

NUTRITION PRACTICES IN NURSERIES IN POLAND - INITIAL RESULTS OF NATIONWIDE STUDY

Anna Harton, Joanna Myszkowska-Ryciak

Chair of Dietetics, Department of Dietetics, Faculty of Human Nutrition and Consumer Sciences, Warsaw
University of Life Science - SGGW, Warsaw, Poland

ABSTRACT

Background. Rational nutrition of infants and toddlers is essential for their normal growth and development, and for the development of proper nutritional habits. It should be preceded by proper planning.

Objective. The aim of the study was to evaluate of the planning and organization of nutrition in nurseries.

Material and methods. In the research conducted within the program “*Eating healthy, growing healthy*” (EHGH), 128 crèches from all over Poland participated. The nurseries were attended by 8182 children under the age of 3. The research was carried out between 2015 and 2016. Data on the organization and quality of nutrition were collected through direct interviews with directors and / or staff responsible for feeding in crèches. In addition, analysis of the decade’s menu of the participating institutions (128 menus) and daily inventory reports (1280 documents) were analyzed. The data were analyzed for the total number and the type (public and non-public) of institution. The program Statistica Version 13.1 was used.

Results. Half of the surveyed DCCs planned in the menu whole grains, nearly all of them served fresh vegetables and fruits to the children, and every third added them to every meal. The most common drink during the meal was compote. Access to water between meals was offered to children in majority of the DCCs. The quality of diet was differentiated by the type of nursery: depending on the type (public vs non-public), the differences in salting and sweetening meals have been shown. Public DCCs had a much lower average amount of money allocated per day to feed a child compared to non-public, most of these managed own kitchens and did not employ a dietitian. Despite the higher nutritional rates in non-public crèches, some errors in nutrition planning have been observed.

Conclusions. Higher average amount of money allocated per day to feed a child in non-public nurseries did not provide adequate nutrition. There is a need to publish standardized, understandable and practical recommendations in nutrition of children in nurseries. Adopting such recommendations in daily practice in all public and non-public crèches should improve the nutrition of children.

Key words: *nurseries, child care, early age, nutrition*

STRESZCZENIE

Wprowadzenie. Racjonalne żywienie niemowląt i małych dzieci jest kluczowe dla ich prawidłowego wzrostu i rozwoju oraz kształtowania prawidłowych nawyków żywienia. Powinno być poprzedzone jednak prawidłowym zaplanowaniem.

Cel. Celem badania była ocena planowania i realizacji żywienia dzieci w żłobkach.

Material i metody. W badaniach w ramach programu „Zdrowo jemy, zdrowo rośniemy” (ZJZR) uczestniczyło 128 żłobków z całej Polski. Do placówek tych uczęszczało 8182 dzieci w wieku poniżej 3 lat. Badania realizowano w latach 2015-2016. Dane dotyczące organizacji i jakości żywienia zbierane były drogą bezpośredniego wywiadu z dyrektorami i/ lub personelem odpowiedzialnym za żywienie w żłobkach. Dodatkowo poddano analizie jadłospisy dekadowe placówek uczestniczących w badaniach (128 jadłospisów) oraz dzienne raporty magazynowe (1280 dokumentów). Dane analizowano dla placówek ogółem oraz w podziale na rodzaj placówki (publiczna i niepubliczna). Do analizy statystycznej wyników zastosowano program Statistica ver. 13.1.

Wyniki. Wykazano, że połowa badanych placówek planowała w jadłospisach udział produktów pełnoziarnistych, prawie wszystkie podawały dzieciom świeże warzywa i owoce, a co trzecia podawała te produkty w każdym posiłku. Najczęściej do picia podczas posiłków był kompot. Dostęp do wody między posiłkami oferowała dzieciom większość badanych placówek. Jakość diety była zróżnicowana ze względu na rodzaj placówki (publiczna, niepubliczna), w tym w zależności od jej typu wykazano zróżnicowanie w zakresie dosalania i dosładzania potraw. Placówki publiczne miały dużo mniejszą stawkę żywieniową niż niepubliczne, w większości prowadziły własną kuchnię i nie miały dietetyka. Pomimo wyższej stawki żywieniowej w żłobkach niepublicznych, obserwowano pewne błędy w planowaniu żywienia dzieci.

