УДК 613.2

CURRENT NUTRITIONAL STATUS AND NUTRITION-RELATED HEALTH PROBLEMS IN SCHOOL-AGE CHILDREN. RESULTS OF ASSESSING NUTRITION-RELATED KNOWLEDGE, ATTITUDES AND PRACTICE

E. Dupouy[1], L. Petriv[2], Z. Chernenko[2], S. Kolesnyk[3]
[1]Food and Agriculture Organization of the United Nations
[2]NGO "Health Forum"
[3]L.I. Medved's Research Center of Preventive Toxicology, Food and Chemical Safety, Ministry of Health, Kyiv, Ukraine

SUMMARY. ***Background***. *Nutrition is important determinant of health. Dietary habits acquired in childhood are likely to influence nutrition in adulthood. In turn, nutrition practices of children predetermined by many factors including home and school environment, economic conditions etc., but nutrition knowledge and attitudes play also important role. In this study review of recent literature, concerning nutritional status of school age children was made and knowledge, attitudes and practice survey was conducted.*
Methods. *In the literature review, preference was given to the sources of information, including national statistics, university research, unpublished and published data in scientific journals/reports for the period of last 5 years. Knowledge, attitudes and practice survey had a cross-sectional study design which was conducted among children (n=236) in third (8–9 years old, n=79), eight (13–14 years old, n=81) and eleventh (15–16 years old, n=76) grades from three cities and one village in Ukraine.*
Results. *According to published data, Ukraine faces triple burden of malnutrition, when undernutrition in some regions coexists with a major prevalence of micronutrient deficiencies and relatively high levels of overweight. Low level of nutrition knowledge inherent for more than half of children of all age group studied. Situation with attitudes was slightly better; however, it still can be improved. Mentioned gaps in knowledge and undesirable attitudes are transformed into poor nutrition practices. Areas that need attention include micronutrient deficiencies, overweight and obesity, food safety.*
Conclusion. *Given the results of the study there is need to review and improve current and/or establish new food and nutrition education programmes. They should be based on behavior change, transdisciplinary, and permanent approach, and use various participatory methodologies inside and outside the classroom and, given importance of home environment, engage and ensure active participation of parents in such programmes.*
Key words: *nutrition status, nutrition knowledge, attitudes and practices, schoolchildren*

Introduction

Nutrition is one of the main factors of the social environment and determines child's development, health and quality of life, as well as learning capacity, longevity and creative and working potential of an adult in the future. The healthy nutrition of children is one of the priority areas for the implementation of social policy of the state; it determines the country's sustainable economic growth.

Poor dietary practices are major contributors to the development of chronic non-communicable diseases. [1, 2]. Chronic diseases, which are major contributors to mortality in adulthood (cardiovascular diseases, some cancers, diabetes, obesity etc.), largely predetermined by dietary practices that are mainly formed during childhood. [3–6] In turn, eating habits are influenced by many factors, among them nutrition knowledge is one of the important factors. However, nutrition knowledge alone may not be sufficient to change dietary habits hence in addition there is need to mold a positive attitude toward healthy eating early in childhood [7–14].

Children, especially in cities, have easy access to numerous fast food outlets, restaurants and

supermarkets, and they are left to make decisions on what to eat. Together with aggressive marketing of highly processed foods with high caloric content, large amounts of fat and sugar, and with little or no micronutrient content contributes to not healthy food choices. [15–17]. Therefore, to address nutrition related health problems among children and then in adulthood, schoolchildren need nutrition knowledge to make the right food choices and got to be encouraged change their attitudes towards healthy eating.

Furthermore, nutrition of schoolchildren requires special attention, since the modern school education is characterized by the high school load, intensification of the educational process due to the modernization of educational programs, forms and methods of teaching, the creation of new models of general educational institutions. [18, 19].

Review of literature was conducted to determine current nutritional status of school age children and to map nutrition-related health problems in school-age children. Then, the knowledge, attitudes and practice (hereafter — KAP) survey was undertaken for situation analysis purpose, for bringing evidence basis to the campaign on promotion of healthy diets in schools with nutrition education elements.

Methods

In the literature review preference was given to the sources of information, including national statistics, university research, unpublished and published data in scientific journals/reports for the period of last 5 years. However, where we were not able to find data for this period or age category of children articles/data for other periods/age categories of children were used.

Findings of review addressed selection of topics and questions thereof for questionnaire to assess nutrition related knowledge attitudes and practice of school age children, their parents (or other guardian) and teachers/principals of these schools. FAO Guidelines for assessing nutrition-related Knowledge, Attitudes and Practices was used to plan and implement study [20].

