

FINAL REPORT

COMPREHENSIVE ASSESSMENT OF DIET OF CHILDREN AGED 13-36 MONTHS IN POLAND

Study results 2010-2011



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Matki i Dziecka**



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**Study edited by
Halina Weker and Marta Barańska**

Warsaw 2011

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Subject matter of the report prepared by:

Prof. nadz. dr hab. n. med. Halina Weker¹

Mgr Marta Barańska²

Dr n. med. Joanna Mazur³

Prof. dr hab. med. Piotr Socha⁴

The study was conducted by:

Prof. nadz. dr hab. n. med. Halina Weker¹

Mgr Marta Barańska²

Dr n. med. Joanna Mazur³

Prof. dr hab. med. Piotr Socha⁴

Dr n. med. Grażyna Rowicka¹

Lek. med. Hanna Dyląg¹

Lek. med. Witold Klemarczyk¹

Mgr Małgorzata Strucińska¹

Mgr Małgorzata Więch¹

Mgr Agnieszka Riahi¹

Mgr Patrycja Kurpińska¹

¹Department of Nutrition, Institute of Mother and Child, Warsaw

²Department of Early Psychological Intervention, Institute of Mother and Child, Warsaw

³Department of Protection and Promotion of Children and Youth Health, Institute of Mother and Child, Warsaw

⁴Children's Memorial Health Institute, Warsaw

Institute of Mother and Child

Warsaw 2011

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I. Introduction

Proper nutrition is one of the most important factors for the child's proper psychosomatic development. The impact of early nutrition on the development of foetus and child, called a nutrition programming, is associated with short- and long-term effects in the functioning of the body, including the health condition in adulthood¹⁻⁴.

The rules for feeding children aged 13-36 months were established in 2007 and published as a medical standard in 2008 in Poland⁵. The idea behind the recommendations was to draw attention to proper nutrition in younger children in order to reduce the risk of obesity and malnutrition.

In the same year the nutrition standards for the Polish population that had been in force since 2001 were changed^{6,7}. The changes introduced in the nutrition standards related to demand for energy and nutrients (protein, vitamins) and were dictated by the current results of research in the area of nutritional science. It was proved that adherence to the nutrition standards through a balanced diet combined with proper physical activity is associated with reduced risk of diet-related diseases, including obesity⁸⁻¹³.

No comprehensive assessment of diet of children aged 1-3 years on a representative sample has been conducted in Poland yet. The results of individual tests conducted on small groups at various centres did not allow drawing conclusions regarding the nutrition in children at that age¹⁴⁻¹⁷. The conducted study is an attempt

¹ Barker D.J.: In utero programming of cardiovascular disease. *Theriogenology* 2000, 53(2), 555-574

² Barker D.J.: The developmental origins of adult disease. *J. Am. Coll. Nutr.* 2004, 23(6 suppl), 588S-595S

³ Neu J., Hauser N., Douglas-Escobar M.: Postnatal nutrition and adult health programming. *Semin. Fetal Neonatal Med.* 2007, 12(1), 78-86.

⁴ Cottrell E.C., Ozanne S.E.: Early life programming of obesity and metabolic disease. *Physiol. Behav.* 2008, 94(1), 17-28

⁵ Dobrzańska A., Czerwionka-Szaflarska M., Kunachowicz H., Książek J., Lukas W., Ryżko J., Socha J., Stolarczyk A., Szajewska H., Wąsowska-Królikowska K., Weker H.: Recommendations for nutrition of healthy children aged 1-3 years (13-36 months) prepared by the team of experts appointed by the National Consultant in Paediatrics. *Pediatr. Pol.* 2008, 82(1), 93-95

⁶ Jarosz M., Bułhak-Jachymczyk B. (eds): *Normy żywienia człowieka. Podstawy prewencji otyłości i chorób niezakaźnych.* Wydawnictwo Lekarskie PZWL, Warszawa 2008

⁷ Ziemiański Ś. [ed]: *Normy żywienia człowieka. Fizjologiczne podstawy.* Wydawnictwo Lekarskie PZWL, Warszawa 2001

⁸ ADA Position Paper. Dietary Guidance for Healthy Children Aged 2 to 11 Years. *J. Am. Diet. Assoc.* 2004, 104(4), 660-677

⁹ Baird J., Fisher D., Lucas P., Kleijnen J., Roberts H., Law C.: Being big or growing fast: systematic review of size and growth in infancy and later obesity. *BMJ* 2005 331(7522), 929

¹⁰ FAO/WHO/UNU Expert Consultation: *Human Energy Requirements.* Rome, World Health Organization 2004

¹¹ Garlick P.J., Rigo J., Ziegler E.E. (eds): *Protein and Energy Requirements in Infancy and Childhood.* Nestle Nutr. Workshop Ser. *Pediatr. Program, Nestec Ltd., Vevey/S. Karger A.G., Basel* 2006, 58, 39-50

¹² Oblacińska A., Weker H. (eds): *Profilaktyka otyłości u dzieci i młodzieży. Od urodzenia do dorosłości.* Wydawnictwo Help-Med., Kraków 2008

¹³ Wu T.C., Chen P.H.: Health consequences of nutrition in childhood and early infancy. *Pediatr. Neonatal.* 2009, 50(4), 135-142

¹⁴ Bała G., Czerwionka-Szaflarska M., Swincow G., Rytarowska A.: Analiza przyczyn niedożywienia u dzieci do lat 2. *Pediatr. Współ. Gastrol., Hepatol. Żyw. Dziecka* 2004, 6(1): 23-26

¹⁵ Weker H.: Badanie nad powiązaniem czynnika żywieniowego z otyłością prostą u dzieci. *Med. Wieku Rozw.* 2006, 1(1), X

to assess the functioning of current nutrition recommendations for healthy children aged 13-36 months in practice.

