

FAMILY ENVIRONMENT AS A PREDICTOR OF SELECTED FOOD HABITS AMONG ADOLESCENTS FROM WARSAW

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Key words: food habits, adolescents, family

The aim of the study was to assess the role of family environment in shaping food habits among adolescents. The questionnaire research was conducted in autumn 2002 among 2179 teenagers aged 13 to 15 living in Warsaw. The correct nutritional habits within family, hospitality, and openness to nutritional information contributed to the occurrence of more correct food habits among adolescents. Bringing pressure to bear on children increased the frequency of consumption of food important for their health, and also increased the number of meals eaten a day.

INTRODUCTION

The development and reinforcement of lifestyle behaviours that encourage the maintenance of appropriate weight, foster good health, and prevent diseases are paramount during childhood and adolescence. Nutrition is one of the components of lifestyle that can be used to keep good health and to create possibilities to develop.

Nutrition that provides adequate intake of energy and all nutrients respective to age and activity can be treated as correct. The frequency of eating meals and food products during a day determines also the adequate diet [Gronowska-Senger, 2000].

Family environment is the earliest source of nutritional knowledge and food habits for small children. This family's influence is important also in the school-life of children [Dennison & Shepherd, 1995; Narojek, 1993]. The studies of Backman *et al.* [2002] demonstrated that mother was the most influential individual for adolescents in creating their dietary behaviours. Peers also appeared to play influential, yet somewhat weaker, roles. Chapman and Maclean [1993] indicated that young females tend to associate "healthy" foods with parents and being at home, and "junk" foods – with pleasure, friends and independence.

In literature there is some evidence referring to selected aspects of the family's influence on food habits during adolescence in other countries [Auld *et al.*, 2002; Fisher *et al.*, 2000; Dennison & Shepherd, 1995; Chapman & Maclean, 1993]. Unfortunately, studies on social factors influencing the eating behaviours among Polish teenagers are missing.

The aim of the study was to assess the role of the family environment in shaping the food habits among adolescents from Warsaw. The frequency of eating selected foods, the number of meals consumed a day and the habit of eating food between meals were taken into account as examples of food habits.

MATERIAL AND METHODS

The questionnaire research was conducted in autumn 2002 among 2179 teenagers aged 13 to 15 living in Warsaw. A sample of teenagers was recruited from randomly selected 10 public schools in Warsaw. One of them refused the participation in the survey. Every second class from the selected 9 schools was recruited as a sample. A total of 2335 pupils participated in the survey. During data verification, 156 questionnaires were rejected because of missing answers and mistakes.

The analysis included frequency distribution, cross-tabulation, Chi-square analysis, factor analysis and cluster analysis.

The distribution of population across demographic and socio-economic characteristics is summarised in Table 1.

The frequency of eating meals, warm meal a day, food between meals, milk, milk products, fruits, boiled and raw vegetables, sweets and cakes were taken into consideration as food habits. As a variable, the number of consumed meals was taken into account, either. In the questionnaire, the evaluation of the frequency of eating selected foods was made using the following categories: several times a day, once a day, 3–4 times a week, once a week, less than once a week, and never. In the analysis, the frequency of these items was reduced to the description as: "more than once a day", "once a day" and "more seldom". The evaluation of eating a warm meal during a day was made using the following descriptions: "every day" and "several times a week", "once a week", "more seldom", and "never". The frequency of eating food between meals was expressed as: "often", "sometimes", and "never". The frequency of eating meals was described as: "once a day", "several times a week", "once a week", "more seldom", and "never". During data analysis, the changes were made and the categories: "once a week", "more seldom" and "never", were treated together as one category named "once a week or more seldom".

TABLE 1. Distribution of population across demographic and socio-economic characteristics (%).

