Coll. Antropol. 39 (2015) 1: 101–107
Original scientific paper

Nutritional Knowledge and Dietary Habits Survey in High School Population

Dragana Milosavljević, Milena L. Mandić and Ines Banjari

»J. J. Strossmayer« University, Faculty of Food Technology, Department of Food and Nutrition Research, Osijek, Croatia

A B S T R A C T

During adolescence, young people are in a sensitive transition period when they gradually take over the responsibility for their own eating habits, health attitudes and behaviours and create lifelong habits so it is essential that they adopt healthy habits according to dietary recommendations. Knowledge is one of the factors necessary for the changes in dietary habits. The objective of this study was to gain insight in nutritional knowledge and dietary habits of adolescents. The sample included 117 adolescents aged 17–19 years. Self-administered, anonymous questionnaire, representing modified version of General Nutrition Knowledge Questionnaire was used to assess general characteristics, nutritional knowledge about nutrients, dietary recommendations, sources of nutrients, diet-disease relationship, and dietary habits. Less than one third of adolescents showed satisfactory knowledge, but boys, adolescents from rural environment and overweight adolescents showed significantly lower knowledge unlike others. Meal skipping was present habit, especially for breakfast consumption. Especially high consumption of meat and meat products was noted for boys, while fruit and vegetables for girls. Fad dieting was quite practiced habit, especially in girls and overweight adolescents. Among girls, high consumption of sweets was confirmed, while boys showed high consumption of soft drinks. Television presents the main source of information about nutrition for adolescents. Collected data shows similarity with other research in Europe and North America that confirm strong influence of globalization and fast spread of unhealthy habits. The results pointed out weak spots in nutritional knowledge and revealed unhealthy eating habits. This information is necessary for the development of new approaches to modulate their knowledge and consequently act on their behaviour. Behavioral changes would include higher number of meals per day, regular breakfast consumption, higher intake of fish, lower consumption of meat and meat products, sweetened foods and drinks etc. The final outcome would result in longterm positive impact on dietary habits.

Key words: *adolescents, nutritional knowledge, dietary habits, recommendations, meal skipping, fad dieting, sources of information, sweets, soft drinks*

Introduction

Growing evidence about importance of proper nutrition in ensuring growth and development, and maintaining health and disease prevention emphasized the need for nutrition research in all population groups. Knowledge is one of the factors necessary for the change in dietary habits[1]. Gaining insight on knowledge enables us to get a clear picture about areas upon which we must act.

Adolescence is a period of increased responsibility and autonomy[2,3] and large influence of peers[3,4]. During adolescence, young people gradually take over the responsibility for their own eating habits, health attitudes and behaviours[5–7]. This period however, results in poor health profile, including poor diets and eating habits as well as rapid reduction in physical activity[2,8,9]. Habits adopted in this life stage are lifelong and influence further dietary and lifestyle behaviours[2,3,6–8]. Among the major factors which are shown to determine later dietary behaviour are cost, convenience, taste, physical and social environment, gender, weight concern, attitudes and beliefs[2,3,7]. Therefore, the importance of adopting healthy habits is crucial[10].

Another important fact is the influence of such behaviours on occurrence of non-communicable diseases, which present the main cause of morbidity and mortality in Europe[11] and Croatia[12]. Dietary habits and physical inactivity are the major preventable risk factors[9,11,12], accenting adolescence as period for the successful prevention programmes[12,13].

The aim of this study was to examine adolescent's knowledge about foods and nutrition, to reveal their di-

Received for publication November 27, 2012

etary habits, and to find out what are the sources of information about foods and nutrition. Such specific information could result in development of the prevention educational programmes.

Subjects and Methods

Subjects selection and the procedure

Sample included 117 high school students (72 girls and 45 boys) from continental part of Croatia. Mean age of all participating adolescents was 17.9 years. A dietary questionnaire previously constructed in collaboration with Faculty of Food Technology, representing modified version of General Nutrition Knowledge Questionnaire[14], was self-administered during school time. This study was conducted according to the guidelines laid down in the Declaration of Helsinki and all procedures involving human subjects were approved by the Ethnical Committee of Faculty of Food Technology. Verbal informed consent was obtained from all participants. Verbal consent was witnessed and formally recorded.

