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## The Influence of the Selected Factors of Community Environment upon Nutritional Behaviour of Teenagers Aged 13-16

### Summary

The aim of the study was to evaluate the effect of parents' education and occupational activity upon the nutritional behaviours of teenagers between 13 and 16. The auditory method was applied in the survey research. 365 girls and 330 boys filled in the survey questionnaires. The scope of the analysed nutritional behaviours involved the frequency of consumption of twenty products and food and drink product groups, the frequency of consuming five meals a day including a hot meal, and also the occurrence of the habit of snacking between meals. The factor analysis was used in this study. The following conclusion: education and occupational activity of parents and mothers in the first place induces a significant effect on the nutritional behaviours of teenagers. The results obtained can be used in the design phase and the marketing of new products for young people. This is a research article.

**Key words:** young consumers, parents' education, parents' occupational activity, nutritional behaviours.

**JEL codes:** D01, H31, I12, M31

### Introduction

There is a huge number of factors determining the nutritional behavior and their classification is varied. Nutritional behavior is genetically conditioned by the production of hormones, neurotransmitters, the development of sensory organs and also by environment and cultural factors (Socha, Stolarczyk, Socha 2002). These factors are divided into the factors originating from the physical environment in which a human lives, i.e. the biological features of his/her body, his/her demographic, geographic and social circumstances. The latter ones include the psychological, community and occupational features of an individual and the economic and social and cultural aspects of the environment (Jeżewska-Zychowicz 2004).

Another division involves external factors (geographic, political and economic) and internal ones (biological, demographic, economic, social and occupational and psychosocial) (Gulbicka, Kwasek 2001).

Many authors also recognize a division between factors influencing nutritional behavior into the economic and non-economic ones (Jeżewska-Zychowicz 2004c). The economic factors involve demographic factors such as population number and structure (age, sex,

number of family members and natural and technical factors, i.e. geographic conditions, climate, demands, scientific and technological progress, apartment fittings) and social and economic factors, i.e. social classes and groups, education, level of cultural and civilization development, traditions, habits, fashion, advertising, promotion, administration bans and orders (Boczar, Kossut 1983).

### **The factors determining nutritional behavior among teenagers**

In the research conducted among teenagers, it is the age, sex, residence environment, parents' education, economic status, the level of nutritional knowledge, psychological and social and cultural factors which are taken into account while finding differences between various nutritional behaviors.

Age is frequently the basic criterion of choice and variation of an examined group (Szczęsna, Waszkowiak, Krawiecka 2005; Kasperczyk, Jaśko, Bilska 2007; Ostachowska-Gąsior, Jankowska, Wójtowicz 2010). The age limits of the examined teenagers are most commonly set on the basis of the school system.

Sex is considered as one of the most important factors influencing the style of nutrition. The differences between genders result from, but are not limited to, the cultural habits and fashion (Babicz-Zielińska 1999) and from acquiring distinct cultural and social standards characteristic for a given population (Uramowska-Żyto 1996; Gawęcki, Reguła, Buszkiewicz 2000).

The nutritional behaviors of children and teenagers are the resultant of the effect of two community environments: the family domestic environment and the school environment. The family environment has a huge effect upon shaping the nutritional behavior of the growing up teenagers (Białokoz-Kalinowska et al. 2006). The characteristics of the family such as its structure and organization, economic situation, knowledge and views in the subject of food, the attitudes related to food and the nutritional behaviors of the rest of family members play a significant role in shaping these behaviors. The school environment induces an effect on the student by the whole range of the experience gained in respect of the nutritional education, the knowledge on nutrition and the teachers' attitudes, the functioning of nutrition units at school and providing spare time for meals within the schedule of school classes (Lund, Burk 1969).