Variables	Population (N= 2179)	Gender		Cluster		
		Female (N=1126)	Male (N=1053)	1 (N=751)	2 (N=798)	3 (N=630)
Gender of pupils /C*						
female	51.7	100.0		49.9	56.3	47.9
male	48.3		100.0	50.1	43.7	52.1
Age of pupils						
13 years old and less	31.7	33.0	30.3	29.8	30.1	36.0
14 years old	33.5	33.6	33.3	34.8	34.7	30.3
15 years old and more	34.8	33.4	36.4	35.4	35.2	33.7
Mother's education /C						
vocational and lower	26.4	26.5	26.4	25.7	24.2	30.1
secondary	28.0	29.3	26.6	27.7	25.8	31.2
academic	45.6	44.2	47.0	46.6	50.0	38.7
Father's education /C						
vocational and lower	33.7	33.5	33.8	31.5	31.5	39.0
secondary	21.2	22.3	20.0	19.8	22.0	21.8
academic	45.2	44.2	46.1	48.8	46.6	39.2
Mother's employment /C						
employed	83.0	83.3	82.7	83.2	87.0	77.7
not employed	17.0	16.7	17.3	16.8	13.0	22.3
Father's employment /G						
employed	92.5	91.2	93.9	92.2	92.8	92.4
not employed	7.5	8.8	6.1	7.8	7.2	7.6

*C – the statistically significant correlation between variable and cluster, G - the statistically significant correlation between variable and gender, the level of significance $p=0.05$

To define the family environment 15 variables referring to the nutritional sphere, including food habits, emotions, knowledge, organisation, *etc.*, were taken into account. They were assessed on a 5-point scale, where 1 represented “I do not agree at all”, 2 – “I do not agree”, 3 – “I neither agree nor disagree”, 4 – “I do agree”, and 5 – “I agree completely”.

Four factors representing relationships among the sets of variables describing family environment were identified on the basis of factor analysis [Norusis, 1994; Brzeziński, 1987]. To determine the number of factors a criterion has been used that only factors which account for variances greater than 1 have been included. The percentage of variance attributable to these four factors amounted to 71.8%. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.813 and Bartlett's test of sphericity amounted to 11529.931, significance 0.000. The variables were grouped according to the weights higher than 0.650. These obtained factors can be described as food habits in a family (in the paper the name “habits” will be used for this factor), bringing pressure to bear on children (“pressure”), eating meals with persons other than family members (“hospitality”) and openness to nutritional information (“knowledge”). The averages of the responses to the items referring to these factors characterizing family's nutritional culture were computed for each respondent.

The first factor “habits” was created to assess food habits within a family. Respondents were asked whether the following situations take place in their families: (1) in my family the regularity of meals eating is taken into account very much (the mean of 3.24 and the standard deviation of

1.11); (2) in my family at least one meal is eaten by all family members together (the mean of 3.61 and the standard deviation of 1.30); (3) the atmosphere prevailing at home during meals is friendly (the mean of 3.96 and the standard deviation of 0.99). The Cronbach's alpha for the three-item scale was 0.544, which is generally considered to be reliable. An affirmative response to one component of this factor is a probable indication of an affirmative response in the other components.

The second factor “pressure” consisted of the following statements: (1) in my family only mother makes decisions concerning food (the mean of 2.55 and the standard deviation of 1.19); (2) I am forced to eat the disliked food (the mean of 2.02 and the standard deviation of 1.16); (3) I am forced by parents to eat all food prepared for me (the mean of 2.88 and the standard deviation of 1.23). The Cronbach's alpha for the three-item scale was 0.597.

The third factor “hospitality” consisted of the following statements: (1) the guests are invited to my home for eating food very often (the mean of 3.59 and the standard deviation of 1.04), and (2) my family is invited to the relatives' homes for eating food very often (the mean of 2.43 and the standard deviation of 1.02). The Cronbach's alpha for the two-item scale was 0.516.

The fourth factor “knowledge” was created from the following statements: (1) at my family home there are a lot of books on food and health (the mean of 2.69 and the standard deviation of 1.11); (2) in my family the conversations on food and nutrition are very frequent (the mean of 2.52 and the standard deviation of 1.09). The Cronbach's alpha for the two-item scale was 0.550.