Corresponding author: Anna Harton, Warsaw University of Life Science - SGGW, Faculty of Human Nutrition and Consumer, Chair of Dietetics, Department of Dietetics, Sciences, Nowoursynowska 159c Street, 02-776 Warsaw, Poland, phone: +48 22 5937022, fax: +48 22 5937018, e-mail: anna_harton@sggw.pl

Wnioski. Wyższa stawka żywieniowa w żłobkach niepublicznych nie zapewniała prawidłowego żywienia. Istnieje potrzeba opublikowania ujednoczonych, zrozumiałych i praktycznych zaleceń w zakresie żywienia dzieci w żłobkach. Stosowanie takich zaleceń w codziennej praktyce we wszystkich żłobkach, zarówno publicznych jak i niepublicznych, powinno wpłynąć na poprawę żywienia dzieci.

Słowa kluczowe: żłobki, opieka nad dziećmi, wczesne dzieciństwo, żywienie

INTRODUCTION

Parents are the most responsible for the nutrition of young children. An important role has also a care and education institution, where a child usually spends many hours during the day. Many studies prove that planning and balancing of meals used in both homes and care/education settings are wrong [5, 10, 11, 13, 15, 22, 24]. Many child care facilities often do not employ specialized staff to plan nutrition, especially for children requiring elimination diets. Some nurseries resign from maintaining their own kitchen for catering. In addition, there is a big problem with the legal regulations on nutrition. There are norms and some quantitative and qualitative nutritional recommendations for planning and organization of nutrition [9, 23, 25] but they are not mandatory. Lack of uniform and mandatory legal regulations results in a large degree of discretion in their application. Such practices can affect the quality of nutrition of young children, which is extremely important, especially in this period of life. This is the moment to shape certain eating habits and period critical for the prevention of many diet-related diseases. Nutrition of toddler should be particularly well planned, and implemented on the basis of uniform nationwide recommendations.

The purpose of this study was to analyze and evaluate selected quality factors of diets used in crèches and to collect information on nutrition practices in these centers from all over Poland.

MATERIAL AND METHODS

The study covered 128 daily care centers (DCCs) attended by 8182 children under the age of 3, including public nurseries (n = 65), and non-public nurseries (n = 63) which came from all over Poland. All examined DCCs participated in a research and education program “*Eating healthy, growing healthy*” (EHGH) [8]. Recruiting process lasted from November 2015 to April 2017. Data on selected aspects of nutrition practices came from a direct interview with the director or authorized staff of the facility. Interviews were conducted by EHGH educators during the on-site meeting at the facility. As a tool for collecting data a specially prepared and validated questionnaire was used. First, the data has been collected in paper form, then carefully analyzed and checked, and

entered into the computer database. An additional source of data that was used to validate nutrition data were decade’s menu and inventory reports. For this purpose, 128 decade’s menu and 1280 daily inventory reports were analyzed. All data have been processed statistically using Statistica Version 13.1. The collected data were further analyzed considering the type of facility (public vs. non-public DCCs). We used chi-squared quality assays and quantitative *Mann-Whitney* U tests with significance levels of $p < 0.05$.

RESULTS

In the general pool of randomly selected DCCs that joined the EHGH program and were presented in the article, half were public crèches. More than 8,000 children attended, including most of them aged 1-3; infants accounted for only 5% of the total group (Table 1).

The selected aspects of nutrition quality are presented in Table 2. It was found that half of the DCCs in daily diets used whole grains products, all nurseries planned fresh vegetables and fruits and every third included them to every meal. As a drink for a meal, most often compote and tea were served, in the smallest percentage - juice and other fruit drinks. Water for meals was planned in more than half of the crèches, and access to water between meals was declared by a high percentage of DCCs. In every second institution, frying was used 1-2 times a week, and complete absence of this cooking method was recorded in half of the crèches. The correct assortment of fat for frying was found in 8 out of 10 DCCs. Salting and sweetening, including using salt while preparing food, was more popular than after preparation. Some of the quality aspects of nutrition practices were determined by the type of nursery (Table 2). Better balanced diets were reported in public institutions compared to non-public crèches. But in the same time, salting and sweetening occurred there more frequently.

