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Poziom wiedzy m□odych ludzi na temat suplementacji kwasu foliowego

Streszczenie

Wstęp. Skuteczne stosowanie pierwotnej profilaktyki zapobiegającej nieprawidłowościom cewy nerwowej w znacznym stopniu zależy od stopnia przyswojenia informacji na temat wpływu kwasu foliowego na organizm człowieka, które młodzi ludzie otrzymują w procesie kształcenia. W dyskusjach na temat licznych przyczyn chorób cywilizacyjnych, rosnące znaczenie przypisuje się różnym czynnikom środowiskowym, w tym diecie ubogiej w kwas foliowy.

Cel. Celem niniejszej pracy było przedstawienie stanu wiedzy młodych ludzi na temat uzupełniania niedoborów kwasu foliowego. Prowadzący badanie starali się zarówno określić występujące braki wiedzy na temat suplementacji kwasu foliowego, jak i przygotować oraz zastosować w praktyce odpowiedni program edukacyjny.

Materiały i metody. W badaniu wzięło udział 338 uczniów szkół gimnazjalnych w Rzeszowie. W badaniu wykorzystano autorski kwestionariusz. Po zweryfikowaniu danych, poddano je analizie statystycznej przy użyciu programu STATISTICA v.7.2.

Wyniki. Badanie wykazało, że poziom wiedzy wśród młodzieży w tej dziedzinie nie był zadowalający. Gimnazjaliści pytani o źródła kwasu foliowego, korzyści wynikające z przyjmowania tego związku oraz o zalecane dawki wykazali sie słabą znajomością tych zagadnień. Zaskoczeniem było stwierdzenie, że dziewczęta niżej niż chłopcy oceniali swoją wiedzy na temat suplementacji kwasu foliowego (p=0.00001) .

Słowa kluczowe: wiedza, wykształcenie, kwas foliowy, młodzi ludzie.

The level of knowledge about folic acid supplementation among young people

Abstract

Intoduction. The effectiveness of primary prophylaxis preventing neural tube defects significantly depends on the fact whether information regarding folic acid influence on human organism, passed to the adolescents and young adults within educational programmes, is understood and modifies their attitudes. As numerous causes of civilisation diseases are discussed, an increasing significance is attributed to different environmental factors including a diet deficient in folic acid.

Aim. The aim of this work was to present current status of knowledge regarding folic acid supplementation among young people. The practical purpose was to identify deficiencies of knowledge about folic acid supplementation as well as prepare and execute an educational programme in this field.

Material and method. The study included 338 students attending high-schools in Rzeszow. An authors' questionnaire was applied. After verification, the gathered data were subjected to statistical analysis using STATISTICA v.7.2 software.

Results. This study showed that the level of teenagers' knowledge in this field was unsatisfactory. When asked about folic acid source, benefits resulting from its intake, and recommended allowances for this compound, high-school students presented insufficient familiarity with these issues. The fact that girls self-evaluated their knowledge about folic acid supplementation lower than boys (p=0.00001) was surprising.

Key words: knowledge, education, folic acid, young people.

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INTRODUCTION

Constantly emerging new opportunities and challenges make people spend less time on healthy life-style while it is one of the most valuable things in everyone's life. In order to make sure that young generations will enjoy good health in their future as long as it is possible, health education must be organised properly. It should become an integral part of one's personality whereas actions taken by parents, teachers, and medical personnel should aim at forming habits and attitudes as well as enriching one's knowledge regarding laws ruling the public health. Therefore, actions promoting health should become a constant process the objectives of which include the formation of behaviours and attitudes beneficial for people of any age, health reinforcement and intensification but also, promotion of adequate values, attitudes, needs, and convictions [1].

Recent years have brought many studies focusing on health issues. Many reports and programmes were developed by international institutions and research centres. Also in Poland, very important numerous documents assigning important duties in the field of health education to all interested entities were written. The first task, presented in these documents, focuses on the beginning and intensification of health education in the early years of adolescence. Many countries put the problem of food and nutrition improvement among the priorities of their policy, which also includes using food supplementation in order to prevent different civilisation diseases [2,3].

The National Health Programme in the years 2007 – 2015 also says in its guidelines that nutritional patterns and health quality of food need to be improved; obesity should be decreased through higher consumption of fruit, vegetables and seed vegetables, which means following recommendations and norms for food health quality and its safety. Moreover, special emphasis is put on the formation of pro-health attitudes and prevention against anti-health behaviours of future parents in the pre-conceptional period through the intake of folic acid preventing inborn neural defects in infants [3-5].

