

THESES OF PhD DISSERTATION

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SURVEY ON THE NUTRITION HABITS OF
YOUNG PEOPLE IN SOUTHERN-TRANSDANUBIA

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1. Background and Aims of the Research

In Hungary diet plays a key role in the development of the most serious diseases among the population. Diet and lifestyle related diseases cause an immense problem. In Hungary coronary heart diseases account for half of all deaths, and malignant tumour is attributable to 40% of deaths. As we know, all of these diseases causing death are related to nutrition. According to some researches, in case of cardiovascular diseases the effect of improper diet is over 30%, while in case of malignant tumour it is more than 35%. Besides these diseases, diet can also be brought into connection with obesity, diabetes, high blood pressure, osteoporosis, as well as dental caries, food allergy and intolerance (RODLER, 2005). As a result of this, every hour 7 people die of obesity or of other obesity related diseases in Hungary (HALMI, 2010).

Childhood obesity is extremely a big problem since a significant number of children become obese when they are adults. According to the research of PUSKA, WAXMAN and PORTER (2003), 17.5 million children below 5 years of age are obese. In the United States the number of obese children has doubled, while among teenagers this number has tripled since 1980 (SZAKÁLY, 2006). Childhood and teenage obesity has become a national economic problem for today (SZÚCS, 2011).

The main reason for obesity is the youngsters' improper health behaviour, a vital part of which is formed by nutrition habits. Children's nutrition habits start to develop at an early age, between 2-5 years of age, therefore it is extremely important to take up proper eating habits, since childhood nutrition habits can decrease the risk of adult age chronic diseases (SZÚCS, BÁNÁTI and SZABÓ, 2008). Teenage obesity has a 70% chance to result in adult age obesity. The chance increases to 80% if one, or both of the parents are overweight or obese (HALMYNÉ, 2006).

The primary aim of my research was to survey the young people's attitude to healthy nutrition and the relating amount and source of information, and the explore the parents' influence on their children's lifestyle.

One reason for frequent obesity can be the development of improper nutrition habits including the number of meals and the food products consumed during the meals. Therefore, my secondary aim was to examine the frequency of meals and the consumption frequency of some food groups (included in the food pyramid).

The body weight is influenced not only by the nutrition habits, but also by sports activity, by snack eating and by – the usually unnecessary – slimming diets. That is why I also looked for an answer to how often, what and when children have snacks. I studied their sporting- and slimming diet habits, and also their judgement of bodyweight.

Since young people obtain most of their information within the family, they acquire their primary habits from their parents, so I wished to analyze the influence of the parents' way of life on their children's health behaviour, therefore, I compared the parents' bodyweight, sporting- and slimming diet habits with their children's.

It seems that although it is the aim of many programs to improve children's attitude towards healthy way of life, and in many cases short-term successes can be observed, but the expected significant change does not happen. As for me, the reason is that the young people's habits are influenced by very many factors, and that the applied communication channels are not always the best. This is why the aim of my research was to survey those lifestyle variables that have the greatest impact on the nutrition habits of the young people, and to find out the homogenous group based on these variables.

2. Material and Method

During working on my dissertation, I regarded it necessary to carry out both secondary and primary researches. I started my work with reviewing special literature. During this work I had an insight into the results of the most important international and national research result. After this I carried out focus group discussions, in the course of which I applied lots of playful elements with respect to the different age groups, then I had an insight into the attitudes and habits of the young people by using a survey by questionnaires (KOTLER and KELLER, 2006).

2.1. Secondary data collection

During my secondary research I studied mostly Hungarian and foreign special literature: special books, scientific journals, and I also analyzed information available on the internet.

2.2. Primary data collection

During my primary research I carried out an independent research to find out current data about the most important information to me from the age group (5th, 7th, 9th and 11th grade students) chosen by me. In the course of my work I conducted both qualitative and quantitative data collection methods.

2.2.1. Qualitative data collection

During our qualitative research we made a creative focus group guide standardized on young people, in which each question is introduced with playful elements. Six focus group discussions were held with the participation of

children. The youngsters were selected by a filter question (How important is healthy eating to you?). This question was applied to help form homogenous groups with respect to their eating habits. The focus group method is beneficial, among others because the participants react to each other's ideas, and in this way more ideas arise than if they are interviewed. The primary aim of these focus group discussions was to find out instructions to be able to compile the questionnaire.

2.2.2. Quantitative data collection

The quantitative part of my research was made by a representative survey launched in the Southern- Transdanubian Region. Eight-hundred primary – and secondary school students were involved in the survey in the county seats (Pécs, Kaposvár, Szekszárd) of the region. The distribution of the questionnaires in the towns, and within them in the different school types (primary school, vocational school, technical school, secondary grammar school) according to genders was defined by the publication of the Central Statistical Office titled “The Main Data of Public Education in the Small Regions of Southern-Transdanubia” (KSH, 2007). The involved schools were selected arbitrarily, which was significantly influenced by the schools' willingness to take part in the survey. Within the schools students from the 5th, 7th, 9th and 11th grades were requested. When choosing the age group, we followed the principles of the HBSC research to obtain comparable results. On the whole we can say that the survey reflects the division rate of the school children attending the different school types of the county seats of the Southern- Transdanubian Region, and it is also representative according to genders.