To cluster the population, the K-Means Cluster Analysis procedure was used. The process of assigning and recomputing cluster cases was repeated until 10 iterations have been reached. On the basis of the four factors from the factor analysis three clusters differing according to family environment were identified. Cluster 1 (n = 751) was characterized by the greatest mean value of “habits” (4.1), “knowledge” (3.4) and “hospitality” (3.3). Cluster 2 (n = 798) was characterized by the lowest mean value of “pressure” (1.8) and Cluster 3

(n = 630) by the greatest mean value of “pressure” (3.3). In Clusters 2 and 3, the remaining factors were described by similar mean values, but lower than in Cluster 1 (Figure 1).

Cluster 1 was represented by almost the same number of girls and boys. Moreover, it was represented rather by older respondents than the younger ones and by more teenagers whose parents were well educated. Cluster 2 consisted of a greater number of girls than boys and a greater number of respondents whose mothers worked and were well educated. Cluster 3 was represented by a greater number of boys and younger respondents. It was characterized by a smaller number of parents with academic education than in the other Clusters, and by more teenagers whose mothers were not employed (Table 1). In all statistical analyses, use was made of the software package SPSS for Windows.

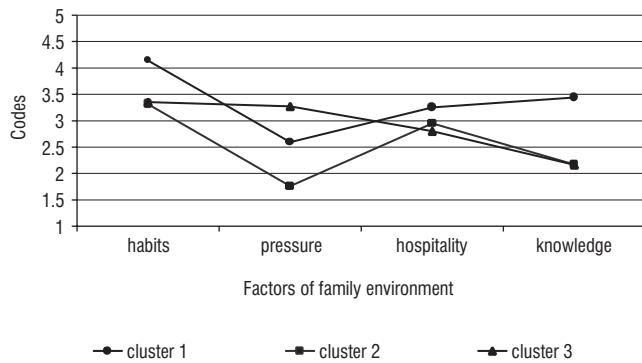


FIGURE 1. The results of cluster analysis taking into account factors of adolescents' family environment.

RESULTS AND DISCUSSION

The results of studies on the frequency eating the selected foods were compiled in Table 2.

The frequency of eating some foods once or more than once a day showed that the population consumed some products too seldom during a day. Only a little more than 50% of teenagers drank milk every day and 2/3 of respon-

TABLE 2. The frequency of eating the selected food products within the population examined (%).

The frequency of eating	Population (N= 2179)	Gender		Cluster		
		Female (N=1126)	Male (N=1053)	1 (N=751)	2 (N=798)	3 (N=630)
Milk / C, G*	20.8	17.1	24.8	24.4	17.8	20.5
more than once a day	32.1	29.9	34.5	34.5	30.3	31.6
male	47.1	53.0	40.7	41.1	51.9	47.9
less than once a day						
milk products / C	34.1	32.4	35.9	37.7	32.3	32.1
more than once a day	31.1	32.2	29.9	32.8	30.5	30.0
once a day	34.8	35.4	34.2	29.5	37.2	37.9
less than once a day						
fruits /C, G	51.2	56.1	45.9	56.6	52.4	43.2
more than once a day	26.8	25.6	28.1	27.6	24.3	29.0
once a day	22.0	38.3	26.0	15.8	23.3	47.8
less than once a day						
raw vegetables / C, G	14.6	18.0	11.0	17.3	14.4	11.7
more than once a day	22.1	23.6	20.5	24.2	22.2	19.5
once a day	63.3	58.4	68.5	58.5	63.4	68.8
less than once a day						
boiled vegetables / C	9.2	8.5	10.0	10.3	6.8	11.1
more than once a day	25.7	24.0	27.2	31.2	21.8	24.0
once a day	65.1	67.5	62.8	58.5	71.4	64.9
less than once a day						
sweets, lollipops / G	21.9	22.5	21.3	21.0	21.1	24.0
more than once a day	16.2	18.1	14.2	16.2	18.0	14.0
once a day	61.9	59.4	64.5	62.8	60.9	62.0
less than once a day						
cakes, cookies / C, G	16.3	13.9	19.0	17.2	15.0	17.0
more than once a day	14.9	13.5	16.4	17.0	14.7	12.7
once a day	68.8	72.6	64.6	65.8	70.3	70.3
less than once a day						