Many authors (Fisher et al. 2002; Wardle, Carnell, Cooke 2005) indicate the effect of the parents, especially of mothers, upon the nutritional behavior of their children through their own nutritional behaviors, and the nutritional preferences of the parents are reflected in their children's behaviors (Skinner et al. 2002; Neumark-Sztainer et al. 2002; Liem, Mars, De Graaf 2004; Benton 2004). Numerous studies have confirmed that the influence of mothers on the children's food preferences is stronger than the one of fathers (Fisher et al. 2000; Skinner et al. 2002). The influence of mothers has been confirmed in terms of milk consumption (Fisher et al. 2000), fats preferences and consumption (Fisher, Birch 1995),

the variety of the consumed vegetables (Skinner et al. 2002) and in terms of applying dietetic restrictions (Cutting et al. 1999).

Having a meal together in a family has a positive effect on social behavior and causes that nutrition disorders of children and teenagers are more rare (Fulkerson et al. 2008) and that the proper nutritional patterns are developed more often (Gillman et al. 2000). Arcan et al. (2007) claim that the parents' knowledge about food should be improved and their nutritional habits should be developed as these factors have a strong effect upon the growing up teenagers' nutritional behavior.

The education level of the parents is considered as an extremely important factor determining both the nutritional knowledge of children and teenagers and their nutritional behavior. Educated persons are usually more aware of their children's needs and they live a more rational lifestyle. Educated parents generally live a more healthy lifestyle and they nourish themselves in a more rational way and they spend more money on recreation, hygiene and protection of health (Król 2004; Witana, Szpak 2009). A higher rate of overweight or obese children and teenagers is observed in families with lower educational status (Jeżewska-Zychowicz 2005).

The children of women with higher education are more physically active and they eat more fruit, vegetables, dark bread and products with higher content of animal protein (Suliga 2004), and there is an inverse relationship between the mother's education and the intake of energy from fats (Crawford et al. 1995).

The influence of the father's education upon the nutritional behavior of the children is much smaller than of the mother's. Numerous authors do not indicate any significant effect of the father's education on the way in which the children and teenagers are nourished (Rogalska-Niedzwiedz 1984; Woroszyńska, Narojek, Kirschner 1986; Narojek, Kirschner 1995).

## Material and research methods

The aim of this study was the evaluation of the effect of the parents' education and occupational activity upon the nutritional behaviors of teenagers between 13-16.

The criteria of selection for the purposes of this research was the social space and environment, that is the lower secondary school which the participants were attending. The selection was oriented on purpose and it was non-probabilistic, and the researcher, based on his/her knowledge on the population, would appoint the individuals to participate in the test (Szreder 2004). The statistical community of teenagers from a small town environment was the subject of analysis.

The research was conducted in May 2016 in a group of 695 teenagers in four community groups similar to each other in terms of homogeneity, i.e. in four lower secondary schools in Rumia, Pomorskie province. The auditory method was applied in the survey research. 365 girls and 330 boys filled in the surveys (Table 1).

The author's survey was used in the research. The questionnaire contained questions regarding the child's sex and age, and the parents' education and occupational activity.

**Table 1**  
**The characteristics of the examined group (%)**

Group characteristics	Total, n=695	Girls, n=365	Boys, n=330
The whole group	100,0	52,6	47,4
13 year old	8,4	10,2	6,4
14 year old	40,4	42,3	38,3
15 year old	31,5	30,4	32,8
16 year old	19,6	17,1	22,3
Father's education V (vocational)	43,1	46,9	38,9
Father's education S (secondary)	30,2	27,0	33,7
Father's education H (higher)	26,7	26,1	27,4
Mother's education V (vocational)	33,7	36,3	31,0
Mother's education S (secondary)	34,5	33,9	35,2
Mother's education H (higher)	31,8	29,8	33,8
Father occupationally active	89,4	89,5	89,2
Father occupationally inactive	10,6	10,5	10,8
Mother occupationally active	72,5	71,8	73,4
Mother occupationally inactive	27,5	28,2	26,6

\*- statistically significant dependency at  $p < 0,05$ .  
Source: own study.

The scope of the analyzed nutritional behaviors involved the frequency of consumption of twenty products and food and drink product groups, the frequency of consuming five meals a day including a hot meal and also the occurrence of the habit of snacking between the meals. The categories of possible answers regarding the frequency of meals were as follows: every day, several times a week, once a week, less than once a week and never.

