

ORIGINAL ARTICLE

ASSESSMENT OF NUTRITIONAL HABITS AND PREFERENCES OF CHILDREN AND ADOLESCENTS BROUGHT UP IN KRAKOW'S ORPHANAGES

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ABSTRACT

Background. Proper nutrition can not only guarantee harmonious child's development, but can also protect against later development of diet-related diseases such as type-2 diabetes, obesity or cardiovascular diseases. Many diseases as well as disorders of intellectual development of a young people may result from the mistakes made in a period of an intense growth and maturing of a child.

Objective. The aim of this study was to assess nutritional habits and preferences in subjects brought up in orphanages in terms of subjective evaluation of eating patterns, frequency of the meal consumption, and a concern about healthy life style.

Material and Methods. This study has been conducted to evaluate nutritional habits and preferences of 181 children aged 9-20, from orphanages in Krakow. Study was performed in 2007-2008 in 5 orphanages, which were under the control of Social Welfare Centre. Evaluation of nutritional habits and preferences was performed on the basis of an anonymous 8-question questionnaire adjusted to the respondent's age, which referred, among other, to questions about subjective assessment of eating patterns, frequency of meal consumption and the concern about healthy lifestyle patterns.

Results. About 75% of the examined population responded affirmatively to a question about subjective assessment of proper eating patterns; 80% female and 88% male respondents declared a regular consumption of meals. Daily diets of children in orphanages consisted usually from 5 or 4 meals (respectively 38 and 33% of affirmative responses); although, 5 meals were most often eaten by the youngest children. Furthermore, it has been revealed that milk and dairy products were consumed, on average, by 66% of respondents. On average, 76% of respondents reported everyday consumption of the lean meat, while 72% ate fish at least once per week.

Conclusions. Results obtained in this study, identify the improper nutritional habits and indicate the necessity of intervention, consisting on training courses and workshops for children, adolescents and their teachers.

Key words: *nutritional habits, food frequency, children, orphanages*

STRESZCZENIE

Wprowadzenie. Właściwe żywienie może nie tylko zapewnić harmonijny rozwój dziecka, ale może też zapobiec późniejszemu rozwojowi wielu chorób dietozależnych, takich jak cukrzyca typu 2, otyłość czy choroby układu sercowo-naczyniowego. Błędy żywieniowe w okresie intensywnego wzrostu i dojrzewania mogą być także przyczyną wielu chorób i zaburzeń rozwoju intelektualnego młodego człowieka.

Cel. Celem podjętych badań była ocena zwyczajów oraz preferencji żywieniowych wychowanków krakowskich domów dziecka, w zakresie wybranych aspektów.

Material i metody. W badaniach uczestniczyło 181 wychowanków. Wiek dzieci objętych badaniami mieścił się w granicach od 9 do 20 lat. Badania wykonywano w 5 domach dziecka w latach 2007-2008. Ocena zwyczajów i preferencji żywieniowych opierała się na anonimowym kwestionariuszu obejmującym 8 pytań, i dotyczyła subiektywnej oceny tzw. "zdrowego" stylu życia, częstotliwości spożywanych posiłków i wybranych grup produktów spożywczych.

Wyniki. Na pytanie odnoszące się do subiektywnej oceny prawidłowego sposobu żywienia twierdząco odpowiedziało ok. 75% ankietowanej populacji. Regularne spożywanie posiłków deklarowało 80% wychowanków i 88% wychowanków. Całodzienne racje pokarmowe młodzieży krakowskich domów dziecka najczęściej składały się z 5 lub 4 posiłków (kolejno 38 i 33% twierdzących odpowiedzi), przy czym spożycie 5 posiłków najczęściej deklarowali najmłodsi wychowankowie.

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Ponadto wykazano, że po mleko i jego przetwory sięga średnio 66% wychowanków. Codzienne spożywanie chudego mięsa i jego przetworów deklarowało średnio 76% ankietowanych, a spożycie ryb, co najmniej raz w tygodniu, deklarowało 72%. **Wnioski.** Uzyskane wyniki badań, wskazują na niewłaściwe nawyki żywieniowe i uzasadniają konieczność interwencji, polegającej na prowadzeniu warsztatów, szkoleń wśród ocenianej populacji dzieci i młodzieży oraz ich opiekunów.

