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Selected aspects of dietary habits in school-aged youth in the Slovak Republic

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Abstract

Findings of the Health Behaviour in School-Aged Children (HBSC) survey related to dietary habits in adolescents in Slovakia are presented.

Anonymous questionnaire data from 4308 respondents aged 11, 13 and 15 years were collected.

Proportion of respondents eating breakfast daily ranged from 43% (15-years old girls) to 63% (11-years old boys). Minority of the respondents reported daily fruit and vegetables consumption and the percentage decreased with age. About one third of respondents reported daily drinking of soft drinks.

Deficiencies in dietary habits in Slovakia are widespread Interventions should be focused particularly on age group between 11 and 13 years.

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1. Introduction

Dietary habits as an important part of a life-style represent important determinant during childhood and adolescence. Adequate qualitative and quantitative composition of diet is necessary for appropriate development and maturation. Moreover, in this age dietary habits are still developing and can be positive modified and thus

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influence behavioural models during adulthood.

Although dietary habits represent a rather complex problem, it can be evaluated in adolescents through several indicators: breakfasts on a regular daily base, eating of fruits and vegetables, consumption of sweets and sweetened soft drinks.

Regular breakfast is a significant predictor of healthy diet of children and adolescents (Keski, Rahkonen et al., 2004). Irregular breakfast affects cognitive functions, alters learning ability and can cause increased level of fatigue, loss of concentration and headache (Wesnes et al., 2003). Skipping of breakfast is associated with more frequent consumption of fast-food products and leads to increased body weight, blood cholesterol level (Wolfe et al. 1994). In overweighted children was observed increased frequency of skipped breakfast and shift of the last meal to later evening hours. On the other hand, risk of obesity is lower in children having breakfast on a regular base.

Fruits and vegetables play particularly significant role in diet of adolescents as an important source of fibres, vitamins, minerals and other compounds positively influencing physiologic processes (Pařízková a kol. 2007). Adequate consumption of fruits and vegetables is beneficial in keeping of body weight and can prevent obesity. According to current recommendations, daily consumption of 2-3 pieces of fruit or vegetable is considered as adequate (World Health Assembly global strategy on diet, 2002). Moreover, some experts share opinion that at least 5 pieces daily should be considered as a minimal amount (Commission of the European Communities 2005).

Frequent consumption of sweets can affect regularity of dietary habits and eating of valuable meals. In most of developed countries, excessive consumption of sweets is predominantly responsible for high prevalence of obesity in the population and related problems. Traditional sweets, with high content of chemically processed mono- and oligosaccharides as well as fats, are not appropriate in a diet of children. According to recent findings, children excessively consuming sweets are predisposed for irritable and aggressive behaviour.

Drinking of sweetened soft drinks also contributes significantly in development of overweight and obesity (St Onge et al. 2003). Together with sweet meals, it causes excessive release of insulin with consequent rapid decrease of blood glucose. This can lead to loss of concentration, fatigue as well as increased appetite triggering overeating (Mrdjenovic et Levitsky 2003, Frary et al. 2004). Moreover, consumption of soft drinks and sweets, together with insufficient dental hygiene, increases risk of caries (Sheiham 2001, Touger-Decker et Van Loveren 2003, Tahmassebi et al. 2006).

The project Health Behaviour in School-Aged Children (HBSC) is one of the first international cross-sectional prevalence studies in adolescents. It was initiated by United Kingdom, Finland and Norway in 1983. The intention was to obtain representative, internationally comparable findings obtained through standard unified method. The study was accepted by World Health Organization (WHO) and also other countries joined it. Currently HBSC comprises more than 40 countries. The project is coordinated by Child and Adolescent Health Research Unit (CAHRU) of Edinburgh University in cooperation with Regional Office of WHO for Europe and University of Bergen, Norway.

This article presents selected indicators related to dietary habits from HBSC study carried out in Slovakia in 11-, 13- and 15-years old adolescents. The indicators are analysed considering gender and age differences.

2. Material and methods

The study keeps a standard HBSC research protocol including description of questionnaire, sampling, data collection, database development as well as analysis of data. HBSC survey has a cross-sectional design; however standard methodology makes possible cross-sectional comparisons and analysis of trends. The data are collected via anonymous questionnaire administered in school classes by trained administrators. Participation in the study was voluntary.

The studied sample was created according to the standard HBSC requirements and respects educational system in Slovakia. The sample is stratified by region and type of a school (elementary school, eight years grammar school). From the official list of all schools provided by the Institute of Information and Prognoses of Education, the random sample of 108 schools was selected and further asked for cooperation. In the second stage, within each selected school random classes were selected, where questionnaires were distributed among students. Two schools

refused the cooperation. From the total sample of 8,491 students (response rate 79.5%), 11, 13 and 15 years old students were analysed (Table 1).

