

Eating habits and influential factors for mothers and children in Romania

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Abstract

Background: In an era of obesity, healthy food habits are essential. Changing already established habits is difficult, so it is very important to seed from the earliest years of life the seeds of an appropriate nutritional behavior. The role of parents is essential, since they are main role models for their children.

Aim: In the present study, the aim was to evaluate mother-child correlation of nutritional habits and to find factors determining them.

Methods: The research was a cross sectional study carried out on a random sample of urban Romanian mothers, who had to answer to demographical and nutritional questionnaires. The nutritional investigation concerned mothers` and children`s nutritional habits.

Results: The study showed that nutrition of mother and of child in Romanian families are highly correlated, that mother`s education, on first place, and income, on the second place, are the main determinants of child`s and women`s nutrition, and that more educated women deal better with challenging nutrients like fats.

Conclusions: More educational programs regarding the adequacy of nutrition have to be put in place and have to target important demographical groups, like women with children. Programs have to be specially adapted to different levels of understanding, in order to reach all women, overtaking differences in background and education.

Key words: women nutrition, children nutrition, mother`s education, healthy eating, nutritional habits

1. Introduction:

In an era of over consumption and obesity, healthy food habits are essential in keeping away a huge variety of chronic diseases. Obesity, cardiovascular illnesses, hypertension, diabetes, arthritis, cancer and many more have as one of the aetiological factors, inadequate feeding. And even though some other determinants are more important, food is the one that can be influenced at a personal level, and with huge consequences. Unfortunately changing already established habits is very difficult, so it is very important to seed from the earliest ages the seeds of an appropriate nutritional behavior. (1)

As many studies have shown before, parents are highly influential factors for their children in different areas, including food habits. (2-7)

Research has also shown that just giving advises or obliging a child to accept healthy food, without eating it themselves, is, for the parents, a dead end in nutrition education.(3) Coercitive methods give the worst results.(1)For several reasons (living in the same household, mothers usually being the ones preparing meals for the family, mothers being in charge with the food supply), the strongest correlation can be found between mother`s eating habits and the ones of the child. (8,9). This statement is especially true in a traditional society like Romania, a East European country where child care and food preparation are still women`s tasks in the household. In the same time, because good nutrition is a ultimately a problem of due material resources, it`s worth to mention that women generally make large contributions to household cash. Women's income share does seem to be associated with household expenditure patterns that are more child-oriented and to be connected with improved outcomes such as the health and nutrition of children. Women tend to spend their

additional resources on ways that have a greater impact on child welfare and nutrition in particular, so even in this area their influence on nutrition is higher than the one of other members of the family. (10)

On the other hand, working women with children often have a stressed, overloaded life, combining work at home and professional involvement, so what they eat is essential for their own health and performance. General strain can be maximized for single working mothers. (11) Studies have correlated in different ways child`s nutritional status with mother`s employment status, children with full time working mothers being sometimes prone to have unhealthy dietary habits and to develop obesity or overweight. (12).

In the present study, the aim was to evaluate mother-child correlation of nutritional habits and to find main influential factors for the respective habits.

2. Material and methods:

The research is a part of a larger study concerning Romanian mothers` quality of life, nutrition, relation with child and financial perspectives and has been carried out in the year 2010, on a random sample of urban women having in the household at least one child of 1-25 years. The sample was formed with help of general practitioners from Bucharest and other 5 Romanian towns with over 100 000 inhabitants. Doctors asked every 10th women entering in their cabinet during the month of January if they want to participate to a research. After having their acceptance, the basal criteria of the selection (having children of 1-25 years of age) was applied and the sample thus gathered had 512 persons. They were supposed to answer to a number of questionnaires, but after lecturing them, 201 women renounced to the collaboration, declaring that questionnaires were too long and complicated, and the