The major biochemical role of folic acid in human organism is to provide multiple compounds with single-carbon elements. These compounds participate in the process of cell division (DNA production), protein synthesis, pirimidine synthesis, catabolism of histidine to glutamine acid, transformations of amino acids and homocysteine to methionine [6,7].

Therefore, even small folic acid deficiency may have great influence on the functioning of human organism. Folic acid deficiency during pregnancy may determine the occurrence of central nervous system defects in the developing foetus, placenta defects, may lead to spontaneous miscarriage and decrease neonate's birth weight. The deficiency of this vitamin in general population may promote sclerotic processes and diseases related to them i.e. ischaemic heart disease, heart attack, stroke, mental disorders of depressive character and even neoplastic processes [3,7-11].

AIM

The aim of this work was to present current status of knowledge regarding folic acid supplementation among young people. The practical purpose was to identify deficiencies of knowledge about folic acid supplementation as well as prepare and execute an educational programme in this field.

MATERIAL AND METHODS

Study population included 338 students living in Rzeszow and the surrounding area. Respondents were chosen randomly and their participation in this study was voluntary. The study took place between May and June 2009. The respondents' knowledge concerning folic acid supplementation was assessed and adequate education with instruction for young people was organised. A questionnaire, developed by the authors, based on the literature regarding the subject was used as a research tool. The respondents were asked to give information about their age, gender, place of residence and if they were familiar with the rules of folic acid supplementation. The questionnaire included open and closed questions. The recorded data were later analysed statistically and descriptively.

RESULTS

Girls comprised the majority of the study group (70%). The biggest subgroup included 17-year-old respondents (37%), then 16-year-old students (35%), and 27% of the participants was at the age of 18.

Most respondents (65%) were urban residents whereas 35% of the study group came from the rural area.

As far as types of school, to which respondents attended, were concerned, high schools comprised the majority (49%), economic high school and vocational school comprised 41% and 9%, respectively.

The analysis of the answers showed that every third respondent (61.0%) agreed with the thesis that parents' health status affects the development of their offspring. The students believed that the first trimester of pregnancy was the most dangerous period of foetus' development (58.0%) (Figure 1).

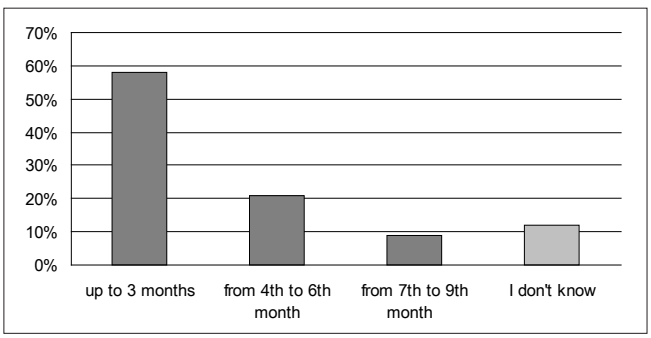

FIGURE 1. The most dangerous period of pregnancy – respondent's opinion.

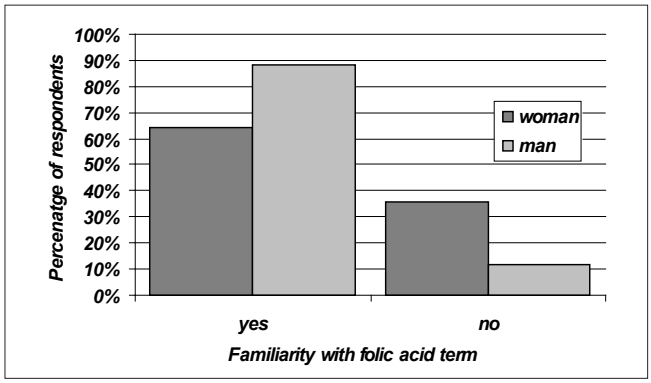

FIGURE 2. Familiarity with the term "folic acid" vs. respondent's gender.

The analysis of the study population in terms of gender and the place of residence showed that boys (65%) more frequently presented the opinion that child's development is influenced by his/ her parents' health status than girls (60%). However, this difference had no statistical significance (p=0.1603). As far as the respondent's place of residents was taken into consideration, significant majority of teenagers living in the urban (65.0%) and rural (35.0%) areas was convinced that the first trimester of pregnancy is its most dangerous period. (p=0.0140)

The vast majority of the study population (71.0%) declared their familiarity with the term "folic acid" whereas only every fourth student (29.0%) didn't know anything about it. Significant difference regarding respondents' knowledge about the term "folic acid" was observed in relation to gender. It seems surprising that girls scored worse when self-evaluating their knowledge since only two thirds of their group heard about folic acid. On the other hand, almost 90% of the boys declared they knew what folic acid was (p=0.00001). (Fig.2) For the purpose of further analyses students, who said they weren't familiar with the term "folic acid", were identified with the answer "I don't know". Therefore, the presented percentage structure of answers concerned the whole study population.