Questionnaire

Questionnaire included questions regarding general information such as age, gender, height, weight and living environment, shown in Table 1. Knowledge was questioned through three sections, containing 25 questions in total.

Section »Understanding of terms« included question about nutrients, energy requirements and dietary recommendations.

Section »Knowledge about food sources« questioned the ability to transfer (use) theoretical knowledge in practice. Participants had to connect certain foods with certain nutrients.

Section »Awareness of diet – disease relationship« questioned level of knowledge about association of certain foods with certain diseases.

Dietary habits were questioned by eight questions such as meal frequency, breakfast skipping, consumption frequency of some food groups (e.g. fish, meat, bread, sweets, milk and milk products), fluid intake, fad dieting, and sources of information about food and nutrition. Fad dieting presents unhealthy, often unreasonable diet restriction aiming at weight reduction.

The scoring system was 1 for the correct answer and 0 for incorrect answer and answer »I don't know«. Due to question complexity it was possible to obtain more than 1 point per question.

Statistics

Statistica 7.0, StatSoft Inc. and Microsoft Office Excel 2003 were used for statistical analyses. The obtained scores are expressed as mean and standard deviation. The percentage distribution of participants in each tertile score was calculated by using the package Statistica, too. Data categorization was done according to gender, living environment and body mass index. ANOVA test was used to determine differences in scores obtained by the groups.

Results

Knowledge assessment

The total knowledge score of each section was divided into tertiles, where 1st tertile represents inadequate knowledge, 2nd tertile represents partially knowledge, while 3rd tertile represents satisfactory knowledge (Table 2). Inadequate knowledge was the highest for »Diet-disease relationship« section (25.6%) and the least for »Un-

TABLE 1
DESCRIPTION OF THE PARTICIPANTS

	Girls (N 72)		Boys (N 45)		Total (N 117)	
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
Age (years)	17.9	0.04	18.0	0.03	17.9	0.04
Height (cm)	166.5	0.03	180.2	0.02	171.8	0.04
Weight (kg)	57.4	0.01	73.8	0.02	63.7	0.05
BMI (kg/m^2)	20.7	0.03	22.7	0.02	21.5	0.05
	N	%	N	%	N	%
BMI <18.5	9	13.0	2	4.0	11	9.4
BMI 18.5–24.9	59	81.0	36	80.0	95	81.2
BMI >25.0	4	6.0	7	16.0	11	9.4
Rural area	42	58.3	21	46.7	63	53.8
Urban area	30	41.7	24	53.3	54	46.2

BMI – body mass index

TABLE 2
PERCENTAGE DISTRIBUTION OF ADOLESCENTS FOR KNOWLEDGE SECTION AND TOTAL KNOWLEDGE TERTILE SCORES ACCORDING TO GENDER, LIVING ENVIRONMENT AND BODY MASS INDEX

	Understanding of terms			Food sources			Diet-disease relationship			Total		
	1st tertile	2nd tertile	3rd tertile	1st tertile	2nd tertile	3rd tertile	1st tertile	2nd tertile	3rd tertile	1st tertile	2nd tertile	3rd tertile
All participants	18.8	53.0	28.2	24.8	47.0	28.2	25.6	45.3	29.1	27.4	44.4	28.2
Girls	12.5	55.6	31.9	20.8	45.8	33.4	25.0	47.2	27.8	22.2	44.5	33.3
Boys	28.9	48.9	22.2	33.3	44.5	22.2	24.4	46.7	28.9	35.6	44.4	20.0
Rural area	20.6	60.3	19.1	33.3	41.3	25.4	30.2	42.9	26.9	28.6	50.8	20.6
Urban area	16.7	44.4	38.9	16.7	50.0	33.3	18.5	51.9	29.6	26.0	37.0	37.0
BMI<18.5	9.1	72.7	18.2	27.2	36.4	36.4	27.2	27.2	45.6	36.4	27.2	36.4
BMI 18.5–24.9	19.6	53.6	26.8	26.8	43.3	29.9	23.7	50.5	25.8	26.8	45.4	27.8
BMI>25.0	22.2	22.2	55.6	11.1	77.8	11.1	33.3	44.5	22.2	22.2	55.6	22.2