*C – the statistically significant correlation between variable and cluster, G – the statistically significant correlation between variable and gender, the level of significance p=0.05.

dents consumed milk products at least once a day. The low frequency of eating milk and milk products, and also their consumption in small quantities, confirmed the results of other investigations carried out within the young population [Wądołowska *et al.*, 2002; Komosińska *et al.*, 2001]. Girls drank milk more seldom during a day than boys, which was also indicated by Komosińska *et al.* [2001].

According to the survey of Auld *et al.* [2002], it appeared that family expectations towards milk drinking varied widely, and mothers had the strongest influence. Fathers were infrequently indicated as the individuals influencing the children's behaviour, either through their encouragement to drink milk or because they drank milk themselves. Fisher *et al.* [2000] found out that young girls are more likely to choose milk if they see their mothers making this choice.

In this survey, the frequency of drinking milk and eating milk products at least once a day was the greatest in Cluster 1, represented by well-educated parents of the teenagers, on the one side, and the greatest mean value of "habits", "knowledge" and "hospitality", on the other side. It can be assumed that the positive impact from the family environment favoured greater frequency of consuming products. It was observed that teenagers representing Cluster 3 drank milk more often than the ones from Cluster 2. Thus, the frequency of milk products consumption was almost the same among the teenagers from these Clusters. It can be assumed that the reason of more frequent milk drinking among the respondents from Cluster 3 was the family factor concerning higher "pressure" using in nutritional sphere than in Cluster 2.

The frequency of eating raw and boiled vegetables was very low. It appeared that more than 2/3 of population did not eat vegetables at least once a day. Other studies confirmed these results [Komosińska *et al.*, 2001]. In the case of fruits, more than 1/2 of the population determined the frequency of vegetables consumption more than once a day and more than 1/4 of the teenagers ate fruits once a day. Females consumed fruits and raw vegetables more frequently than males. Dennison and Shepherd [1995] stated that adolescent females had more positive beliefs and attitudes towards fruits consumption. Females perceived more social pressure to eat fruits and less social pressure than the males did.

About 2/5 of the population consumed chocolate and all kinds of sweets once a day or more often. The high consumption of sweets among teenagers was confirmed by other studies [Komosińska *et al.*, 2001]. The factors representing family environment differentiated to a low degree the frequency of eating sweets. Only in the case of cakes and cookies, a statistically significant correlation was observed. In Cluster 1, a greater frequency of eating these products was observed in comparison with other clusters. Probably the reason of this phenomenon was the greatest mean value of "hospitality". Families from Cluster 1 more often than others ate food at the relatives' homes and they invited guests more often. The Polish hospitality is connected among others with serving desserts and all kinds of sweets. It was surprising that females participating in the survey ate sweets and lollipops more frequently than males. Dennison and Shepherd [1995] stated that adolescent females had more negative beliefs and attitudes towards sweets and chocolates. Females perceived less social pressure to eat

such food. Other studies suggest that female teenagers, in contrast to males, place more importance on healthy eating, pay attention to health-promoting benefits of food to a greater extent and consume fewer calories [Contento *et al.*, 1995].

Respondents representing Cluster 1 were characterized by more correct frequency of eating some foods. They consumed more often milk, milk products, fruits, raw and boiled vegetables. It can be assumed that the family's nutritional culture characterised by correct nutritional habits, great openness to nutritional knowledge and the most frequent eating of meals with people other than family members resulted in the existence of more correct frequency of these products consumption. Unfortunately the teenagers from Cluster 1 ate cakes and cookies more often than others. In families that put pressure on creating the nutritional behaviour of the teenagers some differences were observed in the frequency of eating some foods. Within Cluster 3 there was observed more frequent consumption of such products as milk and boiled vegetables in comparison with Cluster 2. Respondents from Cluster 2 ate fruits and raw vegetables more often than these from Cluster 3 (Table 2).