Słowa kluczowe: zachowania żywieniowe, częstotliwość spożycia, dzieci i młodzież, dom dziecka

INTRODUCTION

Childhood is a particular period of life for establishing nutritional habits and therefore it is crucial to care about a proper nutritional pattern, which is copied in the future. A rational nutritional behaviour in subsequent life stages cannot fully compensate the possibilities for physical and mental development, which had been lost before [11]. Education in nutrition along with rational eating patterns stimulated in this way must be performed starting from early childhood in families as well as in gastronomic institutions in order to prevent against the risk of several diseases and health disorders occurring in adulthood. Due to such education the level of nutritional awareness should be high enough to balance the hazard resulting from some contemporary existing nutritional patterns as well as a ways of their popularization in media [5].

Orphanages are responsible not only for psycho-physical development of children but also for providing them with appropriate life conditions. In addition, as institutions compensating children for the missing family house they should also provide education in healthy behaviour, in terms of nutritional habits too. Taking into account the fact that children and adolescents belong to the group to the greatest extent exposed to the effects of inadequate nutrition, it was reasonable to undertake a study among children brought up in orphanages and school-and-education care institutions.

The aim of this study was to assess nutritional habits and preferences in subjects brought up in orphanages

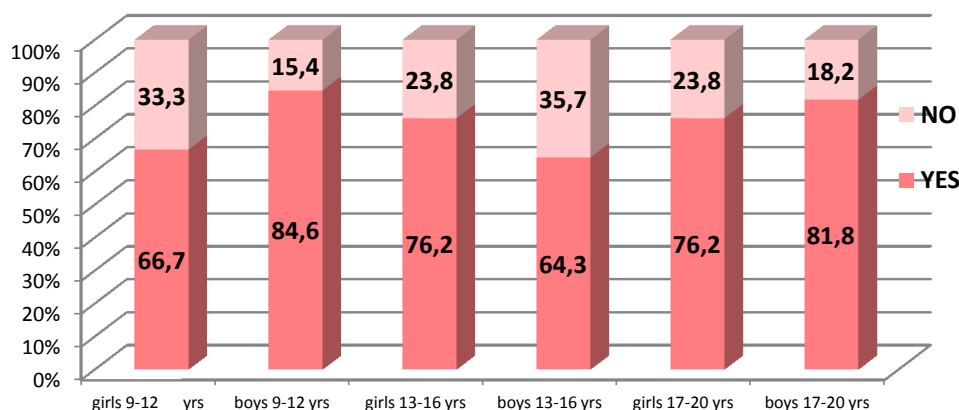
and school-and-education care centres in terms of subjective evaluation of “healthy” life style, frequency of the meal and food products consumption.

MATERIAL AND METHODS

The study were performed with 181 individuals aged 9 to 20 in the years 2007-2008. The evaluated population consisted of young people brought up in orphanages located in Krakow and supervised by the Municipal Social Care Centre. The population, grouped by gender and age, was divided into two groups. The first group, of 84 girls (48% of the entire population), comprised 20 individuals between the ages of 9 and 12 years; 41 girls aged 13-16; and 23 aged 17 to 20. The other group of 97 boys, comprising 52% of the population, was divided into following subgroups: 19 boys aged 9 to 12; 49 children between the ages of 13 and 16 years; and 29 subjects aged 17 to 20.

An anonymous questionnaire developed at the Department of Human Nutrition, the University of Agriculture in Krakow (Poland) was used to evaluate nutritional habits and preferences. The young people participated in this survey were ensured about the discretion and about using obtained information exclusively for research purposes defined in this work.

The results were analyzed statistically using the *Chi*² test (at the probability level of $p < 0.05$) for statistically significant differences in the percentage of answers to the individual questions depending on gender or age.



*- statistically significant differences between male respondents, based on age ($p < 0.05$)

Figure 1. Percentage of children and adolescents' responses to the question “Are your eating habits reflecting your concern about “healthy” lifestyle?”

The Statistica 9.0 software (StatSoft, Inc., Tulsa, OK, USA) and the EXCEL calculation sheet were applied for all calculations.

RESULTS

Self-assessment of appropriate eating habits

In response to the question on appropriate eating behaviours from 64 to 85% of teenagers gave an affirmative response (Figure 1).

The relationship between the percentage of those who declared proper eating habits and age was confirmed only with respect to a group of male respondents ($p < 0.05$). A proportion of the “yes” answer was decreasing significantly with age. There were no statistically significant differences between groups of the opposite gender ($p > 0.05$).