The applied questionnaire mostly involves close-questions. In the course of the research we explored the importance of healthy eating, the source of the children's information, the consumption frequency of some food products, as

well as the children's snack eating, sporting and slimming diet habits. In the next part of the questionnaire we asked the students to evaluate the importance of 70 statements referring to lifestyle, and later on factors serving the basis of cluster analysis were formed from them.

The questionnaires were analyzed by SPSS 13.0 program. Significant corrections were counted (Pearson χ^2 test) for the background variables (significance level: $p < 0.05$) using cross tables (Appendix 4), or in the case of the intervolum scales variance analysis was applied using "ANOVA" tables.

3. RESULTS

3.1. Results of the focus group discussions

Within the qualitative research 6 focus group discussions were made. The research involved 3 primary- and 3 secondary-school groups. In case of both ages the groups were different from each other regarding the importance of healthy eating. It is characteristic of the discussions that, since primary school students were also involved in the research, based on our earlier experience we felt it necessary to raise the interest of the younger students as well, so this is the reason why each task was fulfilled playfully.

Within the frame of the survey we examined what kind of general rules the students know about healthy eating. Those two groups were able to list more rules without help for whom healthy eating is important or very important, and they were the following:

- A lot of fruit and vegetables are necessary to be consumed.
- Five meals a day are recommended.
- Less fat consumption is recommended.
- Not frequent visit to fast food restaurants.
- Giving up meal late in the evening – after six if possible.
- Breakfast is not omissible.
- The consumption of 2-3 liters of liquid is necessary.
- Carbohydrated soft drinks with sugar content should be avoided.
- Coffee and alcoholic drinks should be avoided.

We asked them their opinion about the importance of healthy eating. In this case the majority of the youngsters made statements about health, physical

condition, psychic factors and appearance (e.g.: let us live long, do not get fat). As a summary, we can say that the respondents are generally aware of the reasons for the importance of healthy eating even when, despite this, they do not consider it very important.

We also wanted to find out about where young people turn if they have questions about this topic. The most frequent answer was searching on the internet. Those young people prefer turning to their family members for whom healthy nutrition is more important. The less important this question is to them, the more frequent answer was searching on the internet, or asking a doctor.

The requested youngsters are aware of the factors influencing their health, but despite this some of them do not pay enough attention to these factors. Only very few of them said that they eat healthily compared to what they know about healthy foods.

After this, we wanted to know the reason for this difference. According to the young people, it can be simply laziness, or the influence of their surroundings. Most of them eat what the others in their surroundings, or what they find at home. Another reason was the lack of willpower, and also that it is hard to keep the principles of healthy eating, because according to most of them, healthy diet is often less tasty and also takes more time. Several ones of them are on the opinion that healthy eating costs more, as well as many of them dine in school canteens, or in student hostels, so they eat what they get there. And those schoolers who do not dine at school often have their lunch well after lunch time in the afternoon. Many of them say that in the morning they do not get up earlier just to have breakfast. Some say that they usually eat more in the evening because this is the cooking time for their mother, and this is the time for the family to be together. Some of them mention as a reason that there are several healthy dishes that they do not like, for example fruit and vegetables.

When looking for answers to the reasons for food selection, we found that for those two groups that regard healthy eating important, or very important, the

most important factors are the quality and the content of the food. In the case of the other groups enjoyment factors, like the taste, or the looks are more important.

3.2. Results of the representative survey

In the course of the representative survey 800 primary- and secondary school students were asked about their way of life and family patterns. According to the results of the survey – within the family – healthy eating is the most important for the mothers (3.97), they are followed by the children (3.66), and then the fathers (3.27).

Similarly to the previous question, it can be seen that – within the family – the mother's nutrition is regarded to be the healthiest (3.57), they are followed by the children (3.23) and the fathers (3.02).

The requested youngsters consider their state of health good (3.99), and they are followed by the mothers (3.72) and the fathers (3.40).

The existence of a link between healthy eating and the state of health is also supported by the results of our survey. The healthier people dine, the better their state of health becomes. It is due to the beneficial influence of nutrition on health, and is also due to a lot of diseases resulting from improper eating habits.

According to the surveyed youngsters, within their family it is their mother who knows most about healthy eating (4.04), they are followed by the children (3.78), and then the fathers (3.56).

The more the parents know about healthy eating, the higher the children's knowledge is.