When asked to assign folic acid to the group of chemical compounds, every fourth respondent indicated it belonged to vitamin B family. More than 50% of the girls didn't even try to define folic acid whereas every third boy gave its definition. Also, correct answer indicating the type of chemical compound known as folic acid i.e. "vitamin" was given by similar percentage of girls and boys (26% and 32%, respectively). This difference turned out to be statistically significant (p=0.00001). (Table 1)

Most respondents, every third student, got his/her knowledge about folic acid from school classes, every sixth teenager read brochures and leaflets, and every tenth heard about folic acid on the radio or TV. Only every 12th respondent received information about folates from their parents, friends or health care professionals. Unfortunately, every third student couldn't indicate any source of information regarding folic acid.

Most students (48.0%) were convinced about the necessity of folic acid supplementation; however, 29% of the respondents couldn't give any answer. Teenagers, who believed that everyday diet provided sufficient amounts of folic acid, constituted a less numerous subgroup (22%). Only 4% of the respondents knew the factors decreasing the level of folic acid.

The abovementioned data were analysed in terms of respondent's gender and place of residence (Table 2). Both, gender and the place of residence didn't differentiate opinions regarding adequate folic acid intake with a normal diet as well as the knowledge of factors decreasing the level of folic acid (Table 3).

According to the respondents the following products comprise the largest amounts of folic acid: spinach, Brussels sprout, broccoli, cauliflower, and cabbage. This type of answer was chosen by 39.0% of students. Teenagers also

TABLE 1. General knowledge about folic acid vs. respondent's gender

		Folic acid definition				
		bio-element	unsaturated fatty acid	vitamin	amino acid	I don't know
general	n	5	26	93	46	168
	%	1	8	28	14	50
gender	woman	5 (2%)	14 (6%)	61 (26%)	21 (9%)	137 (58%)
	man	0 (0%)	12 (12%)	32 (32%)	25 (25%)	31 (31%)
	Total	5	26	93	46	168

TABLE 2. Adequate folic acid intake in everyday diet vs. respondent's gender and the place of residence.

Gender	Is normal diet sufficient in folic acid? (p = 0.0001)			Total	Place of residence	Is normal diet sufficient in folic acid? (p = 0.7939)			Total
	yes	no	I don't know			yes	no	I don't know	
woman	47 (20%)	105 (44%)	86 (36%)	238	town	51 (23%)	107 (49%)	62 (28%)	220
man	29 (29%)	58 (58%)	13 (13%)	100	country	25 (21%)	55 (47%)	37 (32%)	117
Total	76	163	99	338	Total	76	162	99	337

TABLE 3. The knowledge about factors decreasing the level of folic acid in everyday diet vs. gender and the place of residence.

Gender	Factors responsible for the decrease of folic acid level (p = 0.1382)		Total	Place of residence	Factors responsible for the decrease of folic acid level (p = 0.5028)		Total
	yes	no			yes	no	
woman	8 (3%)	230 (97%)	238	town	11 (5%)	209 (95%)	220
man	7 (7%)	93 (93%)	100	country	4 (3%)	113 (97%)	117
Total	15	323	338	Total	15	322	337

indicated other products: peas and beans (20.0%), offal (liver, kidneys) – 11%, milk and dairy products (8%), plums and apples (7%), and potatoes (3%). Alarming number of 34% of students was unable to choose out of abovementioned products those with the highest content of folic acid despite the fact that every fourth respondent declared its occasional intake (Figure 3).

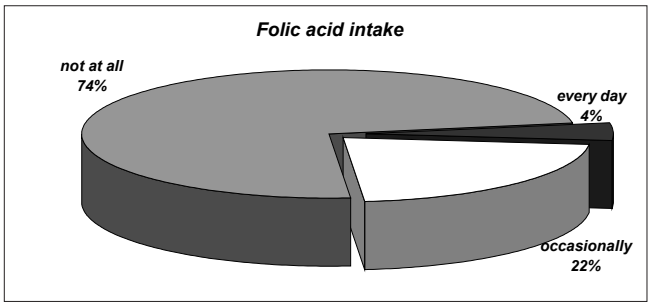

FIGURE 3. Folic acid intake among the youth.