questions, to intimate. Also, for the nutritional analysis, we decided to keep in the data base only women with children of 3 or more years of age, taking in account the particularities of nutrition at earlier ages. Thus, the final sample had 311 women. The questionnaires were completed individually, without the interference of the investigator. In the nutritional study described in this article, the questionnaires had 2 parts. The first part concerned demographical questions: mother's age, education (1=elementary school, 2=high school, 3=university or post university), perceived adequacy of income (1=not enough for bear necessities; 2= just for bear necessities, 3=enough for usual expenses, 4=enough for more expansive goods, 5= enough for very expansive goods, like a car or a house), marital status, working status, number of children, their age. The second was the "Healthy diet questionnaire" of the British Heart Foundation (2009) (13) translated in Romanian and addressed to mother`s and child`s nutrition. Mothers completed both chapters, the one dealing to their own nutrition, and the one dedicated to child`s nutrition, whatever the child`s age. The questionnaire is a simple and handy nutritional evaluation tool, having qualitative and quantitative questions, with yes/no answers, addressed to important but problematic food groups or ingredients and to food behaviors (meal skipping, alcohol consumption) From this questionnaire we calculated separate scores concerning vegetables, animal fats, whole grains, sugars, and salt intake and a total score, resulted by summing the sectorial scores. We considered that the greater the scores, the more adequate the nutritional habits.

The answers were analyzed by means of correlation, tree classification, two step cluster analysis and descriptive statistical tests.

3. Results and comments:

With three exceptions, all the answering mothers were working full time. The average nutrition total scores were 12.75 (+/2.5) for women and 12.3 (+/2.8) for their children (with a maximum of 22 for women, and of 19, for children, for which questions regarding skipping meals and drinking alcohol were not asked). The nutrition total scores both of women, and of children were significantly correlated with the age of women (younger women feed better their children, but older feed better themselves), with the income and with mothers` educational level. (0, 1, 2 education level = primary, high school or crafts school; 3= university at least) (insert table 1).

From table 1, it also can be seen the significant correlation between mothers` and children`s nutritional index. In a partial correlation, after correcting for child`s age, the correlation was still significant and even at a higher level. ($P=.498$, $\text{sig}=.00$) If the correlation might be better understood at early ages, the finding is surprising for teen age, adolescent children. The conclusion is that even if teens are highly influenced by peers, living and eating with parents decides until late what, when and how it is eaten on a daily basis. Other studies have come at different conclusions. A recent meta-analysis brought to light a rather weak link between parent-child dietary habits, especially in USA. (14) The link is becoming weaker, as children grow older.

A non significant factor for nutrition was mother`s familial status ($\text{sig}>.05$), even after correcting for income. The correction seemed necessary, since income is significantly connected with the marital status of women, single, divorced and widowed having lower income than women living in a couple. This was an interesting finding, showing that nutrition has an important role for mothers, whatever their marital status. Even though income

influences nutrition and single parent families had lower incomes, single women find somehow the resources to overcome the limited-income's bias. The greatest nutritional indexes were found in single women, but differences between categories were not statistically significant, as figured in table 2 (insert table 2)

A lot of research has been carried out in this field, trying to identify problems regarding nutrition in different types of families, taking in account the growing number of single parent households. Thus, a Canadian research demonstrates that low-income lone mothers compromise their own nutritional intake in order to preserve the adequacy of their children's diets (15). In undeveloped countries women's and children's malnutrition is significantly associated with marital status indicating that compared to married women malnutrition is higher among unmarried rural and divorced/separated urban women compared to married ones (16). Analyzing results of the NHANES study, although no strong evidence for nutritional deficiency were found for preschoolers with divorced or separated parents, there were some indications of potential for increased nutritional risk among them. The risk was though ruled by income, which was lower in single parent families. (17). Overall, the idea is that lower income in single parents family is the eventual cause of bad nutrition, not the type of the family itself and that even if material resources are scarce, women prefer to put in danger their own nutrition, than to lower the quality of food given to the offspring.