¹⁶ Szponar L., Sekuła W., Rychlik E., Ołtarzewski M., Figurska K.: Badania indywidualnego spożycia żywności i stanu odżywienia w gospodarstwach domowych. Prace Instytut Żywności i Żywienia, Warszawa 2003

¹⁷ Charzewska J., Weker H.: Ogólnopolskie badanie nad zawartością wapnia i witaminy D w dietach dzieci w wieku 4 lat. *Pediatr. Współ. Gastroenterol., Hepatol. Żyw. Dziecka* 2006, 8 (2), 107-109

II. Theoretical Assumptions and Study Overview

1. Dietary Patterns for Young Children

Natural feeding is the best way to feed infants. Natural food contains all the substances necessary for the development of child in the first months of life. They have nutritional and building functions, regulate immunity, have anti-inflammatory properties and prevent infections¹⁸⁻²⁰.

In artificial feeding of infants, the human milk is replaced with cow's milk, in which each fraction is modified so that its composition is similar to breast milk. The pattern for feeding infants who are not breastfed, amended in 2007 - 2008, adopted a lower energy rate in accordance with the standards: for children aged 0 - 3 months - 100 - 110 kcal/kg of body weight, for children aged 3 - 6 months - 90 - 95 kcal/kg of BW, for children aged 6 - 12 months - 95 - 100 kcal/kg of BW. Also, the following were adopted: a lower intake of protein - about 2 g/kg of BW, the introduction of gluten between 17th and 24th week of life (breastfed infants - 5 months of age, artificially fed infants - 6 months of age) for the prevention of celiac disease and wheat allergy, in the artificial feeding of infants - the use of infant formula in the first half year and follow-on milk in the second half year of child's life, complementary food in the composition, nutritional value and health quality appropriate to the needs of the particular child^{21, 22}.

The recommendations that form the safe nutrition model and pattern allow eliminating improper practices in infant nutrition.

¹⁸ European Network for Public Health Nutrition: Networking, Monitoring, Intervention and Training (EUNUTNET). Infant and young child feeding: standard recommendations for European Union. European Commission, Directorate Public Health and Risk Assessment, Luxemburg, 2006

¹⁹ ESPGHAN Committee on Nutrition. Breast-feeding: A Commentary by the ESPGHAN Committee on Nutrition. *J. Pediatr. Gastroenterol. Nutr.* 2009, 49(1), 112-125

²⁰ American Academy of Pediatrics. Working Group on Breastfeeding. Breastfeeding and use of human milk. *Pediatrics* 1997, 100, 1035-1039

²¹ Dobrzańska A., Czerwionka-Szaflarska M., Kunachowicz H., Książek J., Lukas W., Ryżko J., Socha J., Stolarczyk A., Szajewska H., Wąsowska-Królikowska K., Weker H.: Recommendations for nutrition of healthy children in the first year of age. Team of experts appointed by the National Consultant in Paediatrics. *Standardy Med.* 2007, 4, 2-5

²² Książek J., Weker H.: Nowe zalecenia żywienia niemowląt od roku 2007. *Pediatrica Współczesna. Gastroenterologia, Hepatologia i Żywnienie Dziecka* 2007, 9 (1): 9-14.

Children at post-infant age (aged 2 years) and aged 3 years also require a proper nutrition, because of the intensive mental, emotional and motor development. There are significant changes in the dietary pattern of children aged 2 - 3 years, associated with the transition from a typical liquid dairy diet to a more diversified diet (infant diet -> transitory diet -> family table diet²³). Also, the appropriate dietary behaviour and preferences are shaped during this age²⁴.

Demand for energy and most nutrients decreases per 1 kg of body weight compared with the infancy period, remaining at relatively constant level in the case of some nutrients.

This period is defined as the most critical for the risk of nutritional deficiencies, stunted growth and excess body weight / obesity. Inadequate nutrition or deficiencies in the developmental age affect the functioning and health in adulthood.

2. Food Rations for Children Aged 1-3 years

Appropriately selected products recommended for consumption during the day and composed into food / meals allow covering the demand for energy and all nutrients. Combining products from different groups into food / meals in amounts consistent with the standards determined in daily food rations is fundamental for proper nutrition of children²⁵. Table 1 shows the quantities of products recommended for consumption during the day, i.e. daily food rations (DFR), which provide a certain amount of energy and nutrients for children aged 13-36 months, according to various recommendations.

²³ Definitions:

Transitory diet - the selection of products / food suitable for the phase of child development, safe in terms of nutritional value and health quality, with semi-solid and solid consistency.

Family table diet - based on food / meals prepared for the whole family, suitably modified for the needs of the child in terms of consistency, organoleptic properties and method of preparation.