The analysis of folic acid intake versus respondent's gender indicated that it was taken every day or occasionally by relatively bigger number of boys than girls (every third man and only every fifth woman) living in the urban area (Table 4).

In the opinion of respondents (44%) every woman planning pregnancy should take folic acid. Smaller percentage of students (17%) said folic acid supplementation should be practiced by all women between 16 and 49 years old whereas only 5% of respondents believed it should also concern adolescents. Unfortunately, 40% of students couldn't specify any age group (the sum of answers exceeds 100% since every respondent could give more than one answer).

Our study showed that the place of residence has no significant influence on the respondents' opinions about folic acid content in food products (Table 5) as well as indicated groups of people who should take folic acid on regular basis (Table 6).

The analysis of the frequency of indication to different types of products rich in folic acid against respondent's gender revealed statistically significant difference for the group of vegetables: spinach, Brussels sprout, broccoli, cauliflower and cabbage (Table 7).

Also the frequency of answers to the question concerning the groups of people who should take folic acid was analysed. When students' opinions were examined in relation to their gender, significant differences regarding the frequency of answer option were noted since almost two times more women than men didn't give any answer to that question (Table 8).

TABLE 4. Folic acid intake vs. respondent's gender and the place of residence.

Gender	Folic acid intake ($p = 0.0159$)			Total	Place of residence	Folic acid intake ($p = 0.5680$)			Total
	every day	occasionally	not at all			every day	occasionally	not at all	
woman	7 (3%)	46 (19%)	185 (78%)	238	town	11 (5%)	51 (23%)	158 (72%)	220
man	8 (8%)	28 (28%)	64 (64%)	100	country	4 (3%)	23 (20%)	90 (77%)	117
Total	15	74	249	338	Total	15	74	248	337

TABLE 5. Folic acid content in specified food products vs. respondent's place of residence.

Products	Town		Country		p
	n	%	n	%	
beans, peas	42	19	24	21	0.7542
potatoes	8	4	2	2	0.3210
spinach, Brussels sprout, broccoli, cauliflower, cabbage	90	41	42	36	0.3696
plums, apples	16	7	8	7	0.8824
milk and dairy products, eggs, cheese	14	6	12	10	0.2023
offal (liver, kidneys)	27	12	9	8	0.1950

TABLE 6. Groups of people who should take folic acid vs. respondent's place of residence.

Who should take folic acid?	Town		Country		p
	n	%	n	%	
adolescents (puberty period)	14	6	4	3	0.2524
every woman planning pregnancy	100	45	47	40	0.3518
every woman between 16 and 49 years old	38	17	19	16	0.8096
I don't know	83	38	52	44	0.2309

TABLE 7. Folic acid content in specified food products vs. respondent's gender

Products	Women		Men		p
	n	%	n	%	
beans, peas	43	18	23	23	0.2964
potatoes	8	3	2	2	0.5002
spinach, Brussels sprout, broccoli, cauliflower, cabbage	76	32	56	56	0.00001
plums, apples	13	5	11	11	0.0704
milk and dairy products, eggs, cheese	14	6	12	12	0.0540
offal (liver, kidneys)	20	8	16	16	0.0388

TABLE 8. Groups of people, who should take folic acid vs. respondent's gender

Who should take folic acid?	Women		Men		p
	n	%	n	%	
adolescents (puberty period)	7	3	11	11	0.0026**
every woman planning pregnancy	101	42	47	47	0.4402
every woman between 16 and 49 years old	27	11	30	30	0.0000***
I don't know	111	47	24	24	0.0001***

When asked about benefits of folic acid intake respondents most frequently indicated decreased risk of giving birth to a child with neural tube defects (43.0%). Unfortunately, over half of the group (51%) couldn't name any advantages resulting from folic acid intake (Table 9).

TABLE 9. Benefits resulting from folic acid intake.

Benefits resulting from folic acid intake	n	%*
decreased risk of giving birth to a child with neural tube defects	145	43
ischaemia prevention	16	5
decreased risk of malignant diseases	16	5
protective role in heart diseases	13	4
protects against asthma and infections of the upper respiratory tract	5	1
I don't know	173	51

*) The sum might exceed 100% since respondents could give more than one answer

Folic acid supplementation in the daily dose of 0.4mg is a significant link in prevention against neural tube defects [5,12]. Every two out of three respondents didn't even try to specify the recommended daily intake of folic acid and only every fifth gave the correct dietary allowance for folic acid (Table 10).

TABLE 10. Recommended dietary allowances (RDA) of folic acid – respondent's opinion.