In order to have a clearer image of the hierarchy of influential elements, we performed a tree classification of the factors modulating mother's and child's nutritional indexes. It could be seen that education is the first determinant factor, followed by:

- **for woman's index** (fig.1):
 - o if the education degree is low, age is an ameliorating factor for the nutritional adequacy, probably because of gaining experience and nutrition knowledge especially from media channels;
 - o if the education degree is high, income is making the difference (insert figure 1)
- **for children's index** (fig.2):
 - o for higher educational degrees, mother's age is important: the younger, the better. This last finding can be, probably, explained by the greater receptivity of younger moms to modern child nutrition trends, very different sometimes from older ones. (insert figure 2)

Many studies have shown, previously, the importance of mother's education in influencing child's nutrition, but mainly by means of the opportunity given by education to achieve a higher socio-economical status. Income and education erase the eventual risk introduced, for example, by the fact that the child is living in a single parent family. (18,19). However, income by itself is less important than education, fact emphasized in the present study but also in studies carried in completely different cultures (5,20) Parental (and especially mothers') education has an important influence on long-run child nutrition, in avoiding malnutrition, in a normal development of the offspring (21-24)

In order to investigate in detail the nutritional habits, separate indexes have been calculated, as described in the previous chapter and a ***two step cluster analysis*** was performed, taking in account the following variables: age, income, education of mothers and the vegetables, salt, fats, whole grains

and sweets consumption indexes for mothers (in the first cluster analysis) and for children (in the second analysis). In the mothers' indexes, two more indexes were added: skipping meals and drinking alcohol:

- **For mothers**, two clusters resulted, for each education being significantly different (fig.3)

The first cluster (cluster 1) was characterized by:

- generally higher income, (though income was not a statistically significant factor),
- education (a higher frequency of university studies)
- better nutritional indexes for all categories

The second (cluster 2), had mothers with :

- a heterogeneous income (on average, lower than for cluster 1 - for this second cluster, income is a statistically significant factor),
- studies stopping at high school level,
- lower nutritional indexes for all categories

Age was not statistically significant for clusters.

The cluster classification underlined that, regarding detailed nutrition indexes, the only statistically significant difference between clusters was **fat intake**, which was significantly more adequate in the first cluster, than in the second ($p < .00$). The other nutritional differences, though present, were not statistically significant. (insert figure 3)

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- **For children**, again two clusters were selected, also significantly different from the point of view of mothers education and income (fig 4).

The first cluster (cluster 1) is formed mainly by :

- mothers with lower income and education
- worse average nutritional indexes for all categories

The second cluster (cluster 2) is characterized by

- mothers with higher income and education and with
- higher average nutritional indexes for all categories

The cluster classification underlined that the statistically significant differences between clusters, regarding nutrition, are **fat and sweets intake**, significantly more adequate in cluster 2. (insert figure 4)

The lesson to be learned is not new, but still valuable: when it comes to nutrition, education and income are important, especially for more "tricky", complicated nutrients like fats. Sweets in child's diet seem also a "sore spot", on one hand due to child's preferences and on the other hand due to older commercials, advising parents to give sweets to young ones. But in the last years, nutritional knowledge has progressed significantly and things have sometimes changes in a rather confuse way. Unfortunately not enough efforts have been made to make this knowledge available in an understandable form for the entire population. Nutrition knowledge, very useful as a health promotion resource, is based on a laborious, complicated biochemical and phisyopathological corpus of theory, hence it is not easy to put it in practice, if it is not "translated" in a simpler form for non-professionals. A nutritionist recently said "People eat food, not nutrients" (25), emphasizing the necessity of making

nutrition knowledge available and understandable.

In figure 5, separate nutrition indexes' mean and optimal values are presented. At all categories, consume is rather inadequate and mother often skip meals. The inadequacy is important for whole grains intake, both for mothers and children. Sweets and salt consumption are more inadequate in child's nutrition, than in mother's. Parents seem to be permissive regarding children's intake of unhealthy foods and ingredients, thinking perhaps that healthy diet is important just for a grown up. Sweets are energy dense products, with a very low nutritional value and a high glyceic index. On the other hand, whole grains are highly nutritional products, being a source of fiber and vitamins B. As a plus, they have a low glyceic index and they bring down the glyceic load of a meal. Studies have shown that low glyceic foods have sanogenic properties, lowering the risk of heart disease, dislipemia, overweight and obesity, diabetes mellitus. (26) They have also shown the potential of enhancing cognitive processes of school age children, empowering memory, attention and concentration.(27-30) Even more, recent studies have brought to light the influence of low glyceic foods on the brain development of a child (especially of the grey matter) and on his intelligence quotient. (31) The high salt intake is also a big burden for health in the contemporary world, influencing the early onset of high blood pressure and favoring its complication. (32,33) The World Health Organization has underlined the necessity to limit the salt intake to a maximum of 5 g per day.(34) So our study has confirmed that healthy diet is still a problem among mothers and children of Romania and that effort has to be made in order to ameliorate it.