²⁴ Rudzka-Kańtoch Z., Weker H., Strucińska M.: Zalecenia żywieniowe dla małych dzieci (2-3 lata). Med. Wieku Rozw. 1998, II(2), 247-267

²⁵ Dzieniszewski J., Szponar L., Szczygieł B., Socha J.: Podstawy naukowe żywienia w szpitalach. Instytut Żywności i Żywienia, Warszawa 2001

Table 1.

Average daily food rations expressed in products for children aged 1-3 years, according to various standards ²⁶⁻²⁸

No.	Groups of products	Units	Amounts of products according to various recommendations		
			Institute of Mother and Child (1998)	Institute of Food and Nutrition (2001)	American Academy of Pediatrics (2005)
1.	Cereal products (based on flour)				
	bread	g	80	70	85
	flour, pasta	g	20	20	
	groat, rice, cereals	g	20	20	
1A.	Potatoes	g	150	150	
2.	Vegetables and fruits	g	650	600	2 cups (500 g)
	vegetables	g	350	350	1 cups (250 g)
	fruits	g	300	250	1 cups (250 g)
3.	Milk and dairy products (based on milk)	g			2 cups (500 g)
	milk and fermented milk beverages	g	500	600	
	cottage cheese	g	40	40	
	rennet cheese	g	5	-	
4.	Meat, cold meat, fish based on boneless meat	g			56
	meat, poultry	g	35	30	
	cold meat	g	15	20	
	fish	g	-	-	
4A.	Eggs	pc	¾	¾	
5.	Fats	g	25	25	
	animal fats: butter and cream	g	20	16	
	vegetable fats: oils	g	5	9	
6.	Sugar and sweets	g	45	30	

The rations shown in Table 1 differ in terms of quantity in some groups of products. However, these differences do not change the general nutritional value of daily food ration. The above food rations include a division of food into 6 basic groups. Such a division is usually used to assess the diet of children in public catering establishments (nurseries, kindergartens, orphanages and paediatric hospitals) by the inspection bodies (e.g. sanitary and epidemiological stations).

The distribution of energy value in daily food ration for each meal is presented in Table 2.

²⁶ Rudzka-Kańtoch Z., Weker H., Strucińska M.: Zalecenia żywieniowe dla małych dzieci (2-3 lata). Med. Wieku Rozw. 1998, II(2), 247-267

²⁷ Dzieniszewski J., Szponar L., Szczygieł B., Socha J.: Podstawy naukowe żywienia w szpitalach. Instytut Żywności i Żywienia, Warszawa 2001

²⁸ Zasady żywienia dzieci i młodzieży. Current position of the American Heart Association supported by the American Academy of Pediatrics. Medycyna Praktyczna 2005, 6(42), 41-48

Table 2.

The distribution of energy value in daily food ration for meals

Type of meal	%	Energy value of meals*
		Children 1-3 years
1st breakfast	25	250 kcal
2nd breakfast	10	100 kcal
Dinner	30	300 kcal
High tea	10	100 kcal
Supper	25	250 kcal
Total		1000 kcal

Type of meal	%	Energy value of meals*
		Children 1-3 years
Breakfast	25	250 kcal
Dinner	35	350 kcal
High tea	15	150 kcal
Supper	25	250 kcal
Total		1000 kcal

*Without 15% of loss that should be included in public catering (nurseries, kindergartens)

It is believed that children should eat 4-5 meals per day, including 3 basic ones - breakfast, dinner and supper. Before going to the nursery / kindergarten, the child should eat first breakfast or another small meal at home. In the nursery / kindergarten, children usually have breakfast, dinner and high tea. After returning home, the child should eat supper. The planning of menus allows avoiding many errors, such as repetition of dishes, their incorrect selection in terms of nutritional, energy and organoleptic value. Various institutions - e.g. nurseries, kindergartens, hospitals - usually prepare the so-called ten-day menus, which cover 10 days.

3. Demand for Energy and Nutrients ²⁹⁻³⁴

Energy Demand

Fulfilment of the child's energy needs is the main objective of nutrition. Energy is needed primarily to maintain vital functions, i.e. the basal metabolic rate (BMR), representing 50-60% of the total energy expenditure in healthy children, to maintain thermogenesis, which represents about 5-8% of energy expenditure, as well as physical activity (30-40 % of expenditure). Energy expenditure needed in the processes of growth decrease from about 35% of the total energy expenditure at the moment of birth to about 5% by the end of the first year of life.

The increase in the infant's body mass is the most vital indicator of a proper intake of energy. In two first years of life, children have the highest BMR due to the high rate of growth and development of new tissues. During the first six months of life, infants double their birth weight, and triple it at the end of the first year of life.

Energy needs are changing with physical activity and environmental conditions. They also undergo changes during disease of the organism. Physical activity plays a key role in psychological and sociological development of the child, so it is important that children receive the amount of energy sufficient to maintain their optimal physical activity.

Energy Sources. Energy from food is consumed in the form of fats, carbohydrates and proteins. In breast milk, which is the main source of energy for the

²⁹ Jarosz M., Bułhak-Jachymczyk B. (eds): Normy żywienia człowieka. Podstawy prewencji otyłości i chorób niezakaźnych. Wydawnictwo Lekarskie PZWL, Warszawa 2008

³⁰ Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids (Macronutrients) (2005). National Academy of Sciences. Institute of Medicine. Food and Nutrition Board.