The next point of the survey would analyze the consumption of products, food and drink product groups such as milk, dairy products, meat and sausages, fish, eggs, margarine spread, butter, cake and biscuits, white and dark bread, grouts, rice, fruit, vegetables, potatoes, chocolate products and sweets, crisps and chips, French fries, hamburgers and hot dogs, coca cola, sweetened carbonated and energizing beverages. The answers regarding the consumption of products and food product groups involved five frequency rates: several times a day, once a day, several times a week, once a week, once a month, less than once a month and never.

The questions included in the survey also referred to the habit of snacking in between the meals. Eight food and drink product groups have been distinguished: 1. Crisps, crack-

ers, chips; 2. French fries, hamburgers; 3. Sweets; 4. Fruit and vegetables; 5. Cheeses and yogurts; 6. Coca cola; 7. Other sweetened carbonated drinks, 8. Energizing drinks. The possible answers included such statements as: very often, sometimes, rarely, very rarely, I do not have snacks at all.

The statistical methods used in the study focused on extracting certain environmental features which were significantly characteristic for an examined group and on obtaining homogenous respondents groups in terms of nutritional behaviors. The numbers and the rates of persons who were characterized with a certain features have been used for the description of the structure of the group in question.

The factor analysis (Aczel Amir 2006) has been used in this study. The factors analysis has been used for distinguishing the environmental features which were significantly distinctive for a tested group, and then for the reduction of the describing variables. A matrix file was the output file.

The obtained data were subjected to analysis using Stevens series test (Balicki, Makać 2007), which allowed to generalize the conclusions. After the data was analyzed it has been claimed that the observation results in a tested group of teenagers from four lower secondary schools in Rumia can be used for drawing conclusions regarding the whole group, that is regarding all the students attending these schools. The results have been processed by means of the calculation sheet Microsoft Office Excel 97–2003 for Windows and of Statistica package, version 7.

## Results

The frequency of consumption of certain products depended on the level of their parents' education. The children of mothers and fathers with vocational education would have white bread, margarine spread, cakes and biscuits, chocolate products and sweets, crisps and chips, French fries and sweetened carbonated drinks more often. The children whose mothers or fathers had higher education would eat fruit and fish more often.

The consumption of products not recommended in a properly balanced diet, such as chocolate products and sweets, crisps, hamburgers and hot dogs, coca cola and other sweetened carbonated drinks and of products recommended which involved milk and dairy products, butter and margarine spread, white bread, vegetables and potatoes, was common among the children of occupationally inactive mothers. The children of occupationally active mothers would eat fish, fruit and dark bread more often.

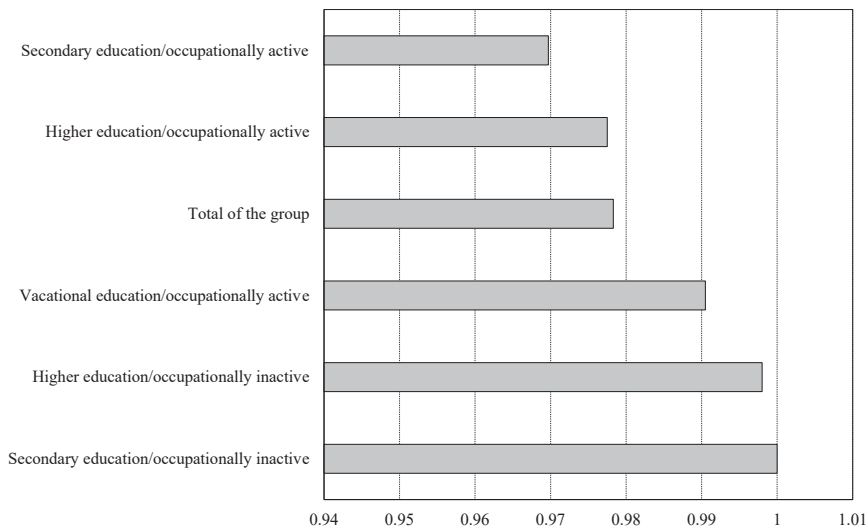
The impact of education and occupational activity of the parents upon the nutritional behaviors of their children was subjected to analysis. While conducting the factor analysis which was linear ordering based on a pattern, the variables characterizing the proper nutritional behaviors, which concerned regular having breakfast, lunch (second breakfast)<sup>1</sup>,