BMI – body mass index

TABLE 3
SCORES OBTAINED FOR KNOWLEDGE SECTION AND TOTAL KNOWLEDGE PRESENTED AS MEAN SCORE, STANDARD DEVIATION, MINIMUM AND MAXIMUM ACCORDING TO GENDER, LIVING ENVIRONMENT AND BODY MASS INDEX

	Understanding of terms				Food sources				Diet – disease relationship				Total			
	Min	$\bar{X}$	SD	Max	Min	$\bar{X}$	SD	Max	Min	$\bar{X}$	SD	Max	Min	$\bar{X}$	SD	Max
All participants	5	9.5	1.4	12	3	14.5	4.0	23	1	8.6	3.3	15	13	33.0	6.9	47
Girls	5	9.8	1.3	12	7	15.6	3.6	23	1	8.5	3.3	15	15	33.9	6.3	46
Boys	5	9.1	1.5	12	3	13.7	4.3	21	1	8.7	3.3	15	13	31.6	7.5	47
Rural area	5	9.3	1.4	12	7	14.5	3.7	23	1	8.2	3.1	15	15	32.0	6.1	45
Urban area	6	9.8	1.4	12	3	15.4	4.2	23	1	9.0	3.4	15	13	34.2	7.6	47
BMI<18.5	5	9.3	1.6	11	7	15.1	4.3	21	3	9.6	4.1	15	15	34.0	3.9	47
BMI 18.5–24.9	5	9.5	1.4	12	3	14.8	4.1	23	1	8.5	3.1	15	13	32.8	6.7	46
BMI>25.0	7	10.0	1.7	12	11	15.0	2.6	20	4	8.8	3.7	15	27	33.8	5.9	45

Min – minimal score, Max – maximum score, SD – standard deviation, BMI – body mass index

derstanding of terms« (18.8%). Girls showed better knowledge than boys, except for the »Diet-disease relationship« section. Adolescents from urban areas showed better knowledge by all sections. Interestingly, adolescents with BMI>25.0 kg/m^2 showed the best knowledge for section »Understanding of terms« (55.6% *vs.* 18.2% in underweight and 26.8% in normal weighted adolescents). For the other two sections, they had the lowest percentage in the highest tertile (11.1% for the »Food sources« and 22.2% for the »Diet-disease relation«). Still, for the small number of adolescents in this group (N=11), the results cannot be used to draw any firm conclusions. In total, the differences between 1st and 3rd tertiles are small, and the highest percent of participants, 44.4% showed only partial knowledge.

Mean score for section »Understanding of terms« was 9.5 out of possible 13.0 (Table 3) with statistically significant differences between males and females (p=0.024). Knowledge about energy requirement was very poor, only 17.1% of all adolescents offered correct answer. As well, recommended serving of fruit and vegetables was unfamiliar to a large part of adolescents. Most of the participating adolescents were aware of recommendation for low fat milk products and recommendation for consuming more or less food from food groups (fruit, vegetable, fibre, milk products, meat, salt, fat, sweets). Out of maximum of 23.0 points for section »Knowledge about food sources« mean score was 14.5 (Table 3) with statistically significant differences between males and females (p=0.013). The most problematic area was recognition of foods containing saturated and unsaturated fats. 60.7% of all adolescents believed that olive oil contains a lot of saturated fats, and 64.1% believed that red meat do not contains lots of saturated fats. Common mistake included relation between fats and cholesterol. 56.4% of all adolescents believed that food containing fats must contain cholesterol as well. More than half of adolescents believed that glass of whole fat

TABLE 4
PERCENTAGE DISTRIBUTION OF ADOLESCENTS FOR MEAL CONSUMPTION FREQUENCY, DAILY BREAKFAST CONSUMPTION, FLUID INTAKE, AND DIETING USE ACCORDING TO GENDER, LIVING ENVIRONMENT AND BODY MASS INDEX