Table 1**The importance of healthy nutrition, consciousness, knowledge and state of health**

Aspect	Own judgement (N=800)	Mother's judgement (N=793)	Father's judgement (N=771)
Importance of healthy eating	3.66	3.97	3.27
Healthiness of nutrition	3.23	3.57	3.02
State of health	3.99	3.72	3.40
Level of knowledge about healthy eating	3.78	4.04	3.57

It can be stated that the surveyed people consider healthy eating important (3.66), however, it can also be seen well that, compared to this, the healthiness of their diet (3.23) lags behind its importance. But the reason for this is not the lack of knowledge, since according to their judgement their level of knowledge is higher (3.78) than both previous factors. The highest value was reached by the state of health, 3.99 average. A very similar tendency can be observed in the cases of both the mothers and the fathers, the difference is that here the state of health comes behind the level of knowledge.

Studying the unity of the families, we can say that – from the point of view of the importance of healthy eating, the healthiness of families and the level of knowledge – the mothers got the highest value, they are followed by the children, and then the fathers. The only exception from this is the state of health, because in this case the children came first, and they are followed by the mothers, and then by the fathers. The possible reason for the fathers' worse judgement is that – within the families – it is mainly the mothers who are responsible for providing food, so the children have less information about their fathers' thinking. In every case the results reflect the children's subjective judgement. Later on – in the next step of the research – we are planning to make the children and their parents fill in parallel evaluation in order to see how realistic the children's judgements are.

Using the value obtained in the first four questions, we worked out a new index and called it perceived health index (PHI). The index is built on the following factors: the importance of healthy eating, the healthiness of eating, the state of health and the level of knowledge regarding healthy eating. An average was made of the four factors and the obtained results were defined in the following way: if the average value is between 1 and 2.50, then PHI is critical, if it is between 2.51 and 3.50, then it is mediocre, if it is between 3.51 and 4.50, then PHI is good, and if the obtained average value is more than 4.51, then PHI is excellent. The value of PHI calculated for the whole family is 3.87, which means that the state of health of the family is good. Counting the PHI for each member of the family, we obtained the results seen in Table 2.

Table 2

Perceived health index (PHI) in the family

Family member	N	PHI	
		Average	Standard Deviation
Child	800	3.80	0.78
Mother	793	4.06	0.77
Father	771	3.75	0.88

According to the applied index, the mother is the healthiest in the family. The PHI of the fathers and the children is almost the same, the difference between them is not significant. In our view the mother's better result is due to that women are more interested in healthy way of life, and in many cases they do more to stay healthy.

We also wanted to find out information about the youngsters' sources of information about healthy eating.

The three important sources of information are the parents (70.5%), the internet (59.6%) and television (59.0%). It is a very good rate that seven in ten youngsters turn to their parents for information about healthy eating. The

doctors and nurses take the fourth place. The teachers came only to the sixth place, only 39.7% of the children ask them for information about healthy eating.

In the course of finding out detailed information about the question, we also looked for an answer to the question that which of the listed sources of information is considered the most authentic by the surveyed children. They were allowed to choose only one of the already introduced answer categories. The obtained order can be seen in Table 3.

Table 3

Authenticity order of the sources of information (N=800)

Source of information	Head	%	Order	
			Authenticity	Frequency
Doctor/Nurse	317	39.7	1.	4.
Parents	140	17.5	2.	1.
Internet	115	14.4	3.	2.
Books	52	6.4	4.	7.
NK/NA	50	6.3	5.	13.
Trainers	36	4.5	6.	9.
Television	31	3.9	7.	3.
Teachers	21	2.6	8.	6.
Newspapers	15	1.9	9.	5.
Friends	7	0.9	10.	8.
Radio	6	0.7	11.	10.
Brother or sister	6	0.7	11.	11.
Other	4	0.5	13.	12.

The order changed significantly. The most authentic sources of information became the doctors, nurses, parents and the internet.

The youngsters eat four times a day most frequently (32.4%), it is followed by dining three times a day (25.9%), then by five times a day (18.9%). It is recommended to eat five times a day, especially for the growing organism, but only 29.6% of the respondents do so.

The young people were also inquired about what they would change in their diet if it depended only on them. 10 changing possibilities could be marked, which we complemented by the “other” category. Those who would not like to

change were given two possibilities: “Nothing, because my eating habits are just good”, or “Nothing, because I do not have a willpower to change”. The respondents had the opportunity to mark several categories. The obtained results are displayed in Table 4.

Table 4

Changing of diet			
Order	Changing of diet	Head	%
1.	More fruit and vegetables	391	48.9
2.	Less fatty food	254	31.8
3.	Fewer sweets	243	30.4
4.	More fish	224	28.0
5.	Less carbohydrate	165	20.6
5.	More meat	165	20.6
7.	More soup	125	15.6
8.	Nothing, it is good as it is	114	14.2
9.	More vegetable sauce	86	10.7
10.	Less meat	68	8.5
11.	Less salt	52	6.6
11.	NK/NA	52	6.6
13.	I do not have a willpower	29	3.6
14.	Other	14	1.7

One-third of the youngsters think that they would have some things to change in their diet. Almost half of the surveyed children (48.9%) would be glad to eat more vegetables and fruit. The second place is taken by the consumption of less fatty food, which is followed by a decrease in the amount of sweets. Eating more fish comes to the fourth place (28.0%). It would especially be important, since the surveyed children – as it can be seen with the consumption frequency – eat far less of it than it is recommended. 14,2% of the children think that their present eating habits are appropriate, and 3.6% of them think that they do not have enough willpower to change their habits.