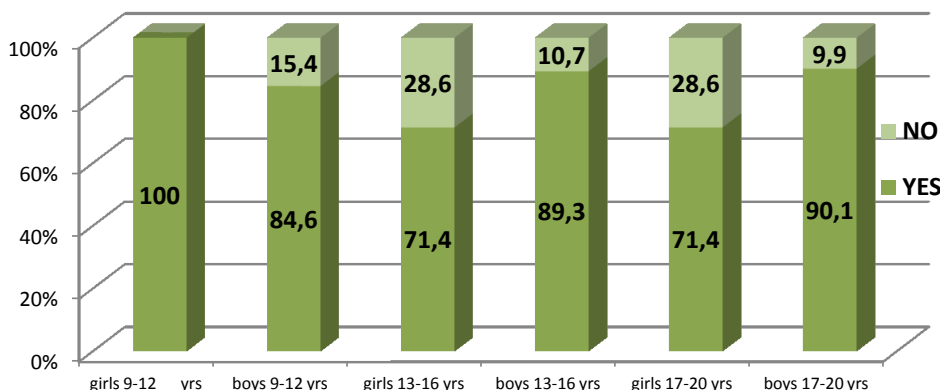
Regularity and a number of the meals consumed

From 71 to 100% respondents have answered affirmatively to the question concerning regularity of consumption of meals (Figure 2).

The statistical analysis proved that in the case of female respondents age had a significant effect ($p < 0.05$) on the regular meals intake (the percentage of responses was decreasing with age). Statistically significant differences were also found between the percentage of girls and boys aged 9-12 and 17-20 respectively; in the aforementioned groups, the higher percentage of the “yes” responses concerned youngest children (9-12 yrs).

When analysing the numbers of consumed meals (Figure 3), it has been noted that over half of the youngest children consumed five meals every day, while those older most often three or four. A daily consumption of 3 meals has declared from 11 to 37% of the respondents, 15% to 43% have eaten four meals, while 5 meals were eaten by 19-62% adolescents.

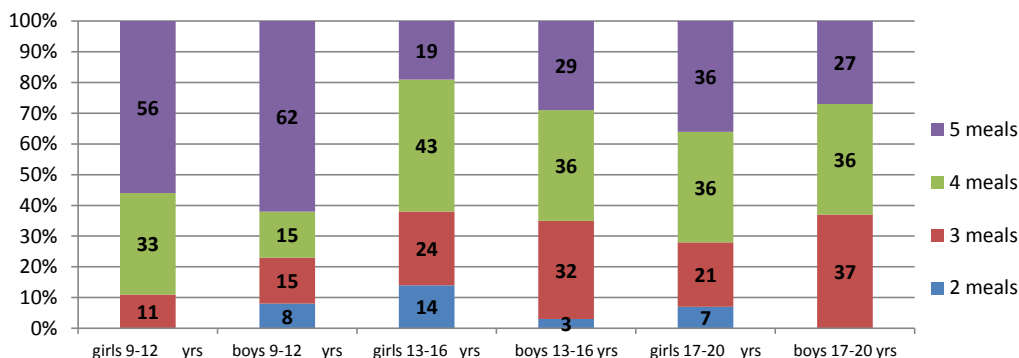
According to the results of a statistical analysis, there is relationship between the number of the meals consumed per day and the respondent’s age in both genders ($p < 0.05$) was found. The proportion of respondents eating 5 meals a day was decreasing with age, accompanied by an increase in the percentage of those who consumed 3 or 4 meals. There were no statistically significant differences between respondents’ gender.



†- statistically significant differences between female respondents, based on age ($p < 0.05$)

††- statistically significant differences between children aged 9-12 and adolescents aged 17-20 ($p < 0.05$)

Figure 2. Percentage of children and adolescents’ responses to the question “Having in mind a concern about healthy lifestyle, do you eat your meals regularly?”



***- statistically significant differences between age of respondents ($p < 0.05$)

Figure 3. Percentage of children and adolescents’ responses to the question “Having in mind a concern about healthy lifestyle, do you eat 2, 3, 4 or 5 meals per day?”

Consumption of different groups of food products

The highest number of the “yes” answers on daily consumption of fruit and vegetables reported girls from the youngest and oldest age group (~86%) (Figure 4). An everyday consumption of such products was also declared most often by the youngest boys (61%).