	Meal frequency (%)				Daily breakfast consumption (%)	Fluid intake, Litre (%)				Dieting (%)
	2/d	3/d	4/d	5/d		>0.5	0.5–1.5	1.5–2.0	>2.0	
All participants	13.7	38.5	28.1	19.7	36.8	6.9	34.5	34.5	24.1	29.9
Girls	13.9	38.9	29.2	18.0	37.5	9.7	48.6	34.7	7.0	34.7
Boys	13.3	37.8	26.7	22.2	35.6	2.3	11.4	34.1	52.2	22.2
Rural area	14.3	39.7	30.1	15.9	36.5	6.5	35.5	29.0	29.0	30.2
Urban area	13.0	37.0	25.9	24.1	37.0	7.4	33.3	40.7	18.6	29.6
BMI<18.5	0.0	36.4	36.4	27.2	36.4	9.1	72.7	9.1	9.1	9.1
BMI 18.5–24.9	13.7	36.8	29.5	20.0	38.9	7.4	30.5	36.8	25.3	29.5
BMI>25.0	27.3	54.5	9.1	9.1	18.2	0.0	27.2	36.4	36.4	54.5

2/d – two per day, 3/d – three per day, 4/d – four per day, 5/d – five per day
BMI – body mass index

TABLE 5
FOOD CONSUMPTION FREQUENCY ACCORDING TO GENDER

	Frequency (%)											
	3 and more/day		1–2/day		1/week		2–3/week		1/month		Never	
	M	F	M	F	M	F	M	F	M	F	M	F
Fish	2.3	1.4	2.3	1.4	34.1	34.7	4.5	8.3	52.3	50.0	4.5	4.2
Meat	6.8	13.9	66.0	48.6	4.5	1.4	18.2	34.7	0.0	0.0	4.5	1.4
Egg	0.0	0.0	15.9	11.3	27.3	35.2	45.5	22.5	6.8	26.8	4.5	4.2
Milk	22.7	16.6	54.6	39.7	2.3	4.2	15.8	9.7	2.3	2.8	2.3	0.0
Fruit	13.9	19.5	53.5	61.1	9.3	8.3	20.9	11.1	2.4	0.0	0.0	0.0
Vegetable	15.9	19.6	38.6	60.6	15.9	9.9	27.3	9.9	2.3	0.0	0.0	0.0
Bread	65.9	57.7	34.1	36.6	0.0	1.4	0.0	2.9	0.0	1.4	0.0	0.0
Sweets	15.9	26.4	36.4	50.0	27.3	9.7	11.4	12.5	4.5	1.4	4.5	0.0
Soft drinks	20.5	15.2	27.2	20.9	20.5	8.4	18.2	18.1	4.5	19.3	9.1	18.1
Coffee	9.0	2.8	29.6	26.3	6.8	5.6	6.8	6.9	4.5	6.9	43.3	51.5
Alcohol	6.8	0.0	4.5	5.6	36.4	47.2	15.9	1.4	18.2	22.2	18.2	23.6

M – boys, F – girls

milk contains more calcium than glass of low fat milk. Mean score for the section »Diet-disease relationship« was 8.6 out of possible 16.0 (Table 3) without any statistically significant difference. Particularly poor knowledge was shown for the salt consumption, where 71.8% correlate salt intake with high cholesterol.

Dietary habits

Dietary habits data are shown in tables 4 and 5. Girls consume breakfast on a daily basis more often than boys do (37.5 *vs.* 35.6%) (Table 4). Adolescents usually have 3 meals per day (38.5% of total). Intake of fluid can be considered as adequate since intake of 1.5 and more liters of fluid per day was found in 58.6% of all participating adolescents, according to recommendations[15]. Boys had better intake of fluids than girls; 52.2% consuming more than 2 liters per day, unlike only 7.0% of girls (Table 4). Also, adolescents from rural areas more oftenly consumed more than 2 liters of fluid per day (29.0 *vs.* 18.6% in urban). Fad dieting was presented in 34.7% of girls and in 22.2% of the participating boys (Table 4). Also, it was presented in 54.5% of adolescents with BMI>25.0 kg/m^2.