Three in ten children (31.2%) admit to having snacks several times a day. If the question is examined on a weekly basis, then it can be stated that over 80% of the youngsters have snacks at least once a week.

In the later detailed survey we also researched the food products consumed as snacks (Table 5). In case of this question more than one answer could be marked.

Table 5

Food products consumed as snacks

Order	Food product	Head	%
1.	Chocolate	599	74.8
2.	Fruit	514	64.2
3.	Salty snacks	461	57.7
4.	Chips	421	52.7
5.	Cakes	413	51.6
6.	Chewing gum	343	42.9
7.	Ice cream	321	40.1
8.	Dairy product	320	39.9
9.	Ice cream in cornet	290	36.2
10.	Candies/Lollypop	236	29.6
11.	Natural oily seeds	211	26.3
12.	Vegetables	142	17.7
13.	NK/NA	24	3.0
14.	Other	18	2.2

The students consume chocolate as snacks most frequently (74.8%), it is followed by fruit (64.2%) and by salty snacks (57.7%). Dairy products are in the bottom of the middle, four in ten young people choose this type of product if they wish to have a snack. Natural oily seeds and vegetables are at the bottom of the list.

The surveyed youngsters do sports mostly every second, or third day (23.1%), but one in ten youngsters never do any sports, and three, or four in ten do sports more rarely than once a week. The rate of those who do sports once a week is 12.5%, which means that the rate of those who do sports regularly (several times a week) does not reach 50%.

More than half of the young people are dissatisfied with their bodyweight. 38.6% of them consider it high, while 15.8% low. On the contrary this, based on the BMI indexes 57.9% fall into the normal category, 11.2% into the low

category and 26.7 into the category of overweight young people. Based on the above, it can be stated that the children's judgement is not realistic.

In the course of the detailed examination of the question we went even further in the comparison. We compared the children's satisfaction with the BMI index (Table 6).

Table 6

Link between the satisfaction with the bodyweight and the BMI index (N=800)*

BMI	NK/NA	I am satisfied	Too low	A bit low	A bit high	Too high
NK/NA	24.0	1.8	1.9	4.1	5.4	8.7
Significant low weight	12.0	4.1	13.0	11.0	0.4	0.0
Thin	4.0	9.4	14.8	13.7	1.9	2.2
Normal	24.0	67.1	61.1	63.0	53.3	21.7
Excess weight	12.0	15.3	7.4	8.2	24.5	26.1
Being overweight	16.0	1.8	0.0	0.0	10.7	21.7
Chronicle obesity	8.0	0.6	1.9	0.0	3.8	19.6

* Those who have a proper judgement of their body weight are marked with red colour.

After studying the data of the table, we can see how unrealistic the children's judgement about themselves is. 67.1% of those who are satisfied with themselves have a normal BMI index, but 13.5% of them are underweight, and 7.7% of them are a bit overweight. 13.0% of those who consider their bodyweight too low are really significantly underweight, more than 60% of them fall into the normal category (!) and 9.3% them are overweight. 13.7% of those who consider their weight low have a proper judgement. 63% fall into the normal category according to the calculated bodyweight index. 53.3% of those who think that their bodyweight is a bit high, fall into the normal category, and the result is the same in the case of 21,7% of those who consider their weight too high.

31.3% of the surveyed children have already been on a slimming diet, and 17.5% of them have already been on a diet more than once. This rate is too high considering that almost half of the respondents are children under 14. Studying the issue parallel with the state of health, we can state that those young people who have never been on a slimming diet consider their state of health better as well (4.21) than those mates of theirs who have already tried this way of weightloss once (4.02), or more than once (3.91). In our view, there are two reasons for this. One is that those who have never gone on a slimming diet do not have excess weight, so the possible negative effects resulting from this do not influence them. The other is that those who have already gone on a slimming diet (once or more than once) have a lower self-respect, or the slimming diet itself may have a negative influence on their state of health (e.g. as a result of the improper nutrient-intake their physical and mental capability falls and they may also become tired).

We tested in three topics (excess weight, slimming diet, sport) what kind of influence the family model has on children. Summarizing the results, we can say that the children copy their parents even in case of these factors.