³¹ Dobrzańska A., Czerwionka-Szaflarska M., Kunachowicz H., Książek J., Lukas W., Ryżko J., Socha J., Stolarczyk A., Szajewska H., Wąsowska-Królikowska K., Weker H.: Recommendations for nutrition of healthy children aged 1-3 years (13-36 months) prepared by the team of experts appointed by the National Consultant in Paediatrics. *Pediatr. Pol.* 2008, 82(1), 93-95

³² FAO/WHO/UNU Expert Consultation: Human Energy Requirements. Rome, World Health Organization 2004

³³ Human Vitamin and Mineral Requirements Report of a joint FAO/WHO expert consultation Bangkok, Thailand. Food and Nutrition Division FAO Rome Food and Agriculture Organization of the United Nations World Health Organization. FAO 2001

³⁴ Fleischer M.K., Weaver L., Branca F., Robertson A.: Feeding and nutrition of infants and young children. Guidelines for the World Health Organization European Region, with emphasis on the former Soviet Countries. WHO Regional Publication, European Series, No. 87, Kopenhaga, 2000

breastfed infants, fats constitute about 55% of energy. Fat is gradually being replaced by carbohydrates, which are the main source of energy in older children.

In the case of a healthy and properly growing child, the energy intake from fat and carbohydrates during the first months of life significantly exceeds the energy demand compared with an adult per 1 kg of body weight. WHO standards of 1985 on the recommended energy intake were based on the observations of average energy intake by healthy breastfed children in industrialized countries, taking into account a 5% safety margin³⁵.

In Poland it was assumed that the energy value of diets of infants in the first half year should be 600 kcal/day, and should provide 700 kcal/day in the second half³⁶. However, according to the medical standard, these values are about 600 kcal and 830 kcal, respectively³⁷.

Studies show that the introduction of complementary food before the 6th month of life may have an adverse effect on breastfeeding³⁸. It should be noted that when the child reaches the age of 6 months, feeding only in the form of breastfeeding does not correlate with the demand for energy in the second half year. Adequate intake of complementary food is essential for proper fulfilment of energy needs in children in the second half year of life.

Energy intake lower than the demand leads to inhibition or limitation of physical activity and/or growth and development of the infant. It may also contribute to protein and energy malnutrition. When energy intake exceeds the body's demand, the amount of fat and weight are increased. The level of reserve fat, measured as subcutaneous fat, increases rapidly up to the 4th month of life and decreases after that period up to about the 6th year of life.

³⁵ World Health Organisation. Energy and protein requirements. Report of a joint FAO/WHO/UNU expert consultation. Geneva, WHO, 1985. Technical Report Series, No. 724

³⁶ Jarosz M., Bułhak-Jachymczyk B. (eds): Normy żywienia człowieka. Podstawy prewencji otyłości i chorób niezakaźnych. Wydawnictwo Lekarskie PZWL, Warszawa 2008

³⁷ Książyk J., Weker H.: Nowe zalecenia żywienia niemowląt od roku 2007. *Pediatra Współczesna. Gastroenterologia, Hepatologia i Żywienie Dziecka* 2007, 9 (1): 9-14.

³⁸ Simondon K.B., Gartner A., Berger J., Cornu A., Massamba J.P., San Miguel J.N., Ly C., Missotte I., Simondon F., Traissac P., Delpeuch F., Maire B.: Effect of early, short-term supplementation on weight and linear growth of 4-7 month-old infants in developing countries: a four-country randomized trial. *Am. J. Clin. Nutr.* 1996, 64, 537-545

Demand for Basic Nutrients

Protein

Proteins are the main functional and structural component of every cell in the body. They maintain cell activity as enzymes, receptors, growth factors, intercellular substances, most of hormones (e.g. insulin and glucagon) and components of cell membranes. Proteins are essential for transport and storage of small molecules and ions (e.g. albumin, globulin, haemoglobin, myoglobin). They also coordinate movement (actin and myosin) and stabilize structures (e.g. collagen or keratin). They play an important role in defence against foreign substances (antibodies, cytokines) and in control of expression of genetic information. The building components of proteins are amino acids, which often act as precursors of synthesis of many coenzymes, hormones, nucleic acids and other molecules necessary for life³⁹. A proper intake of protein in the diet is necessary to maintain the functional and cellular integration of the system, as well as to ensure health and growth.

Protein intake is extremely important during infancy and childhood, when the body needs amino acids for rapid growth. All amino acids provide nitrogen necessary for the synthesis of human proteins.

The human body contains very little reserves of protein (about 3% of the total content of body weight). Pathological conditions, such as trauma, infection or starvation can cause the loss of protein in the body. If energy intake is too low to maintain an adequate level of synthesis of proteins, they are catabolized through the breakdown of muscle cells, which leads to receiving the required amino acids or energy.

Sources. The sources of high-quality protein are animal products (meat, fish, cheese, milk and eggs), and some vegetable products: soya, green beans and pulses. Wheat products are good sources of vegetable proteins.

³⁹ Murray R.K. et al.: Biochemia Harpera. PZWL, Warszawa 2004

Animal proteins (except for collagen) are wholesome, i.e. they contain all the essential amino acids and have a high biological value. Most of vegetable proteins, with the exception of soya, contain inadequate set of amino acids.