The study had a cross-sectional study design which was conducted among children (n=236) in third (8–9 years old, n=79), eight (13–14 years old, n=81) and eleventh (15–16 years old, n=76) grades (randomly selected) of general educational schools (randomly selected) in Kyiv (big city, capital of the country, n=57), Berezan (population 16 452, Kyiv region, n=60), Zhovkva (population 13 834, Lviv region, n=58), and village Davydiv (population 6060, Lviv region, n=61). Parents in Kyiv and Berezan (n=20) and representatives of schools- teachers or principals in all four study areas (n=30) were also interviewed. Questionnaires were prepared and applied according to FAO guideline [20]. Questions were adapted for respective age groups and according to local features (e.g. available foods, school schedule etc). The questionnaire covered the following topics: personal eating habits and practices; various forms of malnutrition; micronutrients deficiencies (iron, vitamin A, iodine); overweight and obesity; food safety and personal hygiene. Furthermore, question concerning weight and height were included enable calculation of body mass index (BMI). Assessment of BMI was conducted according to z-score tables (WHO, http://www.who.int/growthref/who2007_bmi_for_age/en/). The level of nutrition knowledge was determined using 16 questions for students of elementary and middle school, and 28 questions for high school pupils. Attitudes and practice were assessed with 31 and 18 questions respectively.

For each question, a correct knowledge, optimal practice or desired/positive attitude response was coded as 1 and an incorrect (negative practice or attitude) response as 0. The total score for every child was calculated from all correct responses and was then converted to a percentage. Those who scored ≤70 % were categorized as having low nutrition knowledge (low level of utilization of optimal practice or desired/positive attitudes), 71–89 % moderate, and ≥90 % high level of nutrition knowledge (attitudes or practice) which was predetermined before the study. Respectively, according to mentioned FAO Guidance [20] the need for nutrition education interventions was assessed as urgent where more than half of surveyed children have less than 70 % of “correct” answers.

Spreadsheet application (MS Excel 2013) was used for survey results/data compilation and analysis.

Results and discussion

Literature Review

Triple burden of malnutrition

Ukraine faces some form of malnutrition including undernutrition and micronutrient deficiencies, overweight/ obesity, or a combination of these conditions. Food and Agriculture Organization (FAO) of the United Nations reports the results of the cluster analysis together with a comparison between the classification of Europe and Central Asia countries (FAO, 2013). According to a multivariate analysis, Ukraine is one of the countries with triple burden of malnutrition. Ukraine belongs to the second class according to the cluster analysis (2013). It means that undernutrition persists and coexists with a major prevalence of micronutrient deficiencies at relatively higher levels of overweight. In general, however, authors find a separation which is clear enough to suggest differentiated interventions [21].

In one of the recently published studies [22] assessment of nutritional status of school age children was conducted. In this study nutritional status of 90 grade 1–11 pupils from primary and secondary schools in Lviv. It was found that in the majority of pupils, daily dietary intake was substantially unbalanced, with excess of energy and proteins on the background of a lack of microelements and vitamins. These investigations demonstrate the need of nutritional correction and lifestyle modification in pupils to prevent metabolic disorders and their effects, improving health status. The following conclusions in this study were made:

- the modern diet of schoolchildren as a whole is unbalanced, contains an excess of energy and proteins against the background of insufficient amounts of trace elements and vitamins;
- among the pupils with a low body weight, the majority are primary school pupils, which was linked to a shortage of energy intake associated with inadequate intake of fats and proteins against the background of an imbalance of vital micronutrients;
- among the pupils of the 5–8th grades, a large number of persons with overweight was found. An imbalance in the intake of important nutrients against the background of consumption of an increased number of high-calorie foods was typical for them;
- in the group of pupils of 9–11th grades, 20 % of persons had overweight.

Official statistics data published by State service of statistics (http://www.ukrstat.gov.ua/) reports data only on the incidence of diseases by classes according to International Statistical Classification of Diseases and Related Health Problems of the Tenth Revision. Given that Malnutrition (E50–E64), Other nutritional deficiencies (E65–E68) and Obesity and other hyperalimentation (E65–E68) are included in Endocrine, nutritional and metabolic diseases (E00–E90) and for Diseases of the digestive system (K00–K93) nutrition is very important factor in the pathogenesis of these disorders below data on this groups provided (see Figure 1).

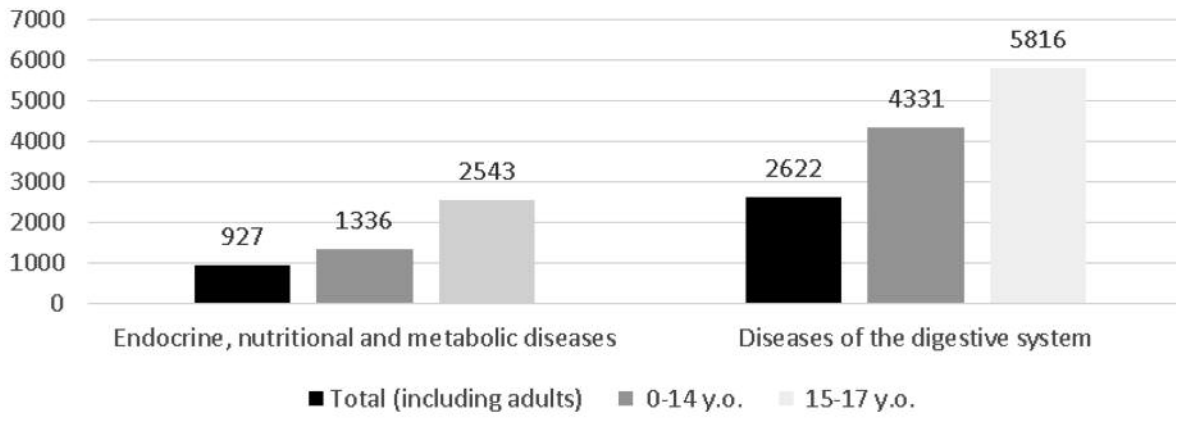

Figure 1. The incidence of Endocrine, nutritional and metabolic diseases and Diseases of the digestive system in separate age groups by classes of diseases in Ukraine in 2016, per 100000 of respective age group