RDA	n	%
0.01-0.05 mg daily	26	8
0.4 mg daily	74	22
6-7 mg daily	9	3
I don't know	229	68

Respondents were also asked to specify if they plan to take folic acid in future. Some differences regarding this issue were found between girls and boys. The number of boys declaring that in future they would encourage their partners to take folic acid was much bigger than that of girls who declared that they plan to supplement their diet with folic acid soon or some time in future (Table 11).

TABLE 11. Declaration of folic acid supplementation for girls in the opinion of male and female respondents.

Are you going to supplement your diet with folic acid (girls)	n	%	Are you going to encourage your girlfriend to take folic acid?	n	%
soon	25	11			
in future	74	31	yes	46	46
no	38	16	no	21	21
I don't know	101	42	I don't know	33	33

DISCUSSION

The statistical analysis showed that the knowledge about folic acid presented by most teenage respondents was incomplete. As the study proved, most young people lack knowledge about the source and role of folic acid, especially in the prophylaxis of neural tube defects.

Despite being familiar with the term "folic acid", which was declared by high school students, the fact that girls scored lower than boys when self-evaluating their knowledge was surprising (p=0.00001). Statistical analysis revealed that every fourth student assigned folic acid to vitamin B family. More than 50% of girls didn't even try to give the definition of folic acid whereas every third boy did it. The analysis of gender and the place of residence also didn't significantly differentiate respondents' opinions concerning folic acid supplementation in the normal diet as well as knowledge of factors decreasing the level of folic acid.

Similar results were presented by Zadarko-Domaradzka et al. [12]. They proved that the vast majority of women knew the term "folic acid". However, every two out of three respondents couldn't specify its source and the significant majority of them couldn't name the objectives of folic acid supplementation. Only every fourth woman (25%) declared folic acid intake, and 4% (19 respondents) took it regularly.

The results of this study showed that, according to respondents' opinions, every woman planning pregnancy should supplement her diet with folic acid (44.0%). Unfortunately, similar percentage of students didn't know the answer to that question. Also the distribution of answers commenting on daily demands for folic acid turned out to be unsatisfactory. The analysis of data in terms of gender let the authors notice that the number of boys planning to encourage their partners to practice folic acid supplementation was much bigger than that of girls, who declared starting folic acid supplementation soon or in the closest future.

Authors' previous study [3] indicated significant differences in particular aspects of knowledge about folic acid. The percentage of people who had heard about folic acid, knew what it was, were familiar with its beneficial role and knew who should take it was much bigger among 18- and 19-year-olds than in the younger subgroup (between 16 and 17 years old). Moreover, girls had heard something about folic acid more frequently than boys (p=0.03). Also young people living in the rural area reported hearing about folic acid more frequently.

Decreasing the risk of neural tube defects by active participation in the prophylaxis of these defects is an important role for young people. However, the analysis of data obtained in this study showed that 51% of respondents couldn't name any benefits resulting from folic acid supplementation.

Zych et al. [3] in their study in 2009 showed the lack of knowledge about advantageous role of folic acid intake. Only every fourth respondent was able to match benefits from folic acid intake with the decreased risk of giving birth to a child with inborn neural tube defects. The analysis of beneficial role of folic acid intake in order to decrease the risk of giving birth to a child with neural tube defects

in terms of gender (p=0.21) and the place of residence (p=0.36) turned out to be statistically insignificant.

Zadarko-Domaradzka et al. [12] proved little engagement in the educational campaign for young people. The results of that study showed that few teenagers had organised classes about folic acid whereas every sixth (little over 16.0%) remembered nothing about folic acid. These data unequivocally suggest that despite the National Health Programme the knowledge in the field of folic acid and its supplementation among young people is insufficient.

Also Tlalka et al. [13] confirmed the lack of educational actions regarding the prophylaxis of neural tube defects at school level.

As the gathered data indicate, in order to realise effective health education at school, it cannot be based only on the teaching programme. The fundamentals of current strategy in health education should include holistic attitude towards health and comprehensive health education for the youth since it is an inseparable and complementary element of health promotion [1].

CONCLUSIONS

1. The level of knowledge about folic acid supplementation is insufficient.
2. Lack of knowledge among girls of childbearing age may significantly increase the risk of neural tube defects among their children.
3. The introduction of effective programme in the process of educating the youth of school age may later decrease the risk of civilisation diseases resulting from low intake of folic acid.
4. Educational actions taken in the field of prophylaxis and connected with folic acid supplementation should be performed regularly in the organised pattern.

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