Regarding specific food groups, animal foods (i.e. fish, meat, eggs and milk and milk products) were consumed in higher percentage on a daily basis by boys than girls

(Table 5). Interestingly, these foods were most likely unconsumed by boys, e.g. 4.5 to 2.3% of boys never consumed specific foods. Fruit and vegetables were consumed on a daily basis by more than 80% of girls (80.6% for fruit and 80.2% for vegetables). Boys consumed these foods on a daily basis in smaler percentage, 67.4% for fruit and 54.5% for vegetable. Bread was consumed 3 and more times a day by 65.9% of boys and 57.7% of girls, with reverse trend for the consumption of 1 to 2 times per day, with 36.6% of girls and 34.1% of boys. Girls consumed sweets on a daily basis significantly more (76.4% *vs.* 52.3%), while boys consumed soft drinks on a daily basis more oftenly (47.7% *vs.* 36.1%). Boys consumed more coffee on a daily basis (38.6%).

The main source of information about food and nutrition was TV (80.3% for girls, 80.0% for boys). Other sources were newspapers (56.3%), Internet (53.5%), school (52.1%), parents (45.1%) for girls, and Internet (48.8%), parents (44.4%), newspapers (35.5%), school (31.1%) for boys. Multiple choices were possible.

Discussion

Study aimed to examine adolescent's knowledge about foods and nutrition, and to reveal their dietary habits. Also the aim was to find out what are the sources of information about foods and nutrition for this population group.

The sample encompassed more girls than boys due to gender distribution in school. Number of adolescents with normal BMI is in accordance with previous study[16], which shows no increase in prevalence of overweight. Overweight is more frequent in boys, as reported by others[3,9,13,17]. Prevalence of overweight and obesity in boys persist to adulthood, as shown in Croatian and European studies[17-19]. Numbers of underweight girls is worrying for the matter of eating disorders as reported by others[3]. State of nourishment expressed as BMI is interesting when the self perception is considered[3], and especially if gender diferencies in food consumption are considered as well[3,8]. Still, for the small number of adolescents in underweight and overweight group (N=11 for each group), no firm conclusions can be drawn under any point.

Of great concern is inadequate and partial nutritional knowledge. Only 28.2% of adolescents had shown satisfactory knowledge. Girls, adolescents from urban areas, underweight and normal weighted adolescents had shown better knowledge than boys, adolescents from rural areas and overweight adolescents. The results are in accordance to earlier work by Krešić et al.[7] showing better nutritional knowledge scores in female university students, confirming transfer of habits established in adolescence later through life. Another Croatian study by Colić Barić et al.[20] also showed that better knowledge is related to better nutritional habits, in this terms related to knowledge about osteoporosis and intake of calcium.

The results on knowledge regarding diet-disease relationship are of special concern, especially for the earlier mentioned influence of nutritional and lifestyle habits on the incidence of non-communicable diseases[11-13,21]. Certainly, knowledge can not be considered as the only, but sure is one of very important factors influencing nutritional behaviour and food choices.

Number of meals varied, by all observed characteristics and show similarity with other researches[3,8,9]. Meal skipping was not as common as reported by Banjari et al.[3] for the university students. Findings that girls eat breakfast more often, while boys in higher percentage tend to have 5 meals per day are in accordance with the same research[3,4]. Overweight adolescents consumed fewer meals per daily, as also shown in Portuguese study[9]. Breakfast skipping is an often dietary habit in adolescents, and our study showed 63.2% of breakfast skippers, much more than other European studies[13,22]. Most breakfast skippers belong to overweight group, confirming the association of higher BMI and breakfast skipping, as already shown by others[22,23].