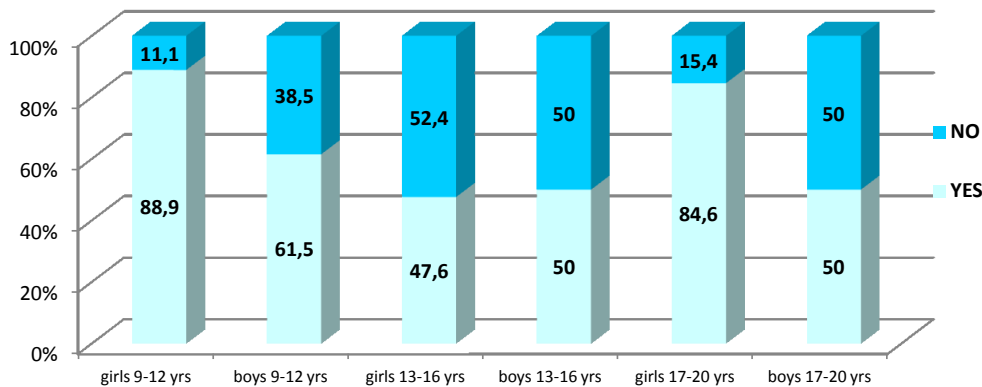
Statistical analysis showed relationship between age and frequency of consumption of the fruit and vegetables ($p < 0.05$).

As illustrated in Figure 5, the percentage of the “yes” responses referring to the question on daily consumption of milk and dairy products was descending

with age. It has been found that most girls and boys from the youngest age group consumed milk and dairy products every day; among older children the percentages of the “yes” responses were lower (Figure 5).

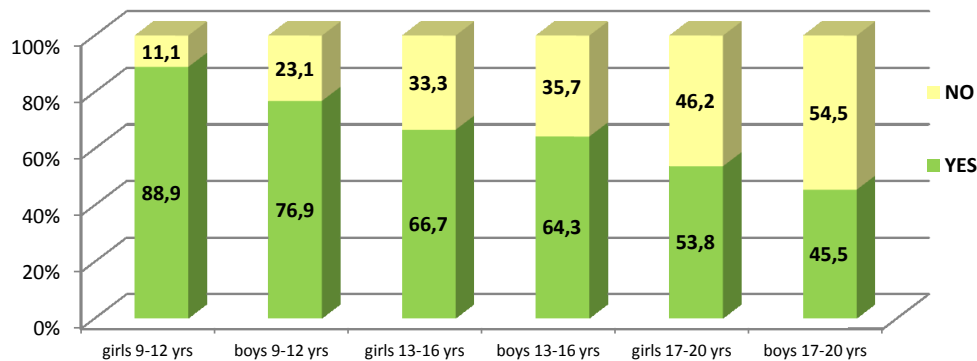
The χ^2 test have shown an influence of age on consumption of milk and dairy product in both boys and girls ($p < 0.05$). Milk and dairy product consumption was decreased with age of respondents and this was statistically significant result.

With regard to the lean meat and meat products, the percentage of girls who declared daily consumption of such products was the highest in the youngest age group



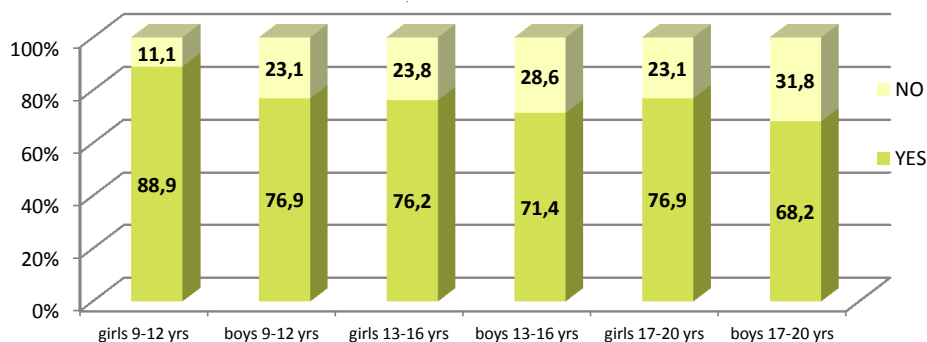
***- statistically significant differences between age of respondents ($p < 0.05$)