The present study has the inherent limitations of a transversal study. Case-

effect relations cannot be highlighted. The sample was rather small and this could rise problems of representativeness, though the statistical analysis showed none. Some answers could be more subjective (for example, the evaluation of the adequacy of the income), but in studies carried out on questionnaires these problems are implicit. The nutritional questionnaire did not cover the entire diet, omitting, for example the intake of diary products, essential in a child's development. Finally, in the study were included only women from urban communities, which leaves uninvestigated the rural area, where 44.9% of the Romanian population lives. In a following study we will focus on the rural population.

4. Conclusions:

- nutrition of mother and child in Romanian families are correlated, whatever child's age;
- mothers' education and income are important determinants of child's and women's nutrition, age being an influential, taming factor in certain circumstances. The importance of education among women is clear and underlines the idea that attending higher levels of education by more and more women is of utmost importance for the healthy nutrition of both mothers and their children;
- more educated (and not necessary wealthier) women deal better with "difficult" nutrient's consumption like fats;
- whole grain intake, sweets and salt consumption are problematic;
- more educational programs regarding the adequacy of nutrition have to be put in place and have to target important demographical groups, like women with children. Programs have to be specially adapted to different levels of

understanding, in order to reach all women, overtaking differences in background and education and have to offer solutions for healthy eating even in the frame of a household with scarce incomes.

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Table 1: Significant Correlation coefficients (Spearman rho) between nutrition indexes and other women `s characteristics (all correlations were significant at the 0.01 level, two tailed)

	Woman`s Index	Woman`s age	Woman`s education (school)	Women`s income
Child`s Index	.488	-.160	.188	.201
Women`s Index	1	.177	.201	.223

Table 2: Average nutrition indexes for children and women, related to marital status of the woman

	Family	Mean value	95%confidence interval
Child`s Index	single	13.4	12.4-14.4
	divorced	12.5	12-13.1
	widowed	10.2	5.8-14.5
	in a relationship	10.7	7.5-13.9
	married	12.3	12-12.7
Woman`s Index	single	13.2	12.3-14
	divorced	12.8	12-13.5
	widowed	10.4	6.5-14
	in a relationship	9.6	9-10.1
	married	12.9	12.6-13.2