Fish consumption is again confirmed to be below the recommendation[24], mainly consumed on a month basis (52.3% of boys and 50.0% of girls). Low consumption indicates low consumption in family, since research by Davy et al.[8] showed that families present the main source in gaining nutritional knowledge. Prell et al.[1] in an intervention study on pupils from Sweden showed positive behaviour change presented as higher fish consumption after the intervention on their nutritional knowledge. These results imply that knowledge interventions give good results in change on behaviour related to nutrition, e.g. food selection, frequency of consumption, meal skipping. Consumption of meat and meat products was very high, especially in boys. The results are in accordance to previous Croatian study[16], which showed large cholesterol intake due to large intake of animal origin food.

Fruit and vegetable consumption is in accordance to other findings[3,7,8]. Girls showed higher consumption of both fruit and vegetables on a daily basis. Recommended intake of fruit and vegetables of recommended 5 servings per day[24] should be promoted, for its known adverse relation to overweight and obesity and their complications[6-8]. Also, consumption of fruit and vegetables within recommendations was found to relate to better nutritional knowledge[7,25].

As reported by Banjari et al.[3], study results showed that girls consumed sweets on a daily basis pointing the tendency of not restricting their consumption even if the weight management is in question. Sweets are considered as rewarding food, giving pleasant, fulfilling effect[3,4]. For boys, soft drinks present considerable source of simple carbohydrates. According to European Comission report, sugar sweetened beverages make a considerable contribution to total sucrose intake, which is above the recommended level[19]. Many health issues are related to high intake of soft drinks such as obesity, dental caries and potential enamel erosion. Often, soft drinks are consumed at the expense of milk consumption, jeopardizing the accrual of maximal peak bone mass and resulting in calcium deficiency with an attendant risk of osteoporosis[26]. Milk and milk product should ensure around 70.0% of calcium[27], which is not case in Croatia[17]. Again, adolescence

presents itself as an important life period for the promotion of higher milk intake.

Alcohol and coffee consumption are related to growing influence of peers on lifestyle habits, emphasizing autonomy and own decision making among adolescents. Fad dieting is another behaviour determinant, related to immense influence of peers[3,4]. Dieting was present in 29.9% of all adolescents. The results are slightly higher than previously reported by Croatian study on adolescent population, showing 21.2% of dieters[17]. On the other hand, another Croatian study on young adults (mean age 20.2 years) showed much higher percentage of dieters, even 42.0% of young females and 10.0% of young males[3]. The reason for lowest percentages could lie in lower age of the studied adolescent population of 17.9 years.

TV is a major source of information about food and nutrition, followed by Internet, newspapers (consider magazine), parents and school. Half of adolescents searched for the information on the Internet, which offers abundance of information, but can also provide inaccurate information. These sources have been confirmed as the main sources of information in other studies as well[3,5,8,25]. It is necessary to encourage adolescents to use safe and trusted Web sites, and encourage competent organisation to make Web sites addressing adolescents[25].

This study is limited for the number of participating adolescents. To get a better insight on how does nutritional status influence knowledge and habits of the adolescent population, larger number of those of underweight and overweight/obese should be included. Even though self reporting was used, it can present an interesting basis on how do they perceive themselves, since similar research was done previously by Banjari et al.[3] Including this information could get another look on their knowledge and habits. High school students from other high school should also be considered. That way comparison between different types of schools could be done, giving insight in how specific schools act on their knowledge related to nutrition. Finally, we would like to consider this study as a pilot study that would be used on a national scale. Such result would serve as ground for the national educational prevention programme.

Finally, even though the study gives observational data it confirmed earlier findings of better knowledge among girls[4,7]. Analysis by specific food groups and diet-disease relationship emphasizes the need for specific educational intervention programme, approved numerously as effective in long term effect on health and life quality later in life.

Acknowledgements

The authors would like to thank highschool students for their co-operation in collecting data.