The proteins most similar (in terms of composition) to human proteins are egg white proteins (ovoalbumine) and cow's milk proteins (lactalbumin). The proportions of amino acid composition of these two proteins were found to be optimal and are used as a benchmark to compare the quality of other proteins.

Demand. Demand for protein for breastfed infants was estimated on the basis of the composition of breast milk. WHO standard was calculated based on the amount of protein found in breast milk, taking into account the biological variation (by adding 2 standard deviations above the mean).

Due to the fact that the biological value of protein in the diet of artificially fed infants is lower than in the case of protein in breast milk, higher amounts of the first are recommended to be used in the diet ⁴⁰. The recommended level of protein intake for infants in Poland at the age of 0-0.5 years was 2.1 g/kg of BW and for older infants, i.e. aged 0.5 - 1 years, these values are recommended to be 2.6 g/kg of BW ⁴¹. Currently, the standards for protein intake for infants in Poland are determined at the level of Adequate Intake (AI), based on breast milk protein at the level of 1.52 g/kg of BW/day in the first six months of life and 1.6 g/kg of BW/day in the second half year ^{42,43}. The medical standard for nutrition of children aged 13-36 months assumes that protein intake in children aged 13 - 36 months should be about 1 g/kg of body weight. This value results from the analysis of the recommendations in which the average protein intake in children aged 6 months - 10 years ranges from 1.12 g/kg/day at 6 months to 0.74 g/kg/day at the age of 10 years (safe intake was specified in the range of 0.91 g/kg/day to 1.43 g/kg/day, respectively) ⁴⁴.

Fat

⁴⁰ WHO. Energy and protein requirements. Report of a joint FAO/WHO/UNU expert consultation. Geneva, WHO, 1985. Technical Report Series, No. 724

⁴¹ Książek J., Weker H.: Nowe zalecenia żywienia niemowląt od roku 2007. *Pediatrica Współczesna. Gastroenterologia, Hepatologia i Żywnienie Dziecka* 2007, 9 (1): 9-14.

⁴² Jarosz M., Bułhak-Jachymczyk B. (eds): Normy żywienia człowieka. Podstawy prewencji otyłości i chorób niezakaźnych. Wydawnictwo Lekarskie PZWL, Warszawa 2008

⁴³ Socha J., Socha P., Gruszfeld D., Stolarczyk A., Dobrzańska A.: Znaczenie białka w żywieniu niemowląt. *Standardy Medyczne. Pediatrya* 2010, 7(1), 79-86.

⁴⁴ Dobrzańska A., Czerwionka-Szaflarska M., Kunachowicz H., Książek J., Lukas W., Ryżko J., Socha J., Stolarczyk A., Szajewska H., Wąsowska-Królikowska K., Weker H.: Recommendations for nutrition of healthy children aged 1-3 years (13-36 months) prepared by the team of experts appointed by the National Consultant in Paediatrics. *Pediatr. Pol.* 2008, 82(1), 93-95

Fats contained in the diet provide infants and young children with energy, essential fatty acids and fat-soluble vitamins (A, D, E). They also improve the taste of food, and therefore increase the absorption of energy. Particular fatty acids, especially long-chain polyunsaturated fatty acids, have characteristic and important physiological functions ^{45,46}.

Sources. Dietary fats contain all the lipids present in both plant and animal food. Fats from animal products (e.g. cow's milk and meat) contain mostly saturated fatty acids. Fats derived from plants and fish contain mainly mono- and polyunsaturated fatty acids.

Essential fatty acids (EFA), especially linoleic acid (LA) and α -linolenic acid (ALA) are not synthesized in the human body and must be supplied with food. They are the precursors of phospholipids, prostaglandins and long-chain polyunsaturated fatty acids, including arachidonic and docosahexaenoic acid. Infants have a limited ability to synthesize arachidonic acid (AA) and docosahexaenoic acid (DHA), therefore these acids are present in breast milk. DHA is necessary for a developing brain ⁴⁷.

Demand. About 50% of the total energy pool in human milk comes from fat. WHO recommends that between the 6th and 24th month of life the energy in the child's diet comes in 30%-40% from fat, of which linoleic acid should be about 3%, and α -linolenic acid - 0.3% ⁴⁸. EFA intake for this age group is still debated. According to the current standards in Poland, the percentage of energy from fat should be 41-35% in the diet of infants, and 30-35% in the case of children over 1 year of age ⁴⁹.

⁴⁵ Ziemiański S. [ed]: Normy żywienia człowieka. Fizjologiczne podstawy. Wydawnictwo Lekarskie PZWL, Warszawa 2001

⁴⁶ Jarosz M., Bułhak-Jachymczyk B. (eds): Normy żywienia człowieka. Podstawy prewencji otyłości i chorób niezakaźnych. Wydawnictwo Lekarskie PZWL, Warszawa 2008

⁴⁷ Czajkowski K., Czerwionka-Szaflarska M., Charzewska J., Chybicka A., Dobrzańska Anna, Gruszfeld Dariusz, Imiela J., Jackowska T., Helwich E., Kaczmarski M., Poręba R., Książek Janusz, Lauterbach R., Lukas W., Mojska H., Milanowski A., Radowski S., Ryżko Józef, Socha Piotr, Szajewska H., Szczapa J., Walkowiak J., Weker H.: Stanowisko grupy ekspertów w sprawie suplementacji kwasu dokosaheksaenowego i innych kwasów tłuszczowych omega-3 w populacji kobiet ciężarnych, karmiących piersią oraz niemowląt i dzieci do lat 3 Standardy Med. 2010 T. 7 nr 5/6 s. 729-736