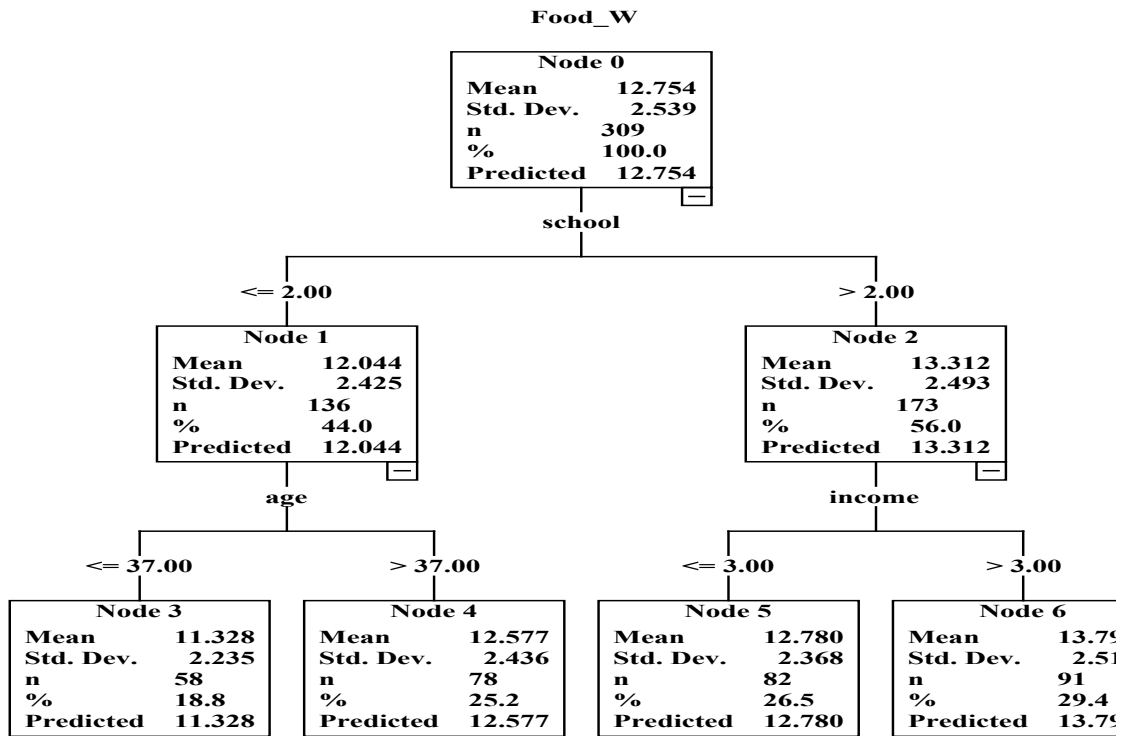


Figure 1: Classification of factors influencing Women’s Nutrition Index

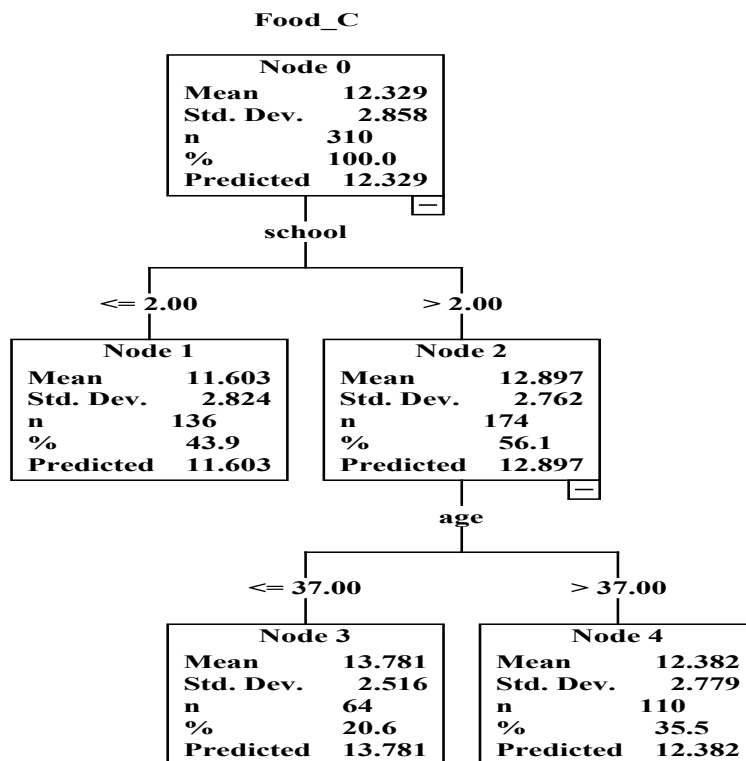


Figure 2: Classification of factors influencing children’s nutrition index