R E F E R E N C E S

1. PRELL HC, BERG MC, JONSSON LM, LISSNER L, J Adolesc Health, 36 (2005) 529. DOI: 10.1016/j.jadohealth.2004.08.009. — 2. DRISKELL JA, KIM Y, GOEBEL KJ, J Am Diet Assoc, 105 (2005) 798. DOI: 10.1016/j.jada.2005.02.004. — 3. BANJARI I, KENJERIĆ D, MANDIĆ ML, NEDELJKO M, Period biol, 113 (2011) 377. — 4. WARDLE J, HAASE AM, STEPTOE A, NILLAPUN M, JONWUTIWES K, BELLISLE F, Ann Behav Med, 27 (2004) 107. — 5. FLEMING-MORAN M, THIAGARAJAH K, Methods Inf Med, 44 (2005) 303. — 6. PROBART C, MCDONELL E, WEIRICH E, BIRKENSHAW P, FEKETE V, Coll Antropol, 31 (2007) 32. — 7. KREŠIĆ G, KENĐEL JOVANOVIĆ G, PAVIČIĆ ŽEŽELJ S, CVIJANOVIĆ O, IVEZIĆ G, Coll Antropol, 33 (2009) 1056. — 8. DAVY SR, BENES BA, DRISKELL JA J Am Diet Assoc, 106 (2006) 1673. DOI: 10.1016/j.jada.2006.07.017. — 9. MOTA J, FIDALGO F, SILVA R, RIBEIRO JS, SANTOS R, CARVALHO J, SANTOS MP, Ann Hum Biol, 35 (2008) 1. DOI: 10.1080/03014460701779617. — 10. DE HENAUW S, GOTTRAND F, DE BOURDEAUDHUIJ I, GONZALEZ-GROSS M, LECLERCQ C, KAFATOS A, MOLNAR D, MARCOS A, CASTILLO M, DALLONGEVILLE J, GILBERT CC, BERGMAN P, WIDHALM K, MANIOS Y, BREIDENASSEL C, KERSTING M, MORENO LA, J Public Health, 15 (2007) 187. DOI: 10.1007/s10389-007-0107-3. — 11. VICENTE-RODRIGUEZ G, LIBERSA C, MESANA MI, BEGHIN L, ILIESCU C, AZNAR LAM, DALLONGEVILLE J, J, GOTTRAND F, Thérapie, 62 (2007) 259. DOI: 10.2515/therapie:2007050. — 12. DŽAKULA A, ŠOGORIĆ S, POLAŠEK O, JURIŠA A, ANDRIĆ A, RADAKOVIĆ N, TODOROVIĆ G, Coll Antropol, 33 (Suppl. 1) (2009) 92. — 13. MORENO LA, KERSTING M, DE HENAUW S, GONZALEZ-GROSS M, SICHERT-HELLERT W, MATTHYS C, MESANA MI, ROSS N, Int J Obes, 29 (2005) S66. DOI: 10.1038/sj.ijo.0803063. — 14. PARMENTER K, WARDLE J, Eur J Clin Nutr, 53 (1999) 298. — 15. INSTITUTE OF MEDICINE Dietary Reference Intakes for Water, Potassium, Sodium, Chloride, and Sulfate (National Academy Press, Washington DC, 2001). — 16. COLIĆ BARIĆ I, KAJFEŽ R, CVIJETIĆ S, Food Technol Biotechnol, 38 (2000) 217. — 17. BRALIĆ I, KOVAČIĆ V, Pediatr Croat, 48 (2004) 73. — 18. TUREK D, RUDAN I, SMOLEJ-NARANČIĆ N, SZIROVICZA L, CUBRILO-TUREK M, ZERJAVIC-HRABAR V, KAIĆ-RAK A, VRHOVSKI-HEBRANG D, PREBEG Z, LJUBIČIĆ M, JANIĆIJEVIĆ B, RUDAN P, Coll Antropol, 25 (2001) 77. — 19. EUROPEAN COMISSION European Nutrition and Health Report 2004 (Karger, Basel, 2004). — 20. COLIĆ BARIĆ I, ŠATALIĆ Z, GILJEVIĆ Z, ŠKREB F, KOREN-KESNER I, Mljekarstvo, 54 (2004) 119. — 21. WORLD HEALTH ORGANIZATION Diet, Nutrition and the Prevention of Chronic Disease (WHO, Geneva, 2003). — 22. KESKI-RAHKONEN A, KAPRIO J, RISSANEN A, VIRKKUNEN M, ROSE RJ, Eur J Clin Nutr, 57 (2003) 842. DOI: 10.1038/sj.ejcn.1601618. — 23. FIORE H, TRAVIS S, WHALEN A, AUINGER P, RYAN S, J Am Diet Assoc, 106 (2006) 55. DOI: 10.1016/j.jada.2005.09.046. — 24. ANTONIĆ DEGAČ K, HABRAK-ŽERJAVIĆ V, KAIĆ-RAK A, MATASOVIĆ D, MAVER H, MESAROŠ-KANJSKI E, PETROVIĆ Z, REINER Ž, STRNAD M, ŠERMAN D (Hrvatski zavod za javno zdravstvo, Zagreb, 2002). — 25. NORRIS ML, Paediatr Child Health, 12 (2007) 211. — 26. AMERICAN ACADEMY OF PEDIATRICS, Pediatrics, 113 (2004) 152. — 27. GUÉGUEN L, PONTILLART A, J Am Coll Nutr, 19 (2000) 136.