⁴⁸ Fats and oils in human nutrition. Report of a joint expert consultation. Food and Agriculture Organization of the United Nations, Rome 1994 (FAO Food and Nutrition Paper, No.57)

⁴⁹ Jarosz M., Bułhak-Jachymczyk B. (eds): Normy żywienia człowieka. Podstawy prewencji otyłości i chorób niezakaźnych. Wydawnictwo Lekarskie PZWL, Warszawa 2008

Carbohydrates

Carbohydrates are a major component of food and energy source supplied to the body. Carbohydrates from food are converted and absorbed as monosaccharides, mainly glucose. Glucose is the main source of energy for all body tissues, especially for brain and erythrocytes, which are not able to use any other energy sources.

After digestion and absorption, carbohydrates may be available as glycogen stored in the liver, muscles or kidneys. Supply of glycogen and its release from the liver are controlled by insulin and glucagon - pancreatic hormones - and adrenaline - the adrenal hormone ⁵⁰.

For cells to be able to directly use the glucose, the body maintains its concentration in blood at a constant level of 70-115 mg/l.

Another important role of carbohydrates is associated with their impact on the senses. Sugars affect the taste, colour, consistency and structure of foods.

Sources. The first source of carbohydrates in the child's diet is breast milk containing lactose, or modified milk, followed by other dairy products. The good sources of carbohydrates among the complementary food are cereal products (flour, porridge, gruel, oatmeal, corn, bread, pasta), which contain 50-80% of starch. Starch is well tolerated and absorbed by infants and young children.

Cereal products and vegetables provide an adequate amount of starch to the child's diet. Due to the lack of gluten, rice is the most appropriate source of this polysaccharide during the introduction of first complementary foods to the child's diet. Fruits and vegetables contain about 10-25% of simple carbohydrates and disaccharides, and are a less significant source of this macro-component. Their role in nutrition is determined by the presence of dietary fibre, vitamins and minerals ⁵¹.

Demand. The human body uses carbohydrates as the energy source. An adequate daily intake of carbohydrates prevents excessive catabolism of tissue proteins, which is especially important during the period of growth and development. Physiological standards for carbohydrates are determined on the basis of intake. According to the

⁵⁰ Murray R.K. et al.: Biochemia Harpera. PZWL, Warszawa 2004

⁵¹ Jarosz M., Bułhak-Jachymczyk B. (eds): Normy żywienia człowieka. Podstawy prewencji otyłości i chorób niezakaźnych. Wydawnictwo Lekarskie PZWL, Warszawa 2008

current Polish standards, the recommended daily intake of absorbed carbohydrates is 60 g (AI) for children aged 0-0.5 years, 95 g (AI) for children aged 0.5-1 year and 130 g for children aged 1 - 3 years. Sucrose and simple sugars are only the source of energy. They do not interact with other nutrients. Diet with a high content of simple sugars has a reduced ability to provide adequate amount of nutrients, and may also cause diarrhoea, especially in the case of fruit juices rich in fructose. Reducing the intake of simple sugars may reduce the risk of dental caries at the preschool age.

It is recommended that the amount of energy introduced into the diet as sucrose does not exceed 10% of daily energy demand ⁵².

Demand for Vitamins

The Current Polish standards for the daily intake of vitamins are similar to the American recommendations ⁵³, with the exception of vitamin D ^{54,55}.

Vitamin A

Vitamin A affects the processes of vision, somatic functions, such as growth, development, as well as differentiation of epithelial and bone tissue. It also plays a significant role in the process of spermatogenesis, the development of placenta and embryo growth ⁵⁶.

Sources. This vitamin is available in the form of retinol in animal products, as well as in the form of carotenoids, mainly β -carotene, which are a part of plant products.

Significant amounts of retinol are contained in dairy products, eggs and fish. The sources of carotenoids are dark green leafy vegetables, yellow and orange vegetables and fruits.

⁵² Jarosz M., Bułhak-Jachymczyk B. (eds): Normy żywienia człowieka. Podstawy prewencji otyłości i chorób niezakaźnych. Wydawnictwo Lekarskie PZWL, Warszawa 2008

⁵³ Ibid.

⁵⁴ Dobrzańska A., Lukas W., Socha J., Wąsowska-Królikowska K., Chlebna-Sokół D., Milanowski A., Książek J., Szymankiewicz M., Chazewska J., Czech-Kowalska J., Weker H.: Polskie zalecenia dotyczące profilaktyki niedoborów witaminy D. *Klinika Pediatria* 2009; Szkoła Pediatrii cz. 13, 17 (5), 5117-5120

⁵⁵ Dobrzańska A., Lukas W., Socha J., Wąsowska-Królikowska K., Chlebna-Sokół D., Milanowski A., Książek J., Szymankiewicz M., Chazewska J., Czech-Kowalska J., Weker H.: Zalecenia Konsultanta Krajowego w dziedzinie Pediatrii dotyczące profilaktyki krzywicy i osteoporozy. *Standardy Med.* 2004, 1, 443-445

⁵⁶ Murray R.K. et al.: *Biochemia Harpera*. PZWL, Warszawa 2004

Children should be encouraged to eat food rich in vitamin A from the introduction of complementary foods into the diet.