Table 1

Incidence of infectious diseases where food along with water is main vehicle in 2016

Infectious diseases	Number of cases		Per 100 000 of population of respective age	
	Total	Children 0–17 yo	Total	Children 0–17 yo
Typhoid fever and paratyphoid A, B, C	4	1	0,0	0,0
Salmonella infection	8941	3597	21,0	47,2
Acute intestinal infections	97331	66081	229,0	867,8
including Shigellosis	913	708	2,1	9,3

Foodborne infectious diseases

Incidence of infectious diseases where food along with water is main vehicle is presented below in Table 1

Overweight and obesity

No prevalence figures are available for overweight and obesity in schoolchildren based on measured intercountry comparable data. Ukraine is not yet participating in the WHO European Childhood Obesity Surveillance Initiative (COSI). In terms of prevalence of overweight and obesity in adolescents, up to 22 % of boys and 12 % of girls among 11-year-olds were overweight, according to data from the Health Behavior in School-aged Children (HBSC) survey (2009/2010). Among 13-year-olds, the corresponding figures were 21 % for boys and 9 % for girls, and among 15-year-olds, 17 % and 8 %, respectively. (see Figure 2) [23].

The number of obese children in Ukraine has doubled from 2002 to 2012: from 7,9 % to 14,41 %. The largest proportion of them in 15–17 years (51 %), 43 % in 7–14 years and only 6 % of obese children under 6 years. The prevalence of obesity is higher in children from rural areas than in urban ones (15,96 vs 13,56 per 1000 population aged 0 to 17). The highest prevalence of obesity was observed in the central regions of Ukraine (Vinnytsa region — 27,24 ‰) and the lowest — in the east (3,71 ‰ in Sevastopol, and 10 ‰ in Odessa region). The prevalence (incidence) obesity is: South Ukraine — 12,31 (3,13) ‰, East Ukraine — 12.07 (2,59) ‰, Center of Ukraine – 17,93 (4,12) ‰ and West Ukraine – 13,9 (3,22) ‰. [24].

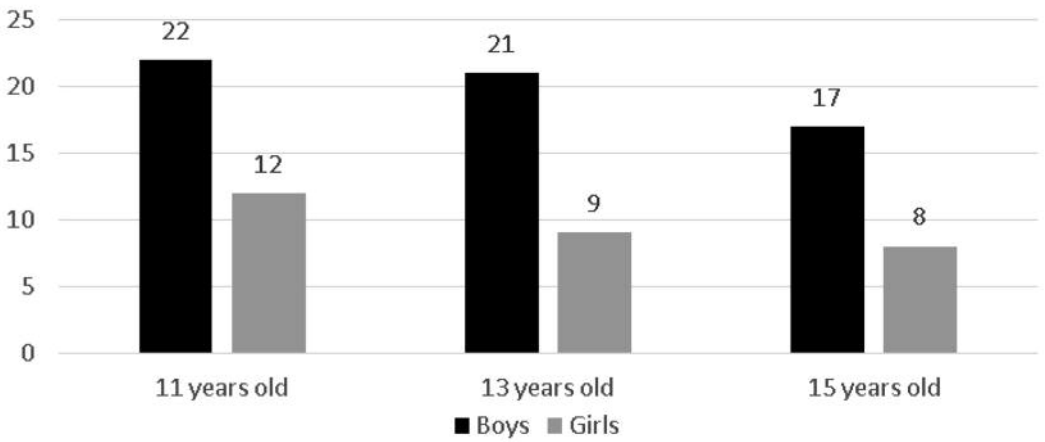

Figure 2. Prevalence of overweight (%) in Ukrainian adolescents (based on self-reported data on height and weight)

Micronutrient deficiencies

The results of the studies of children of school age in the different regions [25–27] demonstrate that:

- nutrition of schoolchildren has an energy shortage by 30–40 % associated with protein deficiency and excessive consumption of carbohydrates (more than 20 %) due to simple sugars;
- a distinct deficiency of vitamins A, B, E, D and vitamin C was revealed in the schoolchildren's diet;
- there is a shortage of at least one of the main vitamins, and in 73,8 % of children — multivitamin deficiency;
- 78,8 % of children have mineral disorders and an imbalance in the ratio of the main essential elements.

According to the official statistics, more than 1,5 million adults and children have thyroid pathology due to iodine deficiency. 80 % of children have a risk of iodine deficiency diseases and 300 thousand children are born annually unprotected from the consequences of brain damage as a result of iodine deficiency. According to the official statistics, more than 1,5 million adults and children have thyroid pathology due to iodine deficiency. 80 % of children have a risk of iodine deficiency diseases and 300 thousand children are born annually unprotected from the consequences of brain damage as a result of iodine deficiency According to the State Statistics Committee in Ukraine, 426,000 children are born every year, about 8 % of whom are from iodine-deficient mothers. Iodine deficiency of different severity is common for the all territory of Ukraine [28].