<sup>1</sup> In Poland there are basically four meals: breakfast, second breakfast (a nourishing snack in between breakfast and lunch), which is usually smaller than e.g. lunch in UK, lunch or dinner in the afternoon hours and supper in the evening – translator's note.

dinner, desserts, supper and hot meal were taken into account at the same time as the variables regarding the knowledge on nutritional behaviors. They concerned such issues as leaving home without breakfast, snacking between meals, drinking sweetened carbonated and energizing beverages. The obtained distribution has allowed to claim that there is a dependency between the mother's education and her occupational activity at the same time and the variables regarding the consumption of regular meals and nutritional knowledge, i.e. the variables used to build the pattern. Occupationally inactive mothers with higher and secondary education were the closest to the pattern. The mothers with secondary and higher education who were occupationally active were found to be the furthest from the pattern (Fig. 1).

**Figure 1**

**Education and occupational activity of the mother in relation to the child's proper nutritional behaviors and the level of the child's nutritional knowledge based on taxonomic measure (% z N=688)**

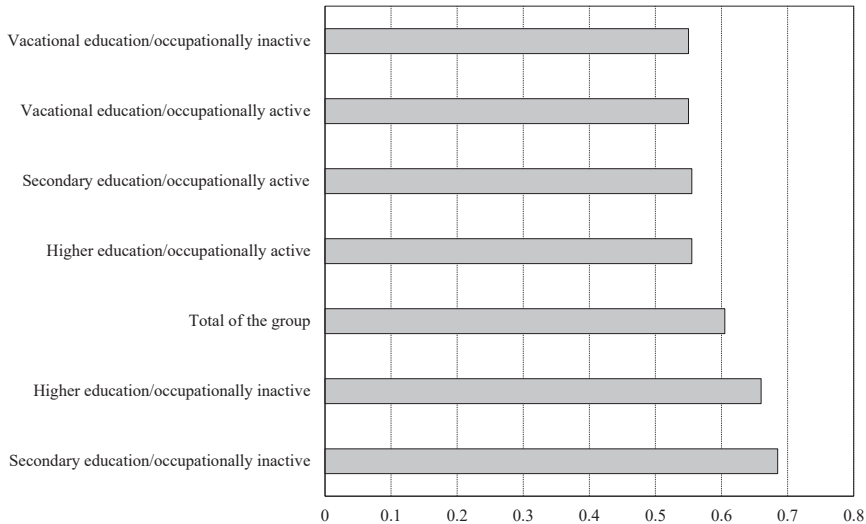


Source: own preparation.

The same variables were used while analyzing the education and occupational activity of the father. Occupationally inactive fathers with secondary and higher education were the closest to the pattern. There was a trace differentiation with regard to other types of education and occupational activity. The analysis of the father's education and of his occupational activity has not indicated any significant effect on the nutritional behaviors of his children. The value of the taxonomic measure for fathers was significantly lower than for mothers (Fig. 2).

**Figure 2**

**Education and occupational activity of the father in relation to the child's proper nutritional behaviours and the level of the child's nutritional knowledge based on taxonomic measure (% taken of N=688)**



Source: as in Figure 1.

### **The influence of education and occupational activity of the parents upon the nutritional behaviors of teenagers**

Searching for differences in nutritional behaviors resulting from environmental factors such as sex, age, place of residence, the parents' education and their occupational activity has become the subject of numerous studies (Wądołowska, Cichon 1996; Jeżewska-Zychowicz 2002; Waluś, Wądołowska, Cichon 2005). As specified in the literature there is a strong dependency between the style of nutrition of the parents and their children (Burke, Beilin, Dunbar 2001; Hannon et al. 2003; Cooke 2004).