Demand. According to the Polish standards, demand for vitamin A is 400 µg/day in the first half year and 500 µg/day in the second half year of the child's life. Recommendations for the intake of vitamin A for children aged 1-3 years are 400 µg/day. Suggested intake of about 400-500 µg of vitamin A, expressed as retinol equivalent, should meet the needs of healthy infants and young children ⁵⁷.

Vitamin B₁₂ (cyanocobalamin) and folic acid

Vitamin B₁₂ and folic acid are essential for the proper functioning of haematopoietic and nervous systems; they also play a role in the development of all body cells. Deficiencies in these vitamins can lead to disturbances in the functioning of the above-mentioned systems and megaloblastic anaemia ⁵⁸.

Sources. Human milk and cow's milk are good sources of these compounds (40-60 µg/l). Foliates are also found in dark green leafy vegetables, yeasts, sprouts and eggs. The main sources of vitamin B₁₂ are animal products - meat, smaller amounts are present also in fish, eggs and dairy products. Breastfed infants whose mothers are vegetarian are at risk of neurological diseases, anaemia, and even encephalopathy.

⁵⁷ Jarosz M., Bułhak-Jachymczyk B. (eds): Normy żywienia człowieka. Podstawy prewencji otyłości i chorób niezakaźnych. Wydawnictwo Lekarskie PZWL, Warszawa 2008

⁵⁸ Murray R.K. et al.: Biochemia Harpera. PZWL, Warszawa 2004

Vitamin C

Vitamin C plays an important role in the functioning of the immune system; it also has the properties neutralizing free radicals and stimulates collagen production in the body. This vitamin also increases the absorption of non-haem iron.

Sources. The best sources of vitamin C are vegetables, especially spinach, tomatoes, potatoes, broccoli and fruit - strawberries, currants, oranges and other citruses.

Vitamin D

Vitamin D plays an active role in the metabolism of calcium and phosphorus - it stimulates their absorption in the intestine, resorption in the kidney and the release and incorporation of these minerals in the bone system.

Sources. This vitamin is synthesized in the skin under the influence of sunlight. About 50% of the amount delivered with food is absorbed from the gastrointestinal tract. After absorption, the vitamin is transported with blood to the liver and kidneys, where it undergoes further transformation to biologically active 1.25-dihydroxyvitamin.

It occurs in foods of animal origin - in oily fish (sardines, salmon and tuna), margarines enriched with this vitamin, in dairy products, as well as in milk mixtures for babies and in eggs. In complementary food, the amount of vitamin D is low; therefore it is important that babies and young children have the possibility of exposure to sunlight^{59,60}.

Demand. Estimation of the recommended daily intake of vitamin D is difficult because it is synthesized by the body. Daily supplementation of this vitamin is recommended in the European countries. In most countries where the supplementation of this vitamin is recommended, its doses are within 7-10 µg (280-400 IU)/day.

⁵⁹ Dobrzańska A., Lukas W., Socha J., Wąsowska-Królikowska K., Chlebna-Sokół D., Milanowski A., Książyk J., Szymankiewicz M., Charzewska J., Czech-Kowalska J., Weker H.: Polskie zalecenia dotyczące profilaktyki niedoborów witaminy D. *Klinika Pediatria* 2009; Szkoła Pediatrrii cz. 13, 17 (5), 5117-5120

⁶⁰ Dobrzańska A., Lukas W., Socha J., Wąsowska-Królikowska K., Chlebna-Sokół D., Milanowski A., Książyk J., Szymankiewicz M., Charzewska J., Czech-Kowalska J., Weker H.: Zalecenia Konsultanta Krajowego w dziedzinie Pediatrrii dotyczące profilaktyki krzywicy i osteoporozy. *Standardy Med.* 2004, 1, 443-445

Currently, it is believed that vitamin D intake in infants and young children in Poland should be higher ⁶¹.

Demand for Minerals

Iodine

Iodine is an essential substrate for the synthesis of thyroid hormones - thyroxine and triiodothyronine, which play an important role in the metabolism of the whole body, also influencing thermogenesis and determining the proper development and functioning of the nervous system.

Sources. The content of iodine in food is determined by the environment. Deficiencies of iodine are present in the population living in mountainous regions. Marine fish are natural sources of iodine, and contain this element in large amounts (160-1400 µg/kg). A portion of about 200 g of marine fish consumed weekly should provide an average of about 50 µg of iodine/day.

Fruits, vegetables, cereals, meat and meat products contain from 20 to 50 µg of iodine/kg.

Zinc

Zinc included in many enzymes plays an important role in metabolic processes associated with the synthesis of proteins and nucleic acids.

Sources. Zinc contained in animal products is absorbed better than zinc in the products of plant origin. A good source of zinc is red meat, milk, milk products, and rice.

⁶¹ Płudowski P., Socha P. Paper in press (2011).

Calcium

Calcium is a major component of teeth and bones. It takes part in regulating many of metabolic processes in the body. Calcium is a cofactor of many enzymes necessary for the proper functioning of nerves and muscles. It is a part of the blood clotting factors and regulates many intracellular processes.