Three studies on problem of vitamin A deficiency in preschool and school age children in Ukraine for period 2012–2017 years have been found. [25, 29, 30] In all mentioned studies deficiency of vitamin A consumption was in 25–30 % of children.

It is reported according data from official statistics, in Ukraine 80 % of all cases of anemia are associated with iron deficiency and iron deficiency is most common among preschool children (22,2 % of cases). [31] Analysis of the findings of another study [25] showed that nutrition of pupils had an iron deficiency on 18,5 % — the average food provision of iron was 11,80±0,20 mg (from 12,60±0,19 mg to 11,0±0,2 mg).

Knowledge, attitudes and practice (KAP) survey

Sociodemographic characteristics and body mass index (BMI)

Sociodemographic characteristics of pupils interviewed are presented in Table 2.

As the questions concerning weight and height were included in the questionnaire, we can roughly assess BMI for study participants. The results of BMI assessment according to age standards gave the following results regarding the prevalence of underweight, healthy weight and overweight and obesity among school age children participated in the study (see Figure 3).

It is worth pointing out that the highest percentage of underweight children was observed among primary school children. Since the choice and control of nutrition for pupils of grades 1–4

Table 2

Sociodemographic characteristics of pupils interviewed

			Age				
			8–9	12–13	16–17	Total	
			N	N	N	N	%
Sex	Boys	N	39	35	43	117	49,58 %
	Girls	N	40	46	33	119	50,42 %
	Total	N	79	81	76	236	100 %
		%	33,47 %	34,32 %	32,20 %	100 %	

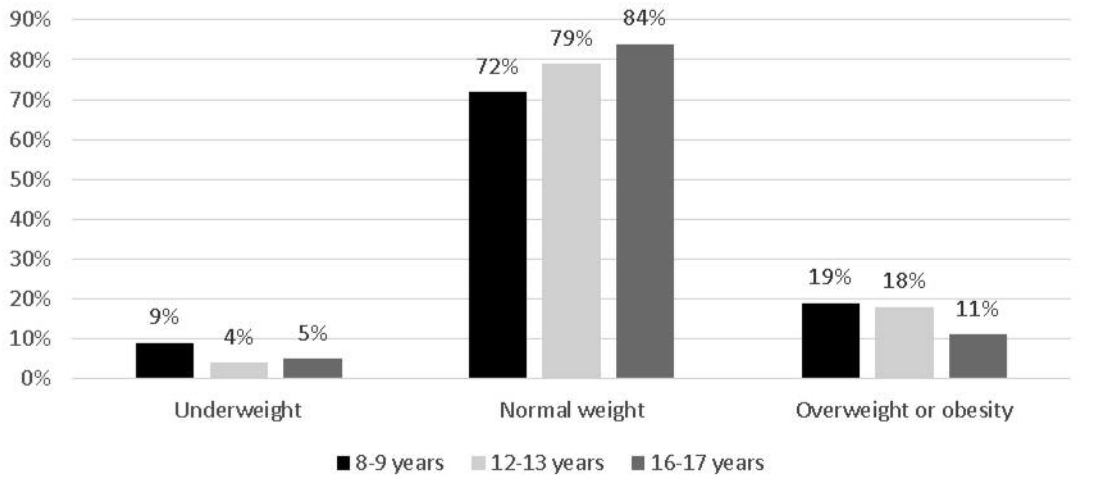

Figure 3. Prevalence of underweight, healthy weight and overweight and obesity in study participants (based on self-reported data on height and weight)

are mostly carried out by parents, the revealed fact may indicate an incorrect approach to the nutritional behavior of children and necessitates the educational work of parents.

Knowledge

Results from this study showed that only 30,3 % of elder age group surveyed (11th grade) have moderate nutrition knowledge, about 69,7 % had low knowledge (Table 3). There were no respondents with high level of knowledge in this age group. This is surprising as only basic knowledge were included in questionnaires and schools had items in curriculum where healthy eating, food safety and personal hygiene are covered.

The study assessed the proportion of pupils who responded correctly on various test questions and presented in Table 4. This was done to identify aspects of the nutrition knowledge where actions are most needed.

In the table above aspects that need urgent nutrition-education intervention (i.e. level of knowledge <70 %) are marked grey.

Attitudes

Situation with attitudes of school age children was slightly better. Results by age group on proportion of desired attitudes is presented in Table 5.

The study assessed the proportion of pupils who responded desirably concerning nutrition attiutudes on various test questions (Table 6). This was done to identify aspects of the nutrition attitudes where actions are most needed.