Figure 4. Percentage of children and adolescents’ responses to the question “Having in mind a concern about healthy lifestyle, do you eat vegetables and fruits every day



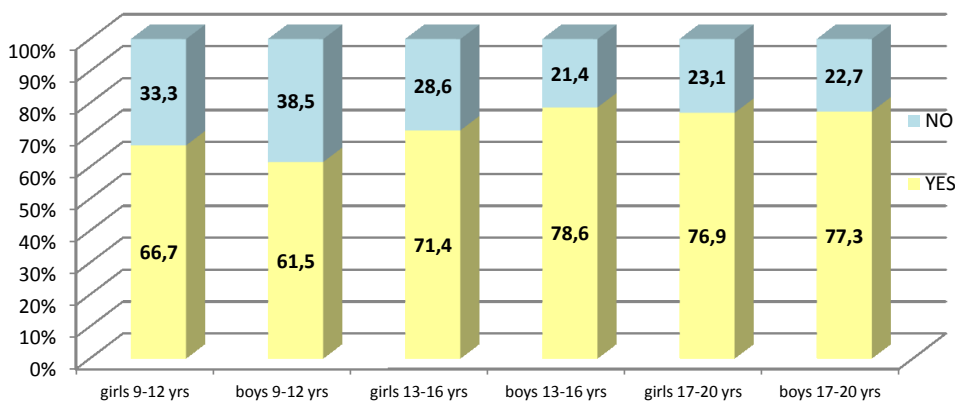
***- statistically significant differences between age of respondents ($p < 0.05$)

Figure 5. Percentage of children and adolescents’ responses to the question “Having in mind a concern about healthy lifestyle, do you eat milk and dairy products every day?”



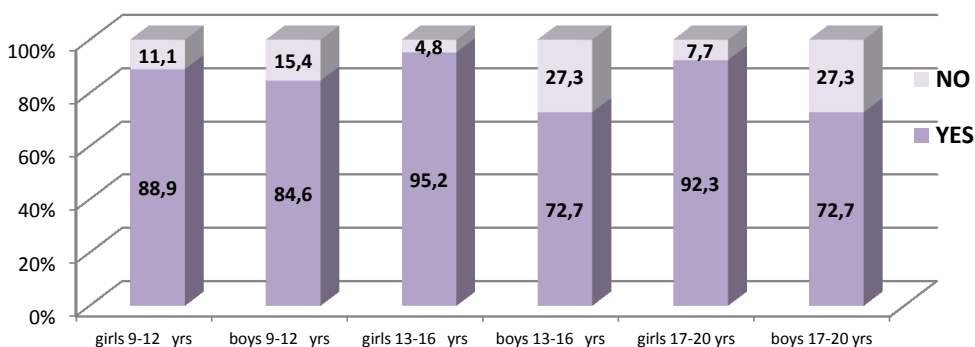
†- statistically significant differences between female respondents, based on age ($p < 0.05$)

Figure 6. Percentage of children and adolescents’ responses to the question “Having in mind a concern about healthy lifestyle, do you eat the lean meat and meat products every day?”



*- statistically significant differences between male respondents, based on age ($p < 0.05$)

Figure 7. Percentage of children and adolescents' responses to the question "Having in mind a concern about healthy lifestyle, do you eat fish at least once a week?"



** - statistically significant differences between gender of respondents ($p < 0.05$)

Figure 8. Percentage of children and adolescents' responses to the question "Do you eat sweets?"

(89%); whereas, the amount of affirmative answers was the lowest (68%) in the oldest boys. It has also been noted that preferences for meat and its products were decreasing with age. Age affected an intake of meat only in a group of girls; the percentage of the "yes" responses was decreasing with age ($p < 0.05$).

61 to 79% of respondents have eaten fish at least once a week. The percentage of consumers eating fish at least once a week was the lowest in the youngest age group (67% for girls and 61% for boys). Among the oldest respondents, about 77% declared an intake of fish with a diet (Figure 7). It has been proved statistically that age had an effect on fish consumption only in a group of boys ($p < 0.05$) and that percentage of boys who ate such products was increasing with age.