Dinner was a meal most often eaten within the population (Table 3). More than 3/4 of teenagers participating in the survey ate breakfast and supper once a day. These meals were eaten more often by males than females. Only 2/3 of girls ate supper once a day. Skipping breakfast [Hamułka *et al.*, 2002; Komosińska *et al.*, 2001; Reddan *et al.*, 2000], but also dinner and supper [Komosińska *et al.*, 2001], has been characterized as a weight-control eating practice for girls aged 12 to 15 [Nowak, 1998]. More than 15% of girls and 3.6% of boys consumed supper once a week or never, in the case of breakfast the difference between girls and boys was also high. Lunch was eaten only by more than 2/5 of the respondents. Differences in eating this meal between boys and girls were not observed. Only 8.9% of the population did not consume food between meals. More males than females did not eat food between meals. Simultaneously, more boys than girls often consumed food between meals (Table 3).

There were observed differences in the frequency of eating selected meals between clusters. In general, the most positive behaviours in this domain were demonstrated by the respondents from Cluster 1. The frequency of eating all meals once a day and every day in the case of warm meal was the highest in this Cluster. The greatest difference between Clusters 2 and 3 was observed in the case of eating breakfast. Respondents representing families that put pressure on creating the nutritional behaviours of the teenagers (Cluster 3) ate breakfast once a day more often than in the case of Cluster 2.

The family environment statistically significantly influenced the number of eaten meals among the survey participants (Figure 2). The greater number of meals eaten a day characterized the respondents from Cluster 1. It means that more positive family's nutritional habits, bigger attention paid to nutritional information and more contacts with food situations from outside can be treated as a good predictor of the number of meals consumed by teenagers. The adolescents from families bringing pressure to bear on them in creating their nutritional behaviours ate more meals a day than those from families not using pressure.

TABLE 3. The frequency of eating meals within the population examined (%).

The frequency of eating	Population (N= 2179)	Gender		Cluster		
		Female (N=1126)	Male (N=1053)	1 (N=751)	2 (N=798)	3 (N=630)
breakfast / C, G*						
once a day	79.1	73.7	84.8	84.6	73.4	79.7
several times a week	11.6	13.7	9.3	8.8	13.3	12.7
once a week or more seldom	9.4	12.6	5.9	6.7	13.3	7.6
lunch (second breakfast) / C						
once a day	43.9	43.3	44.4	53.8	38.3	39.0
several times a week	27.8	27.9	27.6	25.4	27.8	30.5
once a week or more seldom	28.4	28.8	28.0	20.8	33.8	30.5
dinner / C, G						
once a day	90.3	87.9	92.9	94.9	86.7	89.7
several times a week	7.8	9.6	5.8	4.3	11.4	7.3
once a week or more seldom	1.9	2.5	1.3	0.8	2.1	3.0
supper / C, G						
once a day	77.4	67.2	88.3	83.0	72.2	77.5
several times a week	13.0	17.6	8.1	10.5	15.2	13.2
once a week or more seldom	9.6	15.2	3.6	6.5	12.7	9.4
warm meal a day / C, G						
every day	89.4	87.2	91.6	93.1	88.2	86.2
several times a week	9.3	11.2	7.3	6.1	10.5	11.6
once a week	0.8	1.0	0.6	0.5	1.0	0.8
seldom	0.6	0.6	0.5	0.3	0.3	1.3
never	0.0	0.0	0.0	0.0	0.0	0.0
food between meals / G						
often	43.7	39.6	48.1	44.5	44.6	41.7
sometimes	47.4	52.7	41.7	45.5	46.9	50.2
never	8.9	7.6	10.2	10.0	8.5	8.1

* C – the statistically significant correlation between variable and cluster, G – the statistically significant correlation between variable and gender, the level of significance p=0.05.