Table 3

Nutrition knowledge among surveyed children

Nutrition knowledge (percentage of correct answers)	11th grade children		8th grade		3rd grade		Total	
	N	%	N	%	N	%	N	%
High (>90)	0	0	6	7,4 %	2	2,5 %	8	3,4 %
Moderate (71–89)	23	30,3	40	49,4 %	33	41,8 %	96	40,7 %
Low (<70)	53	69,7	35	43,2 %	44	55,7 %	132	55,9 %
Total	76	100	81	100,0 %	79	100,0 %	236	100,0 %

Table 4

Proportions of respondents with correct answers in various nutrition knowledge aspects

Nutrition knowledge aspect tested	11th grade	8th grade	3rd grade	Total
Personal eating habits (2 questions)	52 %	78 %	93 %	73 %
Various forms of undernutrition (6 questions)	84 %	88 %	81 %	83 %
Micronutrient deficiencies (12 questions)	52 %	NA	NA	52 %
Overweight and obesity (2 questions)	57 %	62 %	45 %	54 %
Food safety (5 questions)	44 %	51 %	43 %	45 %
Personal hygiene (1 question)	87 %	74 %	68 %	75 %

Table 5

Proportions of respondents with desired answers concerning nutrition attitudes

	11th grade children		8th grade		3rd grade		Total	
	N	%	N	%	N	%	N	%
High (>90)	4	5,3 %	7	8,6 %	1	1,3 %	12	5,1 %
Moderate (71–89)	49	64,5 %	53	65,4 %	45	57,0 %	147	62,3 %
Low (<70)	23	30,3 %	21	25,9 %	33	41,8 %	77	32,6 %
Total	76	100,0 %	81	100,0 %	79	100,0 %	236	100,0 %

Table 6

Proportions of respondents with correct answers in various nutrition knowledge aspects

Nutrition attitudes aspect tested	11th grade	8th grade	3rd grade	Total
Personal eating habits (8 questions)	80,9 %	81,6 %	77,2 %	79,9 %
Various forms of undernutrition (2 questions)	63,2 %	68,5 %	53,2 %	61,6 %
Micronutrient deficiencies (7 questions)	70,9 %	70,9 %	71,6 %	71,1 %
Overweight and obesity (6 questions)	73,9 %	72,4 %	60,8 %	69,0 %
Food safety (4 questions)	68,7 %	69,1 %	70,4 %	69,4 %
Personal hygiene (4 questions)	79,3 %	75,9 %	85,1 %	80,1 %

In the table above aspects that need urgent nutrition-education intervention (i.e. level of positive attitudes <70 %) are marked grey.

There was two questions to assess attitude of schoolchildren to meals provided in schools in terms of their quality (Did you enjoy your meal in school?) and quantity (Was there a volume of portion enough for you?) which help to assess indirectly performance of SFN system (see Table 7).

As we can see, most pupils are satisfied with quantity and quality of meals provided, but satisfaction decreases with age. From the other hand we can see that school canteen popularity (i.e. practice of dining in school canteen and/or spending pocket money there, see section Practice below) is not correlate with provided here results on satisfaction with quality and quantity of meals provided.

In average, 19,1 % of surveyed children believe that they could be overweight or obese, that correlates with data on BMI assessment in our study and in other sources.

Factors affecting children food choice are presented in Table 8.

Practice

Results of study show that most of children have breakfast (95 %), lunch (92 %) and dinner (96 %). Most frequent reason of omission of meal was absence of appetite (64 %). All children ate meat and meat products, vegetables and fruits, leafy vegetables on the previous day. About 60 % consumed fish or seafood, 50 % dried fruits and nuts, 60 % milk and milk products. Besides main meals 90 % of surveyed children reported they have some snacks during the day. To establish whether school age children were able to make informed choices on healthy foods, they were asked if they have pocket money and spend it for foods. It was revealed

Table 7

Satisfaction with school meals

Aspect	Satisfactory quality (taste)			Satisfactory quantity		
	Yes	No	Don't know	Yes	No	Don't know
11th grade	62,50 %	9,40 %	28,10 %	66,70 %	16,70 %	16,70 %
8th grade	73,90 %	11,60 %	14,50 %	76,80 %	7,20 %	15,90 %
3rd grade	81,90 %	15,30 %	2,80 %	76,00 %	16,00 %	8,00 %
Total	73,20 %	12,20 %	14,60 %	73,30 %	13,30 %	13,30 %

Table 8

Factors affecting children food choice

Factors	Proportion of children answered
Parents and family traditions	22,9 %
Advertising on TV, radio, on the streets	4,2 %
Information on the Internet	6,4 %
School Teachers	2,1 %
School friends and friends	9,7 %

that 92 % (217 children) have pocket money and 96 % (209) spend it to buy foods. Types of foods used as snacks and purchased for pocket money are provided in Table 9. As we can see, significant part of children buy such nutrient poor and energy dense foods like sweets, bakery wares, sweet carbonated drinks and juices, chips etc. Meanwhile, only third of children buy lunch in school canteen.

Places where children buy foods are provided in Table 10. More than half of surveyed children buy food not in school.

Conclusions and reccomendations

Overview of published literature on nutritional status of school age children support conclusion that Ukraine faces triple burden of malnutrition, when undernutrition in some regions coexists with a major prevalence of micronutrient deficiencies and relatively high levels of overweight.