Sweets are the most popular products consumed by young people of all ages (Figure 8). In the youngest age group, only 11% girls and 15% boys declared that they did not eat sweets. Among older boys, 72% had sweets in their normal diet; while for girls this percentage exceeded 90% (Figure 8). It has been noted that boys reported consumption of sweets less frequently than girls. The results obtained by means of the χ^2 test showed statistically significant differences ($p < 0.05$) between the percentage of girls and boys in the frequ-

ency of consumption of sweets. The girls in this group much more often consumed sweet snacks.

DISCUSSION

In literature the information concerning the frequency of food products consumption by children from orphanages are from 1999 [16]. There is no data in the current literature on nutritional habits and preferences of children from orphanages and therefore the results obtained in this study have been compared to other groups of teenagers belonging to similar age categories.

About 75% of children and adolescents responded affirmatively to the question on their subjective assessment of eating patterns.

These findings were confirmed by *Łepecka-Klusek et al.* [12], who found that 79% of secondary school children thought that their eating behaviour was rational; the remaining 21% declared that their feeding patterns were improper. According to the survey of *Goryńska and Senkus* [4], more than half of the people in the over-15 age old were convinced that their eating behaviour was healthy, 38% declared rather "healthy" nutrition patterns, while only 5% of respondents evaluated their diet strongly negatively.

Among the assessed young people from Krakow, 80% female and 88% male respondents reported a regular meal intake. The survey conducted by *Jeżewska-Zychowicz* and *Łyszkowska* [7] in the population of 13-15-year-olds, revealed that the most regularly eaten meals were breakfast, dinner and supper. *Lepecka-Klusek* et al. [12] has reported a regular intake of breakfast, lunch and supper by 63, 81, and 61% secondary school students respectively. Different results have been reported by *Sitko* et al. [17], who showed that only 10% of boys declared regular consumption of meals.

The organism requires regular supply of energy which is then distributed all the day. Regular consumption of 5 meals per day causes that the organism, accustomed to the steady supply of adequate amounts of energy and nutrients, can manage them rationally. Eating meals less than every 3-4 hours leads to the situation in which the organism does not have to be adjusted to longer starvation periods and excessive stockpiling. Thermogenesis of the consumers with irregular meat intake is lower, so they face a risk of positive energy balance and, in consequence, an increase in body weight. An irregular intake of meals leads to the starvation periods, in which appetite for sweet or fatty products occurs. After receiving such signals, the body focuses, as quickly as possible, on compensation for energy shortages that, in turn, leads to eating "unhealthy" food products like sweet or salty snacks or the deep fat fried snacks [6].

Daily diets of children in orphanages in Krakow consisted usually from 5 or 4 meals (respectively 38 and 33% of affirmative responses), while 5 meals were most often consumed by the youngest children.

The correct number of meals consumed per day was also noted by *Kowieska* et al. [11]. Among the secondary-school students 86% consumed 3 and 4 meals, which correspond to the results reported by *Gacek* [2]. This author reported that adolescents aged 14-16 (85% of girls and 83% of boys) consumed 3 and more meals per day but only 47% and 53% girls and boys respectively, did it on a regular basis. *Piórecka* et al. [15] have found that 61% boys and 52% girls ate at least 4 meals a day. Also *Szczepańska* et al. [19] showed that 47% of middle schools pupils have eaten 4-5 meals per day, whereas 14% more than 5 meals per day. The highest percentage of the secondary-school teenagers who declared a daily consumption of 3 meals (45%) was noted by *Kollajtis-Dolowy* et al. [10]. The results referring to low consumption frequency of various products and meals, chiefly those exhibiting high nutritive value and pro-health properties, are the findings that raise concern.

From 48 to 80% of children and adolescents from orphanages declared daily consumption of fruit and vegetables (Figure 4). Less frequent consumption was observed by *Szczepańska* et al. [19] among middle

school pupils. Fruits and vegetables were daily eaten by 49% and 36% pupils respectively. *Likus* et al. [13] shows that only 29% students ate fruit and vegetables at least once per day.

This survey of children from orphanages and school-and-education care institutions in Krakow revealed that, on average, 66% respondents consumed milk and dairy products, which compares with the findings of *Kollajtis-Dolowy* et al. [9] who observed that 64% of 11-12-year-olds in Bialystok consumed milk and fermented products every day. The author reported similar percentage of 14-16-year-old consumers eating dairy products every day in her previous study [10].