The factor analysis has been conducted in this study, following to which a dependency between the mother's education and occupational activity and the frequency of meals and the level of nutritional knowledge has been confirmed. The children of occupationally inactive mothers with secondary and higher education tended to present the awareness of nutrition principles and more health oriented behaviors. The children of occupationally active mothers with secondary education presented the least favorable behaviors and a lower level of nutritional knowledge. Therefore, it can be stated that in order to shape health oriented nutritional behaviors it is essential to combine two factors at the same time: adequately high level of education of the mother as well as her presence at home allowing her for greater engagement in nutritional efforts of the family. The mother's knowledge about nutrition

resulting from her education, without her attendance at home, does not translate into health related behaviors of her children. It seems that the mother's occupational activity is as much an important factor as her high level of knowledge.

According to other authors' studies, the mother's level of education and her occupational activity have also a big impact on regular consumption of meals (generally, these factors were analyzed separately and not by means of factor analysis). A positive correlation between the frequency of having dinner and the student's sex, age, education and his/her mother's occupational activity has been confirmed. According to Jeżewska-Zychowicz (2005), boys have dinners more regularly than girls, in the same way as the younger students and the children of occupationally inactive mothers with relatively lower education. There is a statistically significant dependency between the frequency of having desserts and the student's sex and the mother's occupational activity. Boys and children of occupationally inactive reported to have desserts more regularly. To conclude, the lack of occupational activity of a woman increases the regularity of having desserts and dinner in a statistically significant manner.

The influence of the father upon the children's nutritional behaviors and their knowledge about nutrition was remarkably smaller than of the mother. This results from cultural patterns, as the woman is more engaged in the children's education and nourishing the family. However, it can be stated that the occupationally inactive fathers with higher and secondary education indicated the most positive, although minor influence. This confirms the mentioned opinion regarding mothers that the lack of their occupational activity, however accompanied by a relatively high level of knowledge resulting from the education, induces an effect upon more health oriented behaviors of their children. Many authors (Fisher et al. 2002; Wardle, Carnell, Cooke 2005) indicate the effect of the parents, especially of mothers, upon the nutritional behavior of their children through their own nutritional behaviors, and the nutritional preferences of the parents are reflected in their children's behaviors (Skinner et al. 2002; Neumark-Sztainer et al. 2002; Liem, Mars, De Graaf 2004; Benton 2004). Numerous studies have confirmed that the influence of mothers on the children's food preferences is stronger than the one of fathers (Fisher et al. 2000; Skinner et al. 2002). The influence of mothers has been confirmed in terms of milk consumption (Fisher et al. 2000), fats preferences and consumption (Fisher, Birch 1995), the variety of the consumed vegetables (Skinner et al. 2002) and in terms of applying dietetic restrictions (Cutting et al. 1999). Other authors do not indicate any significant influence of the father's education on the manner of nutrition of the children and teenagers (Rogalska-Niedzwiedz, Charzewska, Chwojnowska 1994; Woroszylska, Narojek, Kirschner 1986; Narojek, Kirschner 1995).

The relation between the parents' education level and the occurrence of snacking between meals by teenagers was subjected to analysis in this research. It has been confirmed that there was an inverse relationship between snacking and the education level of both mothers and fathers. Almost 60% of teenagers of the parents with vocational education would snack between meals every day. The rate of snacking teenagers of the parents with higher education was by 10% lower. The family environment has a huge effect upon shaping the nutritional behavior of the growing up teenagers (Białokoz-Kalinowska et al. 2006). Having a meal together in a family has a positive effect on social behavior and causes that nutrition



disorders of children and teenagers are more rare (Fulkerson et al. 2008) and that the proper nutritional patterns are developed more often (Gillman et al. 2000).

The frequency of consumption of some products depended on the parents' education level. The children of mothers and fathers with vocational education would consume unhealthy food and products uncommendable in a proper diet, such as e.g. cakes and biscuits, chocolate products and sweets, crisps and chips, French fries and sweetened carbonated beverages. The children whose mothers or fathers had higher education would eat fruit and fish more often. The described differences give the evidence of the occurrence of certain tendencies, which provides a suggestion that the teenagers' aware choice of healthy and indispensable products in the diet was correlated with their parents' education.