Overally, lack of data on nutritional status of school age children (6–18 years old) exist. A comprehensive further survey along with the analysis of the data compiled during the presented here survey must be done along with study of food consumption and nutrient content of foods consumed. Different regions and the difference between urban and rural areas must be taken into consideration during the study.

Current KAP survey revealed low level of nutrition knowledge inherent for more than half of

Table 9

Types of foods consumed as snacks and purchased for pocket money by school age children

Types of Foods	Reported that consumed as snacks	Bought for pocket money
Lunch in the school dining room	NA	35,9 %
Sandwiches with cheese or sausage	56,3 %	19,6 %
Seasonal fruits (apple, pear, strawberry, cherry, plum, apricot, orange, mandarin, banana, etc.).	70,0 %	35,4 %
Baking (rolls, cakes, cookies, muffins, cakes, pancakes)	68,5 %	58,4 %
Sweets (candy, chocolate, chocolate bars, waffles, etc.)	38,5 %	34,0 %
Potato chips, crackers, dry noodles, etc.	22,5 %	18,7 %
Milk or dairy products	29,6 %	14,4 %
Sweet carbonated drinks	23,0 %	27,8 %
Tea or coffee	NA	39,7 %
Juices	42,3 %	44,5 %
Water	NA	46,4 %

Table 10

Places where food is purchased by children

In the school canteen	22,88 %	54
In the nearest store	50,42 %	119
On the street (from home-sellers)	3,39 %	8

children of all age group studied. Situation with attitudes was slightly better; however, it still can be improved. Mentioned gaps in knowledge and undesirable attitudes are transformed into poor nutrition practices, which once formed in childhood influence all the rest of the life. Areas that need attention include micronutrient deficiencies, overweight and obesity, food safety.

Given the importance of the school environment for health and nutrition education, it would be important to establish food and nutrition education not only as part of school curriculum which mostly relies on transmission of information and not on participatory, hands-on activities, but also as a key component of the school food and nutrition programmes, in addition to food provision. In order, to achieve best results, it is suggested that food and nutrition education are age and culturally adapted, based on behavior change, transdisciplinary, permanent, and that it uses various and participatory methodologies inside and outside the classroom, such as school gardens, culinary classes, field trips to markets, food fairs, among others. Given the importance of parents and environment at home parents should be engaged and actively participate in the food and nutrition education interventions and all these actors should benefit from them as well.

Acknowledgement: this study was conducted in the framework of FAO Project GCP/UKR/001/NOR funded by Norway.

REFERENCES

1. World Health Organization (WHO). The world health report 2002 — reducing risks, promoting healthy life. Geneva, 2002. — № 2. — 230 p.
2. World Health Organization (WHO). Diet, nutrition and the prevention of chronic diseases // World Health Organization technical report series, 2003. — V. 916. i-viii-1-149-backcover p.
3. Prevention of non-communicable disease in a population in nutrition transition: Tehran Lipid and Glucose Study phase II / F. Azizi [et al.] // Trials. 2009. — V. 10. — № 1. — P. 5.
4. Contribution of Nutrition to the Health Transition in Developing Countries: A Framework for Research and Intervention / H.H. Vorster [et al.] // Nutr. Rev. Blackwell Publishing Ltd, 2009. — V. 57. — № 11. — P. 341–349.
5. Diet, nutrition and the prevention of cancer / T.J. Key [et al.] // Public Health Nutr. 2007/01/01. Cambridge University Press, 2004. — V. 7. — № 1a. — P. 187–200.
6. Reducing obesity and related chronic disease risk in children and youth: a synthesis of evidence with “best practice” recommendations / M.A.T. Flynn [et al.] // Obes. Rev. England, 2006. — V. 7. — Suppl 1. — P. 7–66.
7. Triches R.M. [Obesity, eating habits and nutritional knowledge among school children] / R.M. Triches, E.R.J. Giugliani // Rev. Saude Publica. Brazil, 2005. — V. 39. — № 4. — P. 541–547.
8. Birch L. Influences on the Development of Children’s Eating Behaviours: From Infancy to Adolescence / L. Birch, J.S. Savage, A. Ventura // Can. J. Diet. Pract. Res. 2007. — V. 68. — № 1. — P. S1–S56.
9. Nutritional Knowledge, Practice, and Dietary Habits among school Children and Adolescents / M.M. Naeeni [et al.] // Int. J. Prev. Med. India: Medknow Publications & Media Pvt Ltd, 2014. — V. 5. — № Suppl 2. — P. S171–S178.
10. Vereecken C. Young children’s dietary habits and associations with the mothers’ nutritional knowledge and attitudes / C. Vereecken, L. Maes // Appetite. — 2010. — V. 54. — № 1. — P. 44–51.
11. Patrick H. A Review of Family and Social Determinants of Children’s Eating Patterns and Diet Quality / H. Patrick, T.A. Nicklas // J. Am. Coll. Nutr. Taylor&Francis, 2005. — V. 24. — № 2. — P. 83–92.
12. Pirouznia M. The association between nutrition knowledge and eating behavior in male and female adolescents in the US / M. Pirouznia // Int. J. Food Sci. Nutr. Taylor&Francis, 2001. — V. 52. — № 2. — P. 127–132.
13. Mirmiran P. Dietary behaviour of Tehranian adolescents does not accord with their nutritional knowledge / P. Mirmiran, L. Azadbakht, F. Azizi // Public Health Nutr. England, 2007. — V. 10. — № 9. — P. 897–901.
14. Brown R. Children’s eating attitudes and behaviour: a study of the modelling and control theories of parental influence / R. Brown, J. Ogden // Health Educ. Res. England, 2004. — V. 19. — № 3. — P. 261–271.