The selected aspects of nutrition practices are presented in Table 3. It has been shown that in over half of the surveyed nurseries, a kitchen run by institution and internal catering were present. This type of organization of nutrition was found more frequently in public institutions, where the financial rate for nutrition (average amount of money allocated per day to feed a child/PLN) was twice lower than in

non-public crèches. The diet planning was made by different specialists, and the dietician was noted only in non-public DCCs. The dietitian was not employed by nursery, but by the catering company, which the DCC actually cooperated. In all nurseries, a decade's menu included breakfast and dinner consisting of two dishes (soup and second course). In public DCCs, meals were served earlier (Table 3).

Table 1. General characteristics of children in DCCs (number / % of children)

Children	DCCs		
	Total (n=128)	Public (n=65)	Non-public (n=63)
Total number of children	8182/100	5723/70	2459/30
Children <1 year of age	407/5	297/5.2	110/4.5
Children on a special diets	654/8	491/8.6	163/6.6
Children on a non-dairy diet	393/4.8	266/4.6	127/5.2
Children on a gluten-free diet	30/0.4	14/0.2	16/0.7
Children on other diets*	238/2.9	217/3.8	21/0.9

*Including dietary supplements, used in the various, co-existing problems of the digestive tract or other diseases

Table 2. Selected aspects of nutrition quality (total/% of DCCs)

Category	DCCs			p*
	Total (n=128)	Public (n=65)	Non-public (n=63)	
Occurrence daily				
Whole grain products	63/49	43/66	20/32	0.00010
Vegetables and / or fruits in every meal	45/35	37/57	8/13	0.00000
Fresh vegetables and / or fruits	121/97	63/92	58/95	NS
An assortment of drinks for meals / between meals				
Compote	116/91	61/94	55/87	NS
Tea	94/73	50/77	44/70	NS
Water	85/66	45/69	40/63	NS
Natural juices 100%	47/37	34/52	13/21	0.00020
Other fruit drinks, not juices	27/21	18/28	9/14	0.06307**
Water between meals	120/94	60/92	60/95	NS
Culinary techniques and the type of fat used				
Food frying 1x / week	40/31	24/37	16/25	NS
Food frying 2x / week	23/18	11/17	12/19	NS
No frying food	65/51	30/46	35/56	NS
Olive / rapeseed oil for frying	81/63	44/68	37/59	NS
Butter for frying	19/15	9/14	10/16	NS
Sweetening dishes / beverages				
Sweetening dishes	107/84	64/98	43/68	0.00000
Sweetening during preparation	96/75	57/88	39/62	0.00076
Sweetening after preparation	31/24	20/31	11/17	0.07889**
Sweetening dishes with white sugar	48/38	32/49	16/25	0.02071
Sweetening beverages with white sugar (compote/tea)	64/50	41/63	23/37	0.00265
Salting dishes / type of salt or its replacement				
Salting dishes	109/85	62/95	47/75	0.00095
Salting dishes with salt/sea salt	54/49	27/44	27/58	0.06253***
Salting with diet salt	27/25	18/29	9/15	
Salting with different types of salt	25/23	17/27	8/17	
No data	3/3	0/0	3/6	
Salting during preparation	100/78	58/89	42/67	0.00202
Salting after preparation	23/18	13/20	10/16	NS

p – level of significance for $\alpha=0.05$; *statistically significant Chi-squared test, NS – not statistically insignificant, **tendency, ***tendency, taken into account and converted into DCC which salting ($n = 109$)