Table 1. Age distribution of the sample

	Average age	boys		girls		total
		N	%	N	%	N
		11-years old	11.53 (SD=0.27)	528	46.3	612
13-years old	13.50 (SD=0.27)	774	48.4	826	51.6	1600
15-years old	15.46 (SD=0.25)	771	49.2	797	50.8	1568

In this contribution selected indicators of dietary habits are presented: having breakfast during school days (presented proportion of respondents reporting eating breakfast every school day), fruit consumption (presented proportion of respondents who reported eating fruit at least every day or more than once a day), eating of sweets (presented proportion of respondents who reported eating sweets at least every day or more than once a day) and soft-drink consumption (presented proportion of respondents who reported that they drank soft drinks on at least a daily basis).

The questionnaires were administered by trained administrators during school hours without presence of a teacher. Students were informed about mission of the HBSC and were instructed in a standard way. Filling-in the questionnaires took 25-45 minutes.

Age and gender differences were analysed through logistic regression. Presented are odds ratios with confidence intervals.

3. Results

Occurrence of studied aspects of dietary habits is presented in Table 2. Proportion of respondents eating breakfast during school days ranged from 43% (15-years old girls) to 63% (11-years old boys). In all age groups boys more frequently reported eating breakfast in each school day than girls. This difference reached its statistical significance in 13-years and 15-years old respondents (Table 3). Proportion of respondents eating breakfast on daily base decreased with increasing age, while the deepest decline after 11st year of age. Differences were statistically significant between 11 and 15-years old boys and girls, as well as between 13 and 15 years old boys and girls (Table 4).

Only minority of respondents reported daily consumption of fruits (Table 2), least of them among 15-years old boys (27%) and most among 11-years old girls (47%). Daily eating of fruits was less frequent among boys and this difference was statistically significant in 13-years old respondents (Table 3). Frequency of fruit consumption decreased with increasing age and the difference held the significance between all compared age groups (Table 4).

Similarly as regarding fruits consumption, only minority of respondents reported daily consumption of vegetables (Table 2), least of them among 15-years old boys (21%) and most among 11-years old girls (35%). Daily eating of vegetables was less frequent among boys and the difference was statistically significant in 15-years old respondents (Table 3). Frequency of vegetable consumption decreased with increasing age and the difference was significant between 11 and 15 years old boys and girls (Table 4).

About one in four respondents reported daily consumption of sweets (Table 2) and the occurrence ranged from 39% (11-years old girls) to 47% (13-years old girls). Boys less frequently consumed sweets on a daily base and the difference was statistically significant in 13-years old respondents (Table 3). While among boys there were only slight differences across age groups, in girls the frequency statistically significantly increased from 39% in 11-years old to 47% in 13-years old respondents (Table 4).

More than one third of respondents reported daily consumption of soft drinks (Table 2) and the occurrence ranged from 30% (11-years old girls) to 43% (15-years old boys). Difference between boys and girls increased with age due to rising occurrence among boys and reached statistical significance in 15-years old respondents (Table 3). Significant difference among age groups was found between 11 and 15 years old boys and girls (Table 4).

Table 2. Occurrence of selected aspects of dietary habits

		Occurrence					
		11-years old		13-years old		15-years old	
		boys	girls	boys	girls	boys	girls
Eating breakfast each school day	n	362	389	471	425	399	340
	%	63.2	59.8	58.0	47.6	50.8	42.6
Eating fruits daily	n	257	309	260	342	214	245
	%	45.7	47.2	32.5	38.2	27.2	30.7
Eating vegetables daily	n	170	227	200	254	160	207
	%	30.8	35.2	25.2	28.6	20.6	26.1
Daily consumption of sweets	n	234	247	326	417	323	362
	%	42.2	38.7	41.2	46.9	41.4	45.4
Daily consumption of soft-drinks	n	181	194	305	328	335	286
	%	32.5	30.2	38.2	36.9	42.7	35.9

Table 3. Gender differences in occurrence of selected aspects of dietary aspects (expressed as odds ratios with respective confidence intervals)