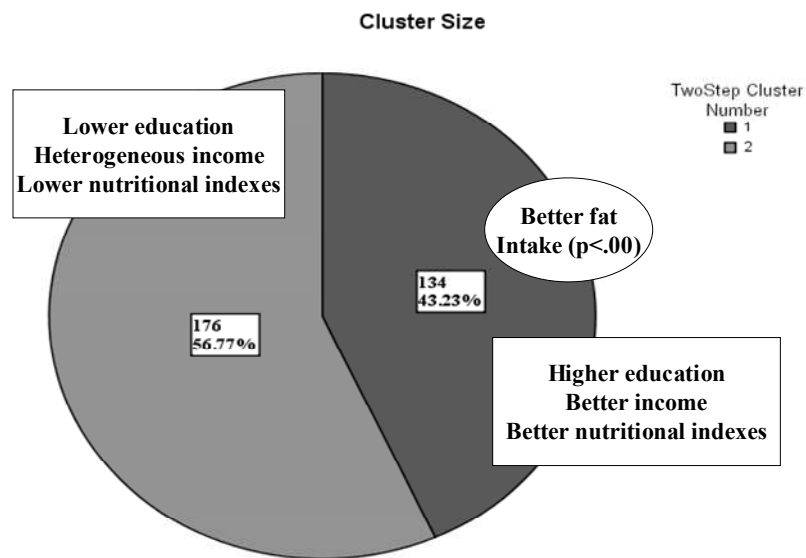


Figure 3: Mother's nutrition clusters

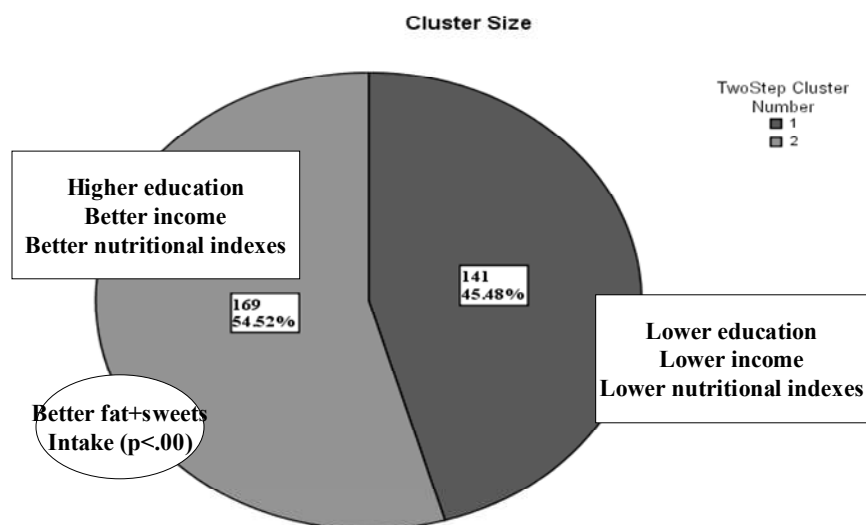


Figure 4: Children's nutrition clusters

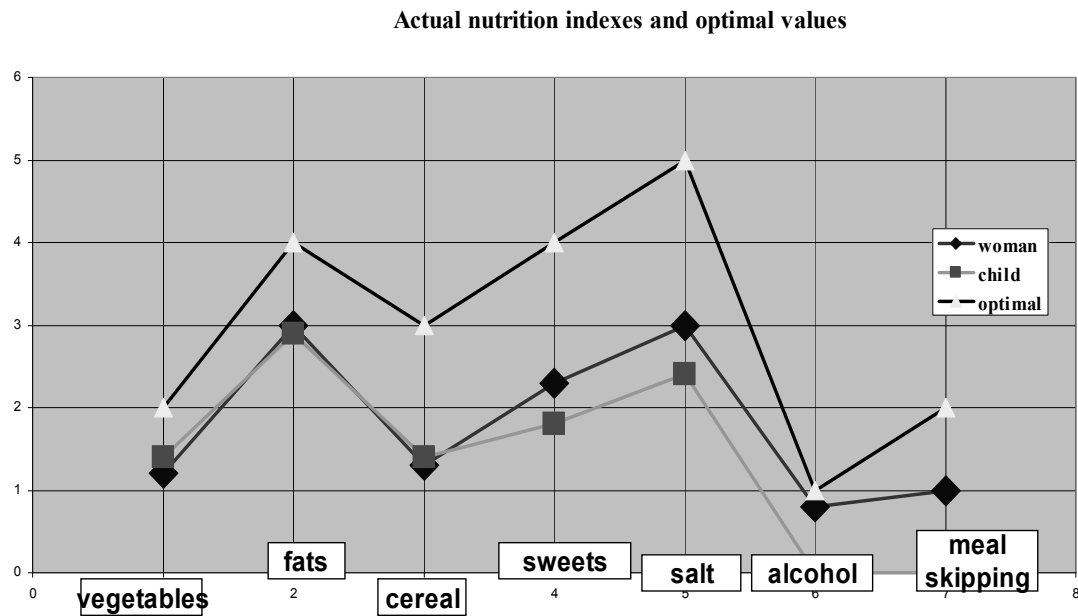


Figure 5: Actual nutrition indexes and optimal values