3.3. Segmentation according to lifestyle

One of the aims of the research was to form such lifestyle groups characteristic of the young people in which we study the role of eating and lifestyle. To reach this aim the children were asked to assess 70 statements referring to their way of life at the end of our questionnaire. Based on these variables 23 influencing factors could be differentiated. In the next step – with the help of the 23 factors – a cluster analysis was carried out. With regard to the high element number, from among the different methods of analysis the K-central method was chosen. The obtained 7 idealistic clusters cover 100% of the sample.

Based on the variables involved with the help of factor analysis, the questions referring to healthy eating, as well as the background variables, the following groups could be identified:

- **Cluster “A”: Average students leading a healthy lifestyle (17.1%)**

In this group there is an equal number of boys and girls. They mainly attend primary schools or technical schools, there is not a significant difference according to years. For them healthy eating is a bit more important than average, so their nutrition, state of health and their knowledge about healthy eating is a bit over the average of the population. They prefer staying at home to going out. They are aware of themselves. For them healthy lifestyle and environmental consciousness are important. They do not follow the latest trends, and surfing on the internet is not important to them either. They do not represent outstanding values.

- **Cluster “B”: Rebellious girls who enjoy life (16.1%)**

This group includes mostly 11th grade girls attending grammar and technical schools. They come from well-to-do-families. Time spent with friends is especially important to them. They search variety. They smoke, go to parties, their group of friends includes the highest rate of those who have already tried drugs. Their knowledge about healthy eating is average, but they do less than the average to keep fit and healthy. They are individualists, entertainment is important to them, they are enjoying life. This group is outstandingly risky.

- **Cluster “C”: Opinion leaders (14.6%)**

In this segment the rate of boys and girls is the same. A significant difference does not appear according to school types either. The majority of them go to the sixth grade and they come from families with incomes above

the average. They are opinion leaders, this is the reason why the internet and other social networking sites are important to them. They purchase popular brands and they are trend followers. Due to their good financial situation, they often shop from vending machines and fast food restaurants. This group is the least environmental friendly.

- **Cluster “D”: Health- and environmental conscious youngsters (18.5%)**

This group includes an equal number of both genders. This is the youngest group, mainly primary school students are included in it. They come from families with average, or below the average incomes. Healthy eating is especially important to them, so the healthiness of their diet, their state of health and their (level of) knowledge linked to that are well above the average. Healthy lifestyle and environmental consciousness are very important to them. They eat healthily and they regularly do sports. They refuse to go on a slimming diet. They do not smoke and do not drink alcohol, or take drugs. They are proud to be Hungarian. Their family is their most important role model. They have a positive attitude towards their future.

- **Cluster “E”: Refusing boys (12.8%)**

This group includes mostly boys who attend vocational schools. They come from families with average incomes and healthy lifestyle is not important to them, they do not eat healthily. This group is characterized by convenient shopping, by the use of vending machines selling food and drinks, and also by dining in fast food restaurants. The internet is almost indispensable for them. They refuse to be environmental conscious and health conscious, so their knowledge about these issues is low.

- **Cluster “F”: Reserved boys (11.8%)**

Similarly to the previous group, such high school boys are included in this group for whom healthy lifestyle is less important. This segment comprises of mainly boys attending grammar and technical schools, who come from mostly families with below the average incomes. They have a negative opinion about everything, only in case of two of the seventy lifestyle variables they are above the average, they prefer to stay at home and the taste of the food is important to them. They award themselves, they belong to the groups with outstanding risk factors. They refuse health consciousness, personal contacts and also sports.

- **Cluster “G”: Controversal youngsters (9.8%)**

The rate of both genders is almost equal in this cluster. This group includes mainly 9th and 11th grade students. They come from families with average, or above the average incomes. This group is the most controversial. Healthy lifestyle and eating are important to them, but they often go to fast food restaurants too, however, the taste of dishes and comfort are more important to them than healthiness. The opinion of other people is important to them, they look up at and follow the celebrities. They often use the internet, follow the most important trends and watch the serials. The idealized pictures of bodies are important to them, so they themselves go to solariums, go on slimming diets and also do sports.

4. Conclusions

Before starting the research, I stated some aims. Following my first aim, I studied the youngsters' attitude towards healthy eating, the amount and source of information connected to it, and the parents' influence on their children's lifestyle.

According to my results it can be stated that, the respondents consider healthy eating important and medium important, but compared to this the healthiness of their diet is behind its importance. The reason for this is not in the lack of their knowledge. According to the respondents, sometimes the parents are also responsible for that the children are not conscious enough (e.g. the children often get the sweets from their parents). It turned out of the survey that the importance of healthy diet is not significant enough in the families.

Although within the family the mother has the greatest influence, but we must not forget the fathers' role either, since they also serve as a role model for their children. Their importance is supported by that 7 in 10 young people obtain information about healthy eating from their parents. The parents are given a serious task with this, since they play an important part in providing their children with clear and relevant information.

According to the respondents, the most authentic sources of information are the doctors and nurses, but despite this, they only take the fourth place among the applied sources of information. As a result, it becomes necessary to ensure the students the possibility to communicate with them more frequently.