Table 3. Selected aspect of nutrition practices

Category	DCCs		
	Total number (n=128)	Public (n=65)	Non-public (n=63)
Type of kitchen in the DCCs*	Number / % of DCCs		
Own kitchen	77/60	62/95	15/24
Internal catering	5/4	2/3	3/5
Own kitchen and external catering	4/3	0/0	4/6
External catering	42/33	1/2	41/65
DCC having a person responsible for planning nutrition**	Number / % of DCCs		
	84/66	62/95	22/35
Dietician	9/7	0/0	9/14***
Cook	14/11	8/12	6/9
Commissary	50/39	46/71	4/6
Nurse	7/5,5	7/11	0/0
Director	2/1.6	1/1.5	1/1.6
No person indicated	14/11	13/20	1/1.6
Nutritional rate (PLN)****	X ± SD / median (min-max)		
	7.34±2.90/6 (4-15)	5.28±1.25/5 (4-12)	9.35±2.62/10 (4-15)
The type of meals served in DCCs	Number / % of DCCs		
Breakfast	128/100	65/100	63/100
II breakfast	93/73	55/85	38/60
Dinner – soup	128/100	65/100	63/100
Dinner – second course	128/100	65/100	63/100
Dessert	108/84	47/72	61/97
The time of meals served in DCC	Hours: minutes (median)		
Breakfast	8:30	8:15	8:30
II breakfast	10:00	10:00	10:00
Dinner – soup	11:45	11:45	11:40
Dinner – second dishes	12:00	11:30	13:00
Dessert	14:30	14:30	15:00

*statistically significant, Chi-square test $p=0.0000$, **Chi-square test $p = 0.0000$, in few cases indicated several people, ***dietitian from catering, ****U Mann-Whitney test, $X \pm SD$ – mean and standard deviation; nutritional rate - average amount of money allocated per day to feed a child

DISCUSSION

The number of children under the age of 3 using various forms of care has grown in Poland in recent years (in 2013 it was nearly 60 thousand children) [3]. According to Central Statistical Office data in 2013 [3] the proportion of children in DCCs was 4.8%. For comparison, in 2012 it was 3.8%. There are also a number of such DCCs, including mainly non-public nurseries. Considering the age structure of children in care facilities, the biggest groups are children aged 2 (about 50%) and least infants (4.1%). A slightly higher percentage of infants were observed in present study and lower in the England study [14].

Nursery is a place where a child spends more than 5 hours a day, and one third of such centers work more

than 10 hours a day. Due to this fact, the DCC should to a large extent meet the needs of a small child for energy and all nutrients. Therefore, the supply of food should be adequate, and the diet properly balanced. Such a diet cannot lack vegetables and fruits, including the best in the fresh form. Many studies, however, prove that the menu is not properly balanced in the DCC, not only in terms of vegetables and fruits [13, 24]. In our study most of the institutions in their daily menu served fresh fruit and vegetables to children. The satisfactory performance of the model ration for vegetables and fruits was also demonstrated in another study [6]. Daily diet should also include whole grains, however, these products are not very popular in feeding small children. There is still a misconception that better choice is a wheat bread. In present study

it was shown that every second DCC placed whole grain products in the decade menu. Better balance of diets for the supply of vegetables and fruits, and whole grains was reported in public institutions compared to non-public ones. Larger quantities of cereal products in the menu of children from private or non-private institutions were reported in the study of preschoolers from Croatia [12]. However, in this case, the authors did not analyze the type of products but only their total supply. The same authors did not note differences in the supply of vegetables and fruits depending on the type of institutions. The lower share of fruits and vegetables in the daily menu of crèches, and higher weekly grains was noted in another large England study [14]. However, it is worth noting that vegetables and fruits were evaluated as separate groups, and cereal products converted per week, which makes comparison of data difficult. Similarly, as in the own study, the results on the supply of vegetables and fruits in the menu of DCCs was recorded in US research [26]. In those study institutions implemented the “*Head Start*” obesity prevention program, which could have resulted in better awareness and implementation of nutritional recommendations for children.

Another issue are drinks. In many studies of infants and young children, the authors point to their abnormal assortment, including too many sweetened beverages [19] with the lack of water. In present study, access to water was provided to children in a very high percentage of crèches, but it was not the most commonly served beverage for meals. Compote according to traditional recipe is prepared with added sugar. Drinks of beverages, including compote, were recorded in half of the surveyed DCCs. Excessive consumption of sugar, including sweetened beverages, is raised as a risk factor for obesity. WHO data from 2014 show that 41 million children worldwide over the age of five are overweight [4]. Thus, in programs to prevent obesity in children and adolescents, the WHO puts special emphasis on reducing the consumption of sweetened beverages [2]. In the latest WHO recommendations [4] the consumption of sugar highlights the importance of free sugars in the prevention of many diet-related diseases - as the authors point out most often come from sweet drinks. The recent recommendations of the American Academy of Pediatrics (AAP) on infant feeding propose a complete resignation from juices [7]. In present study juices were only planned in every third nursery, including a greater percentage of public DCCs. The higher proportion of planned juices for children from crèches with slightly lower water was reported in a British study [14]. Such a situation may be due to the fact that juices continue to be perceived as valuable in the general public opinion, and are often used in feeding young children. The AAP emphasizes that parents and caregivers should be educated in

order of proper share of juices in children’s nutrition because consumed in the right amount of 100% juice produce health benefits, and do not necessarily have to associate with obesity [1].