The results obtained can be used in the design phase and the marketing of new products for young people. The examined group constituted the young people below 20 year of age, that is so-called postmillennials whose community media, new technologies and the care of the external appearance are motivating to action. The authority in the circle of youngest postmillennials musicians, bloggers and performance artists are pleased. Therefore the more we know about their dietary behaviors the more easily is to reach and to plan the proper communication with them. Knowledge of postmillennial's dietary behaviors will enable copy writers easier selection of the person for the campaign, with the transmission which the examined target group is identifying for. This person should create pro-health dietary retention in order to eliminate the possibility of manipulating younger consumers, at which parents didn't vaccinate appropriate eating habits.

## Conclusions

On the basis of the research on the influence of the selected environmental factors upon the nutritional behaviors of teenagers aged 13-16, the following conclusions have been drawn:

- The education and occupational activity of the parents, and of mothers in the first place, induces a significant effect on the nutritional behaviors of teenagers;
- The children of the parents with higher education tend to have snacks between meals at lower rate than their school mates. The teenagers with parents educated at vocational level practice snacking between meals at the highest rate;
- The children of parents with higher and secondary education eat breakfast, second breakfast (lunch), dinner and hot meals more regularly;
- The most regular meals of the children of the parents with vocational education are deserts and suppers. The children of mothers and fathers with vocational education are characterized by a higher frequency of consuming products not recommended in a proper diet;
- It is recommended to continue the examinations in order to determine in what level the taken dietary education of young people using social media influences their dietary behaviors.

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## Wpływ wybranych czynników środowiska społecznego na zachowania żywieniowe młodzieży w wieku 13-16 lat

### Streszczenie

Celem badania była ocena wpływu wykształcenia i aktywności zawodowej rodziców na zachowania żywieniowe młodzieży w wieku 13-16 lat. W badaniu ankietowym wykorzystano metodę audytoryjną, obejmującą swym zakresem wszystkie klasy gimnazjów. Kwestionariusze wypełniło 365 dziewcząt i 330 chłopców. Analizowane zachowania żywieniowe obejmowały zakresem częstotliwość spożycia dwudziestu wybranych produktów i grup produktów żywnościowych oraz napojów, częstotliwość spożywania pięciu posiłków z uwzględnieniem posiłku gorącego, a także występowanie zwyczaju pojadania między posiłkami. W pracy zastosowano analizę czynnikową. Sformułowano wniosek: wykształcenie i aktywność zawodowa rodziców, przede wszystkim matek, wywiera znaczący wpływ na zachowania żywieniowe młodzieży. Otrzymane wyniki mogą być wykorzystane w fazie projektowania oraz wprowadzania na rynek nowych produktów dla młodzieży. Artykuł ma charakter badawczy.

**Słowa kluczowe:** młodzi konsumenci, wykształcenie rodziców, aktywność zawodowa rodziców, zachowania żywieniowe.

**Kody JEL:** D01, H31, I12, M31

## Влияние избранных факторов социальной среды на питательное поведение молодежи в возрасте 13-16 лет

### Резюме

Целью изучения была оценка влияния образования и профессиональной активности родителей на питательное поведение молодежи в возрасте 13-16 лет. В опросе использовали аудиторный метод, охватывающий собой все классы гимназии. Опросники заполнили 365 девочек и 330 мальчиков. Анализируемое питательное поведение охватывало своим диапазоном частотность потребления двадцати избранных продуктов и групп продуктов питания и напитков, частотность выступления пяти приемов пищи в день с учетом горячей еды, а также выявление, существует ли обычай перекусывать между основными приемами пищи. В работе применили факторный анализ. Вывод: образование и профессиональная активность родителей, прежде всего матерей, оказывают значительное влияние на питательное поведение молодежи. Полученные результаты могут использоваться в фазе проектирования и ввода

на рынок новых продуктов для молодежи. Статья имеет исследовательский характер.

**Ключевые слова:** молодые потребители, образование родителей, профессиональная активность родителей, питательное поведение.

**Коды JEL:** D01, H31, I12, M31

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