	Gender differences		
	boys vs. girls		
	11-years old	13-years old	15-years old
	OR(95%CI)	OR(95%CI)	OR(95%CI)
Eating breakfast each school day	1.15(0.92-1.46)	1.52(1.26-1.84)	1.39(1.14-1.70)
Eating fruits daily	0.94(0.75-1.18)	0.78(0.64-0.95)	0.84(0.68-1.05)
Eating vegetables daily	0.82(0.64-1.04)	0.84(0.68-1.05)	0.74(0.58-0.93)
Daily consumption of sweets	1.16(0.92-1.46)	0.79(0.65-0.96)	0.85(0.70-1.04)
Daily consumption of soft-drinks	1.11(0.87-1.42)	1.06(0.87-1.29)	1.33(1.09-1.63)

Table 4. Age differences in occurrence of selected aspects of dietary aspects (expressed as odds ratios with respective confidence intervals)

	Age differences			
	boys		girls	
	11 vs 15	13 vs 15	11vs15	13vs15
	OR(95%CI)	OR(95%CI)	OR(95%CI)	OR(95%CI)
Eating breakfast each school day	1.66(1.33-2.07)	1.33(1.09-1.63)	2.00(1.62-2.47)	1.22(1.01-1.48)
Eating fruits daily	2.25(1.79-2.83)	1.28(1.03-1.59)	2.02(1.63-2.50)	1.39(1.13-1.70)
Eating vegetables daily	1.71(1.33-2.20)	1.29 (1.02-1.64)	1.54 (1.23-1.94)	1.13 (0.91-1.40)
Daily consumption of sweets	1.03(0.83-1.29)	0.98(0.80-1.20)	0.75(0.61-0.94)	1.05(0.87-1.28)
Daily consumption of soft-drinks	0.60 (0.52-0.81)	0.82(0.67-1.01)	0.77 (0.61-0.96)	1.04(0.85-1.27)

4. Discussion

The study brought into light several deficits in dietary habits in school aged adolescents in Slovakia. Proportion of respondents having breakfast on a regular daily base is relatively low compared against HBSC average (pooled results including all countries participating in the study) (Currie et al., 2012). The difference is particularly remarkable in 15-years old respondents (59.5% in boys and 50.3% in girls in HBSC average). Decrease of the prevalence with age found in Slovakia can be seen also in the most of countries participating in HBSC, similarly as lower occurrence in girls (HBSC international report). Analogous results were found also in USA where among 6 to 11-years old children 92% of them reported daily breakfast, while among 12 to 19-years old only 77% (U.S. Department of Agriculture, 1998). Considering changes across time, the current HBSC results in Slovakia only slightly changed compared against results carried out in 2005 (Currie et al., 2008).

Insufficient consumption of fruit is a common public health problem (Gidding et al., 2005). Gender differences in Slovakia in eating of fruits are not as profound as in HBSC average (remarkable dominance of girls in all age groups). Moreover, relative high prevalence in 11-years old boys was found in Slovakia (38.5% in HBSC average). On the other hand, decrease with age was similar as in HBSC average. Compared to results obtained in 2005, situation improved, holding all age groups and genders, however, particularly in 11-year old respondents (30% in boys and 35% in girls in 2005). Considering eating of vegetables, pattern similar to eating of fruits was found, however, the prevalence of daily eating was relatively lower.

Eating of sweets is very frequent in Slovakia, both in boys and girls. Differences among age groups indicate that the habit develops mainly after 11th year in girls. Only slight changes of prevalence across age groups in boys indicate that the habit among them develops in earlier age than in girls.

Frequent consumption of soft drinks is a significant determinant of development of overweight and obesity in developed countries (Frary et al., 2004). Moreover, together with eating of sweets, it increases risk of caries (Touger-Decker et Van Loveren, 2003), particularly in combination with insufficient dental hygiene. The prevalence in Slovakia was considerable higher than in HBSC average (app. by 15%). The situation is almost the same as was in 2005. This finding emphasizes the problem in Slovakia and says for more effective interventions. Increase with age and predominance of boys is similar as in HBSC average, indicating common pattern of use.

Limited physical activity combined with inappropriate dietary habits leads to increased risk of overweight and obesity. It originates as early as during childhood and develops in adolescence. Epidemic occurrence represents one of the most significant public health problems in Europe. Effective interventions focused on dietary factors in adolescents can reverse this unfavourable situation

5. Conclusions

Compared to international HBSC results, unhealthy dietary habits were in Slovakia more profound, particularly irregularity in breakfast and drinking of soft drinks. Considering the overall pattern, it is in Slovakia similar as HBSC average: worsening situation with increasing age and more favourable situation in girls. Interventions should be focused particularly on adolescents between 11 and 13 years, since namely in this age group the situation gets worse compared to younger ones. Further studies analyzing determinants of changes in dietary habits arising with age are needed.

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