The use of salt is a separate issue in nutrition of infants and toddlers. As recommended in infant feeding, salt should be not use [20, 21], just as in feeding children above a year. It is recommended to limit the use of this ingredient with the indication of other alternatives e.g. in the form of appropriate herbs. The excess of salt is often noted in infant and young child nutrition [19, 24]. Salt comes not only from it addition during preparation food, but also from the high proportion of salty snacks often eaten by children. To reduce the supply of salt in diet planning, it is a good idea to replace regular salt with low sodium salt.

The diet of young children should not only be well-balanced but also easy digestible, including the technological processing of food. Very common way of preparing dishes is frying also in the case of the youngest age group. However, in present study, every second institution did not use frying. Another issue is the assortment of fat - here the choice is not always correct. An insufficient supply of fat of different types in the diets of young children has been demonstrated in other nutritional studies [27].

In the light of the changing dietary recommendations for infants and young children in recent years, there is an urgent need for them to continuously disseminate and update knowledge among staff of DCCs. In addition, some of these recommendations are not mandatory in the whole country, resulting in their selective use. To make matters worse, many people involved in diet planning in DCCs do not have specialized education. The scale of errors and other irregularities in this area is also not well known because of the lack of large research on this subject. Existing research concerns only individual institutions, selected regions of the country or only selected issues of this area. Such studies also have a very different methodology for both data collection and development so they cannot be compared. On this basis, no binding conclusions can be drawn. In the light of the above there is an urgent need for continuous staff training, including planning and organization of nutrition, taking into account the latest scientific reports. However, that should be preceded by the issuance of uniform national recommendations, which should be obligatory. Such recommendations concerning the requirements to be fulfilled by foodstuffs used in the framework of collective nutrition for children and young people in the Regulations of the Minister of Health were published in 2015 [17] then corrected in 2016 [18]. It is worth pointing out that they do not refer to nurseries but only to older age groups of children, including preschool age. These recommendations are

often based on childcare facilities. However, they are not targeted to this age group and should therefore not be the basis for crèche staff. This situation shows that there is a need to publish similar recommendations for the feeding of young children in care and educational institutions. The crèche staff declare such a need, which is most often communicated during individual meetings in institutions. These data are not the subject of this study, however.

The overall quality of nutrition in selected nurseries varies, however. Based on the study, which compared the quality of feeding DCCs from Warsaw and other Polish cities [6] it was showed that it was better for the first ones - it was characterized by smaller fluctuations in the supply of selected groups of food products. According to the authors of the study, this could be attributed to the fact that feeding in Warsaw is governed by internal regulations [28] including model rationale and purchase specifications of products. In addition, this nursery team takes care of a dietician who is not listed in many other state agencies. Such a state of affairs is confirmed by the presented data. The different situation is in non-public institutions - in this case the dietician comes from a catering company and is not employed to plan child nutrition. Other authors also point out that child nutrition is not always planned by professionals in this area, and knowledge is derived from various sources. [14]. The results of these and other studies [14] argue for the need to create uniform, mandatory recommendations that will help to plan the nutrition of young children.

In conclusion, it can be stated that nutrition of young children should be preceded by proper planning. It is not easy, however, when there are no standardized and practical recommendations, as well as the child care facility most often does not employ professionals in this area. On the basis of the results, after considering the type of facility (public vs non-public), there was variation in nutritional quality. Although, in the non-public DCCs the average amount of money allocated per day to feed a child was two times higher than the rates in public DCCs, some errors in planning child nutrition have been observed. So funding is not decisive here. As present and other studies show, there is an urgent need for publication of standardized, understandable and practical recommendations for child nutrition. Adopting such recommendations in daily practice in all public and non-public crèches should improve the nutrition of children. Some limitations in the conclusions of this study result from the analysis of only selected aspects of nutrition, the lack of a representative group of DCCs, and the use of the tool that was dedicated to this study.