To stress the need of the use of the internet is also a significant task, since this is the second most frequently used source among the students, and it also takes a prominent place from the point of view of authenticity. However, it is important for the students to be able to select from the information available on the internet, since there is a load of articles and notes without any scientific basis.

My next aim was to examine the regularity of their meals, and also the consumption frequency of some groups of food (also included in the food-pyramid).

In the course of my research it has been stated that the number of the daily meals is often lower than it would be necessary. According to the results of the focus-group discussions, one of the main reasons for missing breakfast is that young people refuse to get up early in order to have breakfast, but if they miss breakfast, then it has a negative influence on their school performance. The reason for the late lunch (resulting from the reduction of the number of the meals) according to the young people is that they arrive home from school at a late hour, and that they refuse canteen food because of its poor quality. The improvement of the quality of canteen food should be a vital aim not only because with better quality school lunch time could be brought earlier, but it could also provide the possibility to show young people that healthy eating can also be tasty and that it does not contradict to enjoyment of life. In this way, they could also try such food that they do not eat at home in the traditional households (according to special literature data, the parents often argue against healthy eating saying that it is more expensive and less tasty than the traditional diet. Tastier school lunch could provide the possibility to disprove this).

I also studied the students' sports and slimming diet habits, as well as their judgement about their body-weight.

Among the surveyed children the rate of those who do sports regularly (do sports several times a week) does not reach 50%. This result totally contradicts the recommendation of the food-pyramid, the basis of which is regular sports activity. Sport should become part of their life already at a young age to prevent childhood obesity and the related health problems, and their chances to do sports when they become adults and have a job would also be higher.

Over half of the students are dissatisfied with their bodyweight. 38.6% consider it high, and 15.8% consider it low. But contrary to this, based on the

calculated BMI index, 57.9% fall into the normal category, 11.2% into the low category, and 26.7% fall into category with some excess weight. Based on this, it can be stated that the children's judgement is not realistic.

31.3% of the surveyed children have already gone on a slimming diet, and 17.5% of them have tried this method of losing weight more than once. This rate is extremely high considering that almost half of the surveyed children are younger than 14 years-of-age.

In the course of my research work I also studied the influence of the parents' lifestyle on their children's health behaviour. To do so, I compared the parents' bodyweight, sports and slimming diet habits with those of their children's. Based on my studies it can be stated that, similarly to what has been said about healthy eating in the case of these lifestyle factors, family also has a significant impact on the youngsters, so the parents' example is extremely important.

Finally, another aim of my research was to survey those lifestyle variables that have the greatest influence on the children's eating habits, or to find those homogenous groups that can be formed based on these variables. The most important factors influencing health behaviour are summarized in a logical frame, which is shown in Figure 1.