Flaczyk et al. [1] showed lower consumption frequency of milk and dairy products. 27% of adolescents consumed dairy products every day; 43% at least once a week, while 30% even less frequently. *Stefańska* et al. [18] showed that milk was consumed 2-3 times per day by about 30% of children aged 10-12, and 13-15% of adults (20 years old). Alarming situation was also observed in the usual frequency of consumption of cottage cheese, consumed by the largest percentage of the children (40% irrespective of age and gender) less than 2-3 times a week.

Satisfactory level of consumption of milk and other food products rich in calcium, higher than in the present study, was observed mainly among young people living in rural areas. Milk and dairy products are abundant in nutritive compounds such as protein, calcium and other mineral compounds as well as vitamins, which are fundamental to the growth and development of a child. Due to high levels of calcium, a recommended intake of milk and dairy products helps to achieve the upper extremity bone mass and, when enriched with vitamin D, reduces risk of the rickets prevalence in children [8, 14,].

Lean meat and its products have been consumed daily by 75% of the young people.

An overview of the literature presented here does not confirm our results, since according to the authors quoted beneath; the consumption of lean meat and its products was much smaller. Such discrepancy may result from the fact that in orphanages as well as in school-and-education care institutions, nutritional patterns are imposed from outside; however, meat and meat products are necessary to balance the diet of children and adolescents. Restrictions on food rations cause that persons responsible for planning the diet in such institutions introduce willingly poultry and its products into a menu.

According to the findings of *Jeżewska-Zychowicz* and *Łyszkowska* [7], only 16% of the 13-15-year-olds questioned consumed lean meat every day; more than 60% of the respondents introduced such products into their daily menu only several times per week. The high-

est consumption of poultry meat and its products was reported by *Szewczyński* et al. [20]. Their results showed that the menu of more than half of 16-17-year-olds contained poultry meat in at least one of the meal served.

Of the young respondents questioned in this study, 72% consumed fish at least once per week.

The results comparable to those obtained in this study were presented by the other authors.

More than half of the secondary-school students in Warszawa had fish in their daily diet at least once per week [11]. According to *Jeżewska-Zychowicz* and *Kosicka* [8], two fifth of the respondents declared eating fish and fish products at least once per week, while other studies of *Jeżewska-Zychowicz* and *Łyszkowska* [7] showed that more than half of 13-15-year-olds was enriching their diet with fish and fish products occasionally. On the other hand, *Szewczyński* et al. [20] found that there were no fish and fish products in over 90% students' menus in Warszawa. *Kollajtis-Dołowy* [9] noted much smaller fish consumption too. On average, 30% adolescents in Białystok had fish on their weekly menu. Once a week 50% of children with Krakow's nursery schools consumed fish and 33% less than once a week [3].

The fact that eating candies is popular has been confirmed by *Gacek* [2]. Almost half of the students reported eating sweets and confectionery daily, which agrees with the results obtained for adolescents by *Jeżewska-Zychowicz* and *Łyszkowska* [7] and *Szewczyński* et al. [20]. *Stefańska* et al. [18] showed that even 60% of pupils from elementary schools and junior high schools consumed sweets every day. The authors revealed that more than half of teenagers consumed sweet snacks at least once a day. In addition, according to the last author quoted, girls were more interested in such products that agree with the results obtained in this work.

CONCLUSIONS

1. Children brought up in school-and-education care institutions in Krakow most often declared regular consumption of meals. The daily diets of youngest respondents contained mostly 5 meals and the older 4 meals.
2. Frequency of consumption of fruit, vegetables, milk, dairy products, lean meat and its products as well as fish decreased with age. About half of older population of children declared that did not consume fruit and vegetables as well as milk and dairy products, about 1/3 did not consumed lean meat and its products every day. About 1/5 of them declared that they did not eat fish even once per week.
3. Consumption of sweets decreased with the higher age of respondents. Most of girls declared that they

eat sweets, on the other hand about 1/4 of boys from the oldest age groups declared that they did not consume these products.

4. Results obtained in this study, identify the improper nutritional habits and indicate the necessity of intervention, consisting on training courses and workshops for children, adolescents and their teachers.

Acknowledgement

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Conflict of interest

The authors declare no conflict of interest.