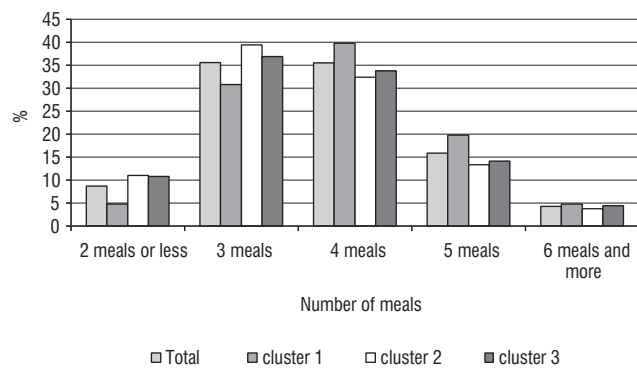


FIGURE 2. The number of eaten meals among the population with regard to cluster distribution (%).

Girls consumed fewer meals during a day in comparison with boys. The consumption of two meals a day or less was declared by 12.4% of girls and 5.1% of boys. On the other hand, 17.0% of females and 23.4% of males consumed 5 or more meals a day (Figure 3). The lower frequency of eating meals characterizing young females can result from the aspiration for being slim. Skipping meals is used by females, independently of age, as a means to manage weight.

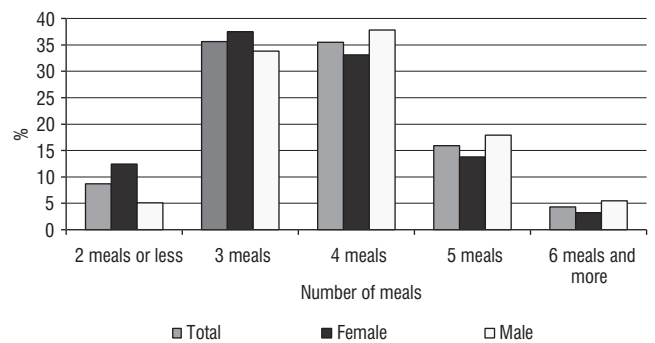


FIGURE 3. The number of eaten meals among the population with regard to gender distribution (%).

CONCLUSIONS

The positive food habits, hospitality, and openness to nutritional information within family caused the occurrence of more correct food habits among adolescents. Bringing pressure to bear on children increased consumption of food important for their health, and also increased the number of meals eaten a day.

Gender was important as a factor differentiating the food habits of adolescents. Young females ate fruits and raw

vegetables more often in comparison with young males. Boys consumed milk, cakes and cookies more often than girls. Females consumed fewer meals than males during a day.

On the grounds of these results, it can be stated that the process of nutritional education must address the family environment. Messages must be directed to increasing families' expectations towards their children to consume some foods and stress the importance of adequate diet for adolescents. The gender-specific communication strategies may need to be developed to improve the healthful eating behaviours.

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Received January 2004. Revision received January and accepted March 2004.

ŚRODOWISKO RODZINNE JAKO CZYNNIK DETERMINUJĄCY WYBRANE ZACHOWANIA ŻYWIENIOWE MŁODZIEŻY

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Celem pracy była ocena znaczenia środowiska rodzinnego w kształtowaniu wybranych zachowań żywieniowych młodzieży. Badanie ankietowe zostało przeprowadzone jesienią 2002 roku wśród 2179 osób w wieku 13–15 lat mieszkających w Warszawie. Pozytywne zwyczaje żywieniowe występujące w rodzinie, zjawisko gościnności oraz otwartość na wiedzę żywieniową sprzyjała bardziej prawidłowej częstotliwości spożywania mleka, przetworów mlecznych, owoców oraz surowych i gotowanych warzyw (tab. 2). Stosowanie przez rodziców różnych form przymusu w kształtowaniu zachowań żywieniowych dzieci łączyło się z częstszą konsumpcją takich produktów żywnościowych jak mleko i gotowane warzywa (tab. 2), także z większą liczbą posiłków spożywanych w ciągu dnia (rys. 1).