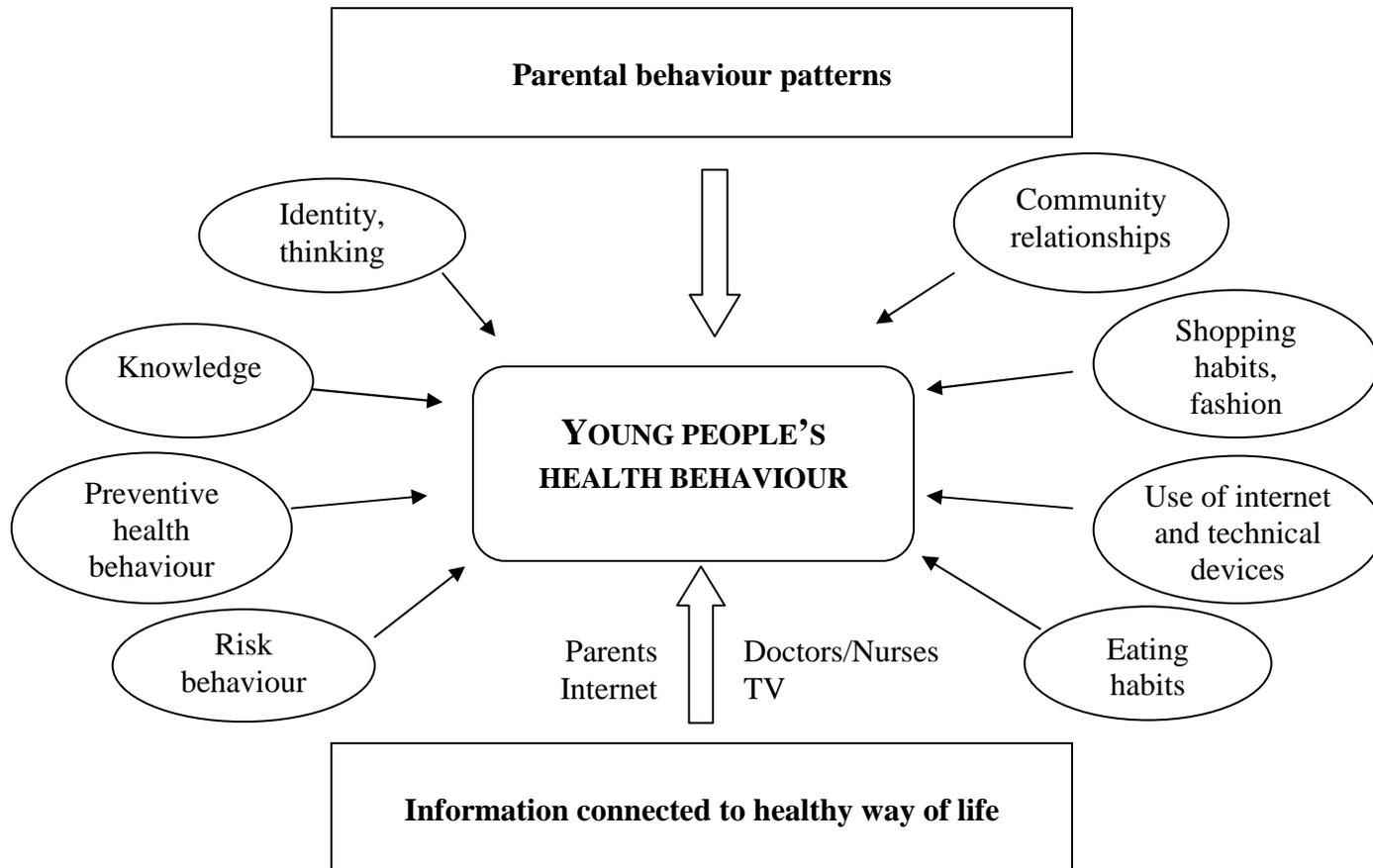


Figure 1: The logical frame of factors determining the young people's health behaviour

I separated 23 influencing factors with factor analysis. With the help of these factors I obtained 7 different homogenous groups. They are the following: Average students leading healthy lifestyle; Rebellious girls who enjoy life; Opinion leaders; Health and environmental conscious youngsters; Refusing boys; Reserved boys; Controversal youngsters.

Before starting the research work I presumed that the different groups can be approached by different communication channels. My presumption proved to be correct based on the joint research with the information sources, so I have also made proposals referring to these ways of communication.

5. NEW AND NOVEL SCIENTIFIC RESULTS

I present my new and novel scientific results in order of the research process.

1. The creation of a creative focus group scenario (FSK) standardized on young people is considered a new methodological result which enhances the motivation of the children and also keeps their attention active.
2. The development of the perceived health index (PHI) is a new methodological result. The index was given from the average of the school-type grades obtained from the evaluation of the students' knowledge about healthy eating, state of health, healthiness of eating and the importance of healthy eating. The value of PHI calculated for the whole family is 3.87, which means that the state of health of the family is good. According to the surveyed youngsters, the mother is the healthiest in the family. The PHI of the fathers and the children is almost the same, the difference between them is not significant.
3. The most important factors influencing health behaviour are summarized in a logical frame. Its elements are the following: parental behaviour patterns; information connected to healthy way of life; community relationships; shopping habits, fashion; use of internet and technical devices; eating habits; identity, thinking; knowledge; preventive health behaviour; risk behaviour.
4. With the help of factor- and cluster analysis I obtained 7 clusters that have different features from the view of lifestyle
 - Average students leading healthy lifestyle (17.1%): In this group there is an equal number of boys and girls. They mainly attend primary schools

or technical schools, there is not a significant difference according to years. For them healthy eating is a bit more important than average, so their nutrition, state of health and their knowledge about healthy eating is a bit over the average of the population.

- **Rebellious girls who enjoy life (16.1%):** Their knowledge about healthy eating is average, but they do less than the average to keep fit and healthy. They are individualists, entertainment is important to them, they are enjoying life. This group is outstandingly risky.
- **Opinion leaders (14.6%):** They are opinion leaders, this is the reason why the internet and other social networking sites are important to them. They purchase popular brands and they are trend followers. This group is the least environmental friendly.
- **Health and environmental conscious youngsters (18.5%):** Environmental and healthy eating are especially important to them, so the healthiness of their diet, their state of health and their (level of) knowledge linked to that are well above the average.
- **Refusing boys (12.5%):** Healthy lifestyle is not important to them, they do not eat healthily. They refuse to be environmental conscious and health conscious, so their knowledge about these issues is low.
- **Reserved boys (11.8%):** They have a negative opinion about everything, they belong to the groups with outstanding risk factors. They refuse health consciousness, personal contacts and also sports.
- **Controversal youngster (9.8%):** Healthy lifestyle and eating are important to them, but they often go to fast food restaurants too, however, the taste of dishes and comfort are more important to them than healthiness. The idealized pictures of bodies are important to them, so they themselves go to solariums, go on slimming diets and also do sports.