REFERENCES

1. *Flaczyk E., Górecka D., Szczepaniak B.*: Preferences and frequency of milk and dairy products consumption among students of secondary schools in Konin. *Żyw Człow Metab* 2003; 30, 1 / 2: 160-163 (in Polish).
2. *Gacek M.*: Dietary habits and locus of control assessed in middle-school pupils from the Malopolska region of Poland. *Rocz Panstw Zakl Hig* 2013; 64(2):129-134.
3. *Gacek M.*: Sposób żywienia dzieci przedszkolnych ze środowiska wielkomiejskiego. [Dietary patterns in nursery school children from an urban environment]. *Rocz Panstw Zakl Hig* 2012; 63(4):477-482.
4. *Goryńska E., Senkus P.*: Consumer's declarations about healthy eating habits and their dietary behaviors. Warszawa, Wyd. SGGW 2004: 253-257 (in Polish).
5. *Grzybowski A., Trafalska E., Paradowska-Stankiewicz I.*: Nutritional habits of youth. *Probl Hig* 2000; 69:13-21 (in Polish).
6. *Jarosz M.* (red.): The principles of proper nutrition of children and young people and guidelines for a healthy lifestyle. Warsaw, National Food and Nutrition Institute 2008 (in Polish).
7. *Jeżewska-Zychowicz M., Łyszkowska D.*: Evaluation of selected dietary behaviors of young people aged 13-15 years and their determinants on the example of the urban society. *Żyw Człow Metab* 2003; 30, 1 / 2, 572-577 (in Polish).
8. *Jeżewska-Zychowicz M., Kosicka M.*: Relations between dinning out and selected indicators of family situation. *Żyw Człow Metab* 2007; 10, 34, 1/2 733-739 (in Polish).
9. *Kollajtis-Dołowy A., Matysiuk E., Boniecka I.*: Nutritional habits of one selected group of 11-12 years old children from the city of Białystok. *Żywność. Nauka. Technologia. Jakość* 2007; 6(55):335-342 (in Polish).
10. *Kollajtis-Dołowy A., Pietruszka B., Waszczeniuk-Uliczka M.*: Selected nutritional behavior of youth from Warsaw. *Żyw Człow Metab* 2003; 30, 1 / 2:189-191 (in Polish).

11. *Kowieska A., Biel W., Stanislawski A.*: Dietary habits and food selection factors among high school students. *Żyw Człow Metab* 2007; Supplement, 28: 360-366 (in Polish).
12. *Lepecka-Klusek C., Dońska K., Święs Z., Pilewska A.*: The grammar-school youth about their nutrition. *Annales Universitatis Mariae Curie-Skłodowska* 2003; Vol. 58, Supplement, 13, 151:256-260 (in Polish).
13. *Likus W., Milka D., Bajor G., Jachacz-Lopata M., Dorzak B.*: Dietary habits and physical activity in students from the Medical University of Silesia in Poland. *Rocz Panstw Zakł Hig* 2013; 64(4):317-324.
14. *Mędreła-Kuder E.*: The source of microelements and macroelements in a diet of students from rural and urban areas. *Żyw Człow Metab* 2005; 32, Supplement, 1:624-629 (in Polish).
15. *Piórecka B., Jagielski P., Wójcik K.*: Nutritional habits in school youth in the Małopolska region. *Żyw Człow Metab* 2007; 34,1-2:620-627 (in Polish).
16. *Polus-Szeniawska E.*: Warunki i sposób żywienia wychowanków domów dziecka. *Rocz Panstw Zakł Hig* 1999; 50(1): 107-113.
17. *Sitko D., Wojtaś M., Gronowska-Senger A.*: Sposób żywienia młodzieży gimnazjalnej i licealnej. [Food patterns of youth from gymnasium and lyceum]. *Rocz Panstw Zakł Hig* 2012; 63(3):319-327.
18. *Stefańska E., Falkowska A., Ostrowska L.*: Wybrane zwyczaje żywieniowe dzieci i młodzieży w wieku 10-15 lat. [Chosen nutritional habits in group of children and teenagers aged 10-15]. *Rocz Panstw Zakł Hig* 2012; 63(1):91-98.
19. *Szczepańska E., Deka M., Całyniuk B.*: Studies to determine nutrition behaviour amongst middle school pupils living in the border areas of Poland and the Czech Republic. *Rocz Panstw Zakł Hig* 2013; 64(3):191-196.
20. *Szewczyński J., Ostrowska A., Gajewska M.*: Assessment food products consumption frequency in daily diet of youth in Warsaw. *Żyw Człow Metab* 2005; 32, Supplement, 1, 2: 9-15 (in Polish).

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