15. Kearney J. Food consumption trends and drivers / J. Kearney // Philos. Trans. R. Soc. B Biol. Sci. The Royal Society, 2010. — V. 365. — № 1554. — P. 2793–2807.
16. Baker P. Food systems transformations, ultra-processed food markets and the nutrition transition in Asia / P. Baker, S. Friel // Global. Health. London: BioMed Central, 2016. — V. 12. — P. 80.
17. Advertising of ultra-processed foods and beverages: children as a vulnerable population / C. Mallarino [et al.] // Rev. Saude Publica. Faculdade de Saъde Pъblica da Universidade de Sгo Paulo, 2013. — V. 47. — № 5. — P. 1006–1010.
18. Полька Н.С. Гігієнічні проблеми навчального навантаження школярів / Н.С. Полька, С.В. Гозак // Про зміст загальної середньої освіти. Науково-аналітична доповідь. НАПН / під ред. Кремень В.Г. Київ: Національна академія педагогічних наук України, 2015. — P. 97–115.
19. Гозак С.В. Ретроспективний аналіз навчального навантаження у загальноосвітніх навчальних закладах України за 1970–2013 роки / С.В. Гозак, О.В. Шумак // Гігієна населених місць. — 2014. — № 63. — P. 269–276.
20. Macnas Y.F. Guidelines for assessing nutrition-related Knowledge, Attitudes and Practices manual / Y.F. Macnas, P. Glasauer // Food and Agriculture Organization of the United Nations. Rome: Food and Agriculture Organization of the United Nations, 2014. — P. 1–188.
21. The triple burden of malnutrition in Europe and Central Asia: a multivariate analysis / S. Capaccі [et al.] // Policy Studies on Rural Transition, FAO Regional Office for Europe and Central Asia. — 2013. — P. 1–19.
22. Няньковський С.Л. Оцінка нутритивного статусу школярів 1–11-х класів міста Львова / С.Л. Няньковський, І. Пасічнюк // Здоров`я дитини. — 2016. — т. 6. — № 74. — С. 77–81.
23. Social determinants of health and well-being among young people. Health Behaviour in School-aged Children (HBSC) study: International report from the 2009/2010 survey / C. Currie [et al.] // World Heal. Organ. Heal. Policy Child. Adolesc. — 2012. — № 6. — P. 1–272.
24. Зелінська Н.Б. Ожиріння та метаболічний синдром у дітей / Н.Б. Зелінська // Клінічна ендокринологія та ендокринна хірургія. — 2013. — т. 4. — № 45. — С. 62–72.
25. Vitamin and Mineral Support in Children from Kharkiv Region / T.V. Frolova [et al.] // CHILD`S Heal. — 2016. — V. 0. — № 5 (73). — P. 50–54.
26. Marushko Y.V. Vitamin and Mineral Supplementation of Children under Current Conditions / Y.V. Marushko // CHILD`S Heal. — 2015. — № 2 (61).
27. Niankovskyi S.L., Features of Microelement Homeostasis in Children Living in the Modern City and Its Effect on the Immune System / S.L. Niankovskyi, V.V. Podolianska // CHILD`S Heal. — 2015. — № 7 (67).
28. Ministry of Health of Ukraine. Explanatory note to the draft resolution of the Cabinet of Ministers of Ukraine "On the approval of the State target social program to prevent the occurrence of diseases caused by iodine deficiency for 2010–2014. 2009.
29. Dietary habits and nutritional status of children from Ukraine during the first 3 years of life / S. Nyankovskyy [et al.] // Pediatr. Pol. — 2014. — V. 89. — № 6. — P. 395–405.
30. Essential nutrient deficits of the populationof radioactively contaminated territories of Ukraine [Article in Ukrainian] / I. Matasar [et al.] // Environ. Heal. — 2014. — № 1. — P. 8–41.
31. Matyukha L. Iron deficiency anemia: the current state of the problem [Article in Ukrainian] / L. Matyukha // Heal. Ukr. — 2016. — V. 391. — № 18. — P. 54–55.