5. Some elements that can be efficient when promoting healthy lifestyle and that adjust most to the needs of the 7 separated groups are recommended. The main differences are between the communication messages and communication paths which are leading to different groups.
- Average students leading a healthy lifestyle: This group is heading into the right direction, and in my view, they can be made more conscious with the help of their parents' examples.
 - Rebellious girls who enjoy life: They could be targeted by demonstrating the enjoyment of healthy eating by tasting and via internet.
 - Opinion leaders: They will accept healthy way of life if we make it trendy. If we can "conquer" this group, then they will have a significant influence on their mates.
 - Health and environmental conscious youngsters: The main element of communication could be the affirmation through parents.
 - Refusing boys: they could be reached via the internet, the television and the celebrities.
 - Reserved boys: The main problem is not the rejection of healthy living; they are a high risk group in all way.
 - Controversal youngsters: Everything is important for them what is fashionable. They can be reached most easily through the celebrities, the internet and the group of "Opinion leaders".

6. RECOMMENDATIONS

Considering the gained results it would be important to forward the information not only to the children, but it is also important to enhance the parents' consciousness as well, since the results prove that the parents' consciousness has a great influence on their children's way of thinking. And the parents' consciousness highly depends on their education and knowledge.

In order to improve the parents' knowledge, brochures should be published using up the possibilities offered by collective marketing, or even lectures could be given at parents' meetings, or at other events where the emerging issues could be answered.

Children should be provided a lot more opportunities to communicate with doctors and nurses. They could also be provided by the schools in such a way that the children should be provided the possibility to visit their doctors or nurses not only if they are ill, but whenever they have any other problems too. Children would need more consulting hours with school doctors or nurses to be able to discuss healthy lifestyle, or if necessary, the different ways of body weight reduction or increase.

Since the internet is the information source used by them most frequently, children could also be provided the chance to communicate with a school doctor or nurse in such a way. This way of communication could ensure anonymity for the children, which is very important for the children of this age. Anonymity would make it possible for them to get informed about topics that otherwise they would not dare to, or would not want to ask, e.g. alcohol consumption, smoking, use of drugs or sexuality.

A big part of the students do not have breakfast before they leave for school, since they do not want to get up earlier because of breakfast. This is the reason why I recommend the schools to bring the time of arrival at school a bit earlier

(e.g. 7:40), so the class could have breakfast together before the first lesson, or during the break after the first lesson.

In my view, it would also be the task of the physical education lessons to help children find the sports that suit them the best. I advise the schools to show the children as many possibilities as possible in these lessons. It would be more significant to make the children like sports, which does not necessarily require school marks.

The higher number of slimming diets could be reduced by putting an end to the idealized bodies. It is extremely important to address this problem, since adolescents often have problems with their self-estimation, which can be made more serious by the media that stresses the importance of the “perfect body”. They should be made aware of the importance of other inside values by highlighting that those without a perfect body can also be successful. The schools could provide the possibilities for the students to meet happy and successful people who are not celebrities. And the media could also do a lot in this field.

With the help of cluster analysis 7 groups were separated that have different habits and that obtained information in different ways. That is why the different groups need different ways of communication.

The group of the “Average students leading a healthy lifestyle” can be said to be conscious. For them the main sources information are their parents and the doctors/nurses whom they consider authentic. This group is heading into the right direction, and in my view, they can be made more conscious with the help of their parents’ examples.

The group of the “Rebellious girls who enjoy life” has average knowledge about healthy eating, but they do less to keep a healthy diet than their mates. They could be targeted by demonstrating the enjoyment of healthy eating. Maybe sampling healthy food could make them realize that what is healthy can also be good. Their main source of information is the internet, which they

consider authentic, so they could be targeted via the internet. I recommend to target them very carefully (because intensive targeting may improve their rebellion) and with a lot of patience until the end of their adolescent age.

For the group of the “Opinion leaders” everything that is trendy is appealing. The internet is an important source of information for them, so they can be reached most easily via the net. They will accept healthy way of life if we make it trendy. If we can “conquer” this group, then they will have a significant influence on their mates.

The consciousness of the group of “Health and environmental conscious youngsters” stands out of that of their mates. Their most important role models are their parents who are considered authentic by them, so we should reach these children through their parents. They require increased attention because the majority of them still go to primary school, so the real rebellions age is still to come.

For the group of the “refusing boys” healthy nutrition is not significant, they refuse both health- and environmental consciousness. However, the internet is important to them. They get informed regularly both by the net and the television, so the world of the celebrities is not unknown to them. As for me, they could be reached via the internet, the television and the celebrities.

The group of the “Reserved boys” sees everything pessimistically. They need to be moved out of their pessimism, and we must show them that the world is not as bad as they see it.

The group of the “Controversal youngsters” probably considers healthy way of life important mainly because of the formalities. They can be reached most easily through the celebrities, the internet and the group of “Opinion leaders”.

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