CONCLUSIONS

1. Nutrition practices in nurseries in Poland did not meet all nutrition recommendations.
2. Higher average amount of money allocated per day to feed a child in non-public nurseries did not provide adequate nutrition.
3. There is a need to publish standardized, understandable and practical recommendations in nutrition of children in nurseries. Adopting such recommendations in daily practice in all public and non-public crèches should improve the nutrition of children.

Acknowledgements

Authors of this publication would like to thank NUTRICIA Foundation and other partners of project: The Comenius Foundation for Child Development, The Institute of Mother and Child, Academic Business Incubators and Educators involved in the project. Study was performed as a research grant „Eating healthy, growing healthy” funded by Danone Ecosysteme.

Conflict of interest

The authors declare no conflict of interest.

REFERENCES

1. Crowe-White K., O'Neil C.E., Parrott J.S., Benson-Davies S., Droke E., Gutschall M., Stote K.S., Wolfram T., Ziegler P.: Author information et al. Impact of 100% fruit juice consumption on diet and weight status of children: An evidence-based review. *Crit Rev Food Nutr* 2016; 56(5): 871-84.
2. de Ruyter J.C., Olthof M.R., Seidell J.C., Katan M.B.: A trial of sugar-free or sugar-sweetened beverages and body weight in children. *N Engl J Med*. 2012; 367: 1397-406.
3. Główny Urząd Statystyczny Departament Badań Społecznych i Warunków Życia. Notatka informacyjna. Żłobki i kluby dziecięce w 2013 r. Materiał na konferencję prasową w dniu 30 maja 2014 r.
4. Guideline: Sugars intake for adults and children. Geneva: World Health Organization; 2015.
5. Hamulka J., Wawrzyniak A.: Ocena wartości odżywczej jadłospisów dekadowych dzieci w wieku 1-6 lat. *Bromat Chem Toksykol* 2003; 36(1): 7-11.
6. Harton A., Myszkowska-Ryciak J.: Wpływ edukacji żywieniowej na realizację zaleceń modelowej racji pokarmowej w wybranych żłobkach – wyniki wstępne. [The influence of nutrition education on the implementation of the recommendations of daily food ration in selected nurseries – preliminary results]. *Stand Med Pediatr* 2016; 13: 567-73.
7. Heyman M.B., Abrams S.A.: AAP Section On Gastroenterology, Hepatology, And Nutrition, AAP Committee On Nutrition. Fruit Juice in Infants,