ХАРЧОВИЙ СТАТУС ТА ПОРУШЕННЯ ЗДОРОВ'Я, ПОВ'ЯЗАНІ ІЗ ХАРЧУВАННЯМ. РЕЗУЛЬТАТИ ОЦІНКИ ЗНАНЬ, СТАВЛЕННЯ ТА ПРАКТИКИ

Е. Дюпуї[1], Л. Петрів[2], З. Черненко[2], С. Колесник[3]
[1]Продовольча та сільськогосподарська організація ООН (ФАО)
[2]ГО "Форум Здоров'я"
[3]Науковий центр превентивної токсикології, харчової та хімічної безпеки імені академіка Л.І. Медведя МОЗ України, м. Київ, Україна

***Резюме. Актуальність**. Харчування є важливим чинником здоров'я. Харчові звички, набуті в дитинстві, можуть впливати на харчування у дорослому віці. У свою чергу, харчові практики дітей обумовлені багатьма чинниками, включаючи домашнє та шкільне середовище, економічні умови тощо, але знання та ставлення до харчування також відіграють важливу роль. У даному дослідженні зроблено огляд сучас-*

ної літератури щодо харчового статусу дітей шкільного віку та було проведено опитування щодо знань, ставлення та практики відносно харчування.
***Методи**. В огляді літератури перевага надавалася джерелам інформації, включаючи національну статистику, дослідження, неопубліковані та опубліковані дані в наукових журналах/звітах за останні 5 років. Дослідження знань, ставлення та практики проведено методом поперечних зрізів серед дітей (n=236) у третьому (8–9 років, n=79), восьмому (13–14 років, n=81) та одинадцятому (15–16 років, n=76) класах з трьох міст та одного села в Україні.*
***Результати**. Згідно з опублікованими даними, для України характерний потрійний тягар порушень харчування, коли недоїдання в деяких регіонах співіснує з великою поширеністю дефіцитів мікроелементів та відносно високим рівнем надлишкової ваги. Низький рівень знань про харчування виявлено у понад половини опитаних школярів у всіх вікових групах. Ситуація зі ставленням була дещо кращою, але також вимагає корекції. Зазначені недоліки у знаннях та небажаному ставленні перетворюються на погані практики харчування. Сфери, які потребують уваги, включають мікроелементні дефіцити, надмірну вагу та ожиріння, безпеку харчових продуктів.*
***Висновок**. Враховуючи результати дослідження, необхідно переглянути та вдосконалити поточні та/або запровадити нові освітні програми щодо харчових продуктів та харчування. Вони повинні ґрунтуватися на змінах поведінки, трансдисциплінарному та постійному підході, а також використовувати різні методології, спрямовані, зокрема на практичну діяльність як у класі, так і за його межами. З огляду на важливість домашнього середовища, такі освітні програми мають залучати та забезпечувати активну участь батьків.*
***Ключові слова:** харчовий статус, знання про харчування, ставлення та практика, школярі*

ПИЩЕВОЙ СТАТУС И НАРУШЕНИЯ ЗДОРОВЬЯ, СВЯЗАННЫЕ С ПИТАНИЕМ. РЕЗУЛЬТАТЫ ОЦЕНКИ ЗНАНИЙ, ОТНОШЕНИЯ И ПРАКТИКИ

Э. Дюпуи[1], Л. Петрив[2], З. Черненко[2], С. Колесник[3]
[1]Продовольственная и сельскохозяйственная организация ООН (ФАО)
[2]ОО "Форум Здоровье"
[3]Научный центр превентивной токсикологии, пищевой и химической безопасности имени академика Л.И. Медведя МЗ Украины, г. Киев, Украина

***РЕЗЮМЕ. Актуальность.** Питание является важным фактором здоровья. Пищевые привычки, приобретенные в детстве, могут влиять на питание во взрослом возрасте. В свою очередь, пищевые практики детей обусловлены многими факторами, включая домашнюю и школьную среду, экономические условия и т.д., но знание и отношение к питанию также играют важную роль. В данном исследовании был сделан обзор современной литературы, касающейся пищевого статуса детей школьного возраста и был проведен опрос относительно знаний, отношения и практики касательно питания.*
***Методы**. В обзоре литературы предпочтение отдавалось источникам информации, включая национальную статистику, исследования, неопубликованные и опубликованные данные в научных журналах/отчетах за последние 5 лет. Исследование знаний, отношения и практики были проведены методом поперечных срезов среди детей (n=236) в третьем (8–9 лет, n=79), восьмом (13–14 лет, n=81) и одиннадцатом (15–16 лет, n=76) классах из трех городов и одной деревни в Украине.*
***Результаты**. Согласно опубликованным данным, для Украины характерно тройное бремя нарушений питания, когда недоедание в некоторых регионах сосуществует с большой распространенностью дефицитов микроэлементов и относительно высоким уровнем избыточного веса. Низкий уровень знаний о питании был обнаружен у более чем половины опрошенных школьников во всех возрастных группах. Ситуация с отношением была несколько лучше, но также требует коррекции. Указанные недостатки в знаниях и нежелательном отношении превращаются в плохие практики питания. Сферы, которые требуют внимания, включают микроэлементные дефициты, избыточный вес и ожирение, безопасность пищевых продуктов.*
***Вывод.** Учитывая результаты исследования, необходимо пересмотреть и усовершенствовать текущие и/или ввести новые образовательные программы относительно пищевых продуктов и питания. Они должны основываться на изменениях поведения, трансдисциплинарном и постоянном подходе, а также использовать различные методологии, направленные, в частности, на практическую деятельность как в классе, так и за его пределами. Учитывая важность домашней среды, такие образовательные программы должны привлекать и обеспечивать активное участие родителей.*
***Ключевые слова:** пищевой статус, знания о питании, отношения и практика, школьники.*

Надійшла до редакції 11.01.2018 р.