M. L. Mandić

»J. J. Strossmayer« University, Faculty of Food Technology, Department of Food and Nutrition Research, F. Kuhača 20, 31000 Osijek, Croatia

e-mail: milena.mandic@ptfos.hr

ISPITIVANJE ZNANJA O PREHRANI I PREHRAMBENIM NAVIKAMA SREDNJOŠKOLSKE POPULACIJE

S A Ž E T A K

Adolescenti su u osjetljivom prijelaznom periodu kada postupno preuzimaju odgovornost za svoje prehrambene navike, stavove vezane uz zdravlje i ponašanja, te stvaraju cjeloživotne navike. Stoga je izrazito važno da usvoje zdrave prehrambene navike koje su u skladu s prehrambenim smjernicama. Znanje je jedan od čimbenika neophodnih za promjenu prehrambenih navika. Cilj ovog rada je prikupljanje podataka o znanju o prehrani i prehrambenim navikama adolescenata koristeći novo oblikovani upitnik. Ukupno 117 adolescenata u dobi od 17 do 19 godina ispunilo je samostalno anonimni upitnik. Upitnik predstavlja modificiranu verziju Općeg upitnika znanja o prehrani. Sadrži pitanja o karakteristikama ispitanika, znanju o prehrani, prehrambenim smjernicama, izvorima nutrijenata, vezi između bolesti i prehrane te prehrambenim navikama. Manje od trećine ispitanika pokazalo je zadovoljavajuće znanje, dok su dječaci, ispitanici iz ruralnih područja i ispitanici s prekomjernom tjelesnom masom pokazali niži stupanj znanja od ostalih skupina ispitanika. Preskakanje obroka vrlo je učestalo, posebice zajutrka. Visoka konzumacija mesa i mesnih proizvoda zabilježena je u dječaka, a voća i povrća u djevojčica. Posezanje za dijetama učestalo je prakticirano, posebice u djevojčica i adolescenata s povećanom tjelesnom masom. Među djevojčicama potvrđena je visoka konzumacija slatkiša, dok je u dječaka utvrđena visoka konzumacija napitaka s dodanim šećerom. Televizija predstavlja glavni izvor informacija o prehrani među adolescentima. Prikupljeni podaci pokazuju sličnost s drugim istraživanjima u Europi i sjevernoj Americi, te se time potvrđuje jaki utjecaj globalizacije i brzo širenje nezdravih navika. Ovi rezultati ukazuje na slabe točke znanja o prehrani i otkrivaju nepravilne prehrambene navike. Ove su informacije potrebne za razvoj novih pristupa k promjeni njihovog znanja i posljedično djelovanja na njihovo ponašanje. Promjene u ponašanju uključivale bi veći broj obroka tijekom dana, redovitu konzumaciju doručka, viši unos ribe, niži unos mesa i mesnih proizvoda, slatkiša i napitaka s dodanim šećerom itd. Konačni cilj rezultirao bi dugoročnim pozitivnim utjecajem na zdravlje.