- Children, and Adolescents: Current Recommendations. *Pediatrics*. 2017; 139(6):e20170967AAP 2017.
8. <http://www.zdrowojemy.info>
 9. Jarosz M. (red.): Normy żywienia dla populacji polskiej – nowelizacja. Wyd. IŻŻ, Warszawa 2012.
 10. Królak-Olejnik B., Hordowicz M.: Ocena sposobu żywienia noworodków i niemowląt do 12 miesiąca życia – wielośrodkowe badanie ankietowe. *Stand Med Pediatr* 2016; 13: 1057-1063.
 11. Marcinek K., Wójciak R.W., Krejpcio Z.: Assessment of the nutritional value of daily food rations of children aged 1-4 years. *Rocz Panstw Zakl Hig* 2016; 67(2): 169-177.
 12. Matić I., Jureša CV.: Compliance of menus with nutritional standards in public and private kindergartens in Croatia. *Rocz Panstw Zakl Hig* 2015; 66(4): 367-371.
 13. Myszkowska-Ryciak J., Harton A.: Ocena realizacji norm i zaleceń żywieniowych w wybranych placówkach przedszkolnych z terenu Krakowa. [Evaluation of the implementation of recommendations and dietary guidelines in selected kindergartens from the area of Cracow]. W: Gromadzka-Ostrowska J. (red.): *Metabolizm i fizjologia jako podstawy postępowania dietetycznego*. Wyd. SGGW, Warszawa 2016, 357-69.
 14. Neelon S.E.B., Burgoine T., Hesketh K.R.: Nutrition practices of nurseries in England. Comparison with national guidelines. *Appetite* 2015; 85: 22-29.
 15. Rakuś-Kwiatosz A., Frańczak P., Pac-Kożuchowska E.: Ocena sposobu żywienia niemowląt w świetle aktualnych zaleceń. *Czyn Ryz* 2011; 1: 18-27.
 16. Roszko-Kirpsza I., Olejnik B.J., Kulesza M., Jabłoński R., Czerech E., Maciorkowska E.: Żywnienie dzieci wiejskich w 2 i 3 roku życia. *Probl Hig Epidemiol* 2012; 93(3): 605-612.
 17. Rozporządzenie Ministra Zdrowia z dnia 26 sierpnia 2015 r. w sprawie grup środków spożywczych przeznaczonych do sprzedaży dzieciom i młodzieży w jednostkach systemu oświaty oraz wymagań, jakie muszą spełniać środki spożywcze stosowane w ramach żywienia zbiorowego dzieci i młodzieży w tych jednostkach. *Dz. U.*, poz. 1256.
 18. Rozporządzenie Ministra Zdrowia z dnia 26 lipca 2016 r. w sprawie grup środków spożywczych przeznaczonych do sprzedaży dzieciom i młodzieży w jednostkach systemu oświaty oraz wymagań, jakie muszą spełniać środki spożywcze stosowane w ramach żywienia zbiorowego dzieci i młodzieży w tych jednostkach. *Dz. U. Poz.* 1154.
 19. Stolarczyk A., Szott K., Socha P.: Ocena sposobu żywienia niemowląt w wieku 6 i 12 m.ż. w populacji pilskiej w odniesieniu do zaleceń Schematu Żywienia Niemowląt z 2007 r. *Stand Med Pediatr* 2012; 9: 545-551.
 20. Szajewska H., Horvath A., Rybak A., Socha P.: Karmienie piersią. Stanowisko Polskiego Towarzystwa Gastroenterologii, Hepatologii i Żywienia Dzieci. *Stand Med Pediatr* 2016; 13: 9-24.
 21. Szajewska H., Socha P., Horvath A., Rybak A., Dobrzańska A., Borszewska-Kornacka M.K., Chybicka A., Czerwionka-Szaflarska M., Gajewska D., Helwich E., Książek J., Mojska H., Stolarczyk A., Weker H.: Zasady żywienia zdrowych niemowląt. Zalecenia Polskiego Towarzystwa Gastroenterologii, Hepatologii i Żywienia Dzieci. *Stand Med Pediatr* 2014; 11: 321-338.
 22. Trafalska E., Szczepanik A., Kolmaga A.: Wartość energetyczna i odżywcza racji pokarmowych dzieci uczęszczających do żłobka. *Probl Hig Epidemiol* 2014; 95(2): 477-480.
 23. Weker H., Barańska M. (red.): *Żywnienie niemowląt i małych dzieci Zasady postępowania w żywieniu zbiorowym*. Warszawa 2014.
 24. Weker H., Hamulka J., Więch M., Głowacka K.: Analysis of nutrition of children In Warsaw day nurseries in view of current recommendations. *J Pre-Clin Res* 2010; 4(1): 63-67.
 25. Weker H., Strucińska M., Więch M., Riahi A., Barańska M.: Modelowa racja pokarmowa dziecka w wieku poniemowlęcym – uzasadnienie wdrożenia. *Stand Med Pediatr* 2013; 6: 815-30.
 26. Whitaker R.C., Gooze R.A., Hughes C.C., Finkelstein D.M.: A national survey of obesity prevention practices in Head Start. *Arch Pediatr Adolesc Med* 2009; 163(12): 1144-50.
 27. Weker H., Barańska M., Riahi A., Strucińska M., Więch M., Rowicka G., Dyląg H., Klemarczyk W., Bzikowska A., Socha P.: Nutrition of infants and young children in Poland - PITNUTS 2016. *Dev Period Med* 2017; XXI(1): 13-28.
 28. Zarządzenie nr 6/2016 Dyrektora Zespołu Żłobków m.st. Warszawy z dnia 15 stycznia 2016 r. zmieniające zarządzenie w sprawie zasad żywienia dzieci w żłobkach wchodzących w skład Zespołu Żłobków m.st. Warszawy.

Received: 24.06.2017

Accepted: 12.12.2017