Sources. Milk and milk products are major sources of calcium. Other good sources include fish, nuts and green vegetables.

Demand. Demand for calcium in children is met by breast milk for the first six months of the child's life. After this period, milk should remain the main source of calcium in the child's diet.

Sodium

Sodium is present in the body mainly in ionic form and is the main cation in extracellular space. It is responsible for the proper functioning of the nervous system and muscles, regulates water management, and affects the acid-base balance of the system.

Sources. Sodium is contained in legumes, nuts, potatoes, as well as in meat, bananas and whole grains. Bread, meat products and processed food are also sources of sodium.

Iron

Iron is one of the components of haemoglobin and myoglobin. It is also a part of many enzymes necessary for transport and storage of oxygen and electron transport.

Sources. The main sources of this element in the diet are: meat and meat products, legumes, chives, parsley and dill green, cereal products. It is present in food in the heme and non-heme form (in plant products).

Insufficient intake of iron causes a negative balance and reduction of its deposits in the body, then it may result in biochemical changes. A longer low intake of iron may lead to iron deficiency anaemia, caused by the reduction in haemoglobin concentration. Symptoms of anaemia include changes in the mucosa, or diarrhoea. Hypoxia, which accompany anaemia, reduces the ability to make physical effort, and causes impaired psychomotor and intellectual development. Deficiencies of iron at the level of tissue iron may lead to lower immunity of the body.

The effects of too high iron intake may be the following: excessive accumulation of this element in tissues and their damage, as well as lowered absorption of other minerals, mainly copper and zinc.

Demand for energy and nutrients for children aged 0-36 months is shown in Table 3 (nutritional standards) and in Table 4 (medical standard).

Table 3.
Standards for energy and nutrients for infants and children aged 1-3 years ⁶²

A. Standards for energy

Group (age in years)	Body weight (kg)	Kcal/day			MJ/day		
		Physical Activity Level (PAL)			Physical Activity Level (PAL)		
		low	moderate	high	low	moderate	high
Infants 0-0.5 0.5-1	6.5 9		600 700			2.5 3.0	
Children 1-3 years	12		1000 (1.40)			4.2 (1.40)	

PAL - Physical Activity Level

B. Standards for protein

Group (age in years)	Body weight (kg)	Protein g/person/day		
		Estimated Average Requirement (EAR)	Recommended Dietary Allowances (RDA)	Adequate Intake (AI)
Infants 0-0.5 0.5-1	6.5 9			10 14
Children 1-3 years	12	12	14	

AI - Adequate Intake

RDA - Recommended Dietary Allowances

EAR - Estimated Average Requirement

B. Standards for fats

Group (age in years)	Body weight (kg)	Fats						
		% of energy				g/person/day		
		Total fat	Saturated fatty acids	n-6 fatty acids	n-3 fatty acids	Physical Activity Level (PAL)		
						low	moderate	high
Infants 0-0.5 0.5-1	6.5 9	40%-55%		n-6 4%-8% of energy from a daily diet		27-37		
				n-3		31-43		
Children 1-3 years	12	30-35%		2 g of alpha-linolenic acid and 200 mg of long-chain polyunsaturated fatty acids		33-39		

B. Standards for carbohydrates

Group (age in years)	Body weight (kg)	Carbohydrates g/person/day			
		Digestible			Dietary fibre
		Estimated Average Requirement (EAR)	Recommended Dietary Allowances (RDA)	Adequate Intake (AI)	
Infants 0-0.5 0.5-1	6.5 9			60 95	
Children 1-3 years	12	100	130		

⁶² Jarosz M., Bułhak-Jachymczyk B. (eds): Normy żywienia człowieka. Podstawy prewencji otyłości i chorób niezakaźnych. Wydawnictwo Lekarskie PZWL, Warszawa 2008

B. Standards for vitamins

Vitamins	Infants (age in months)		Children (age in years)
	0-6	7-12	1-3
A (µg/day)	400*	500*	400**
D ₃ (µg/day)	5*	5*	5*
E (mg/day) Tocopherol	4*	5*	6*
K (µg/day)	5*	10*	15*
B ₁ (mg/day) Thiamine	0.2*	0.3*	0.5**
B ₂ (mg/day) Riboflavin	0.3*	0.4*	0.5**
Niacin (mg/day)	2*	4*	6**
B ₆ (mg/day)	0.1*	0.3*	0.5**
Folate (µg/day)	65*	80*	150**
B ₁₂ (µg/day)	0.4*	0.5*	0.9**
Biotin (µg/day)	5*	6*	8*
Pantothenic acid (mg/day)	1.7*	1.8*	2*
Vitamin C (mg/day)	40*	50*	40**
Choline (mg/day)	125*	150*	200*

*AI - Adequate Intake

**RDA - Recommended Dietary Allowances

F. Standards for minerals for infants

Name	Infants (age in months)		Children (age in years)
	0-6	7-12	1-3
Calcium Ca mg	300*	400*	500*
Magnesium Mg mg	30*	70*	80**
Iron Fe mg	0.3*	11**	7**
Copper Cu mg	0.2*	0.3*	0.3**
Zinc Zn mg	2*	3**	3**
Selenium Se mg	15*	20*	20**
Iodine J µg	110*	130*	90**

*AI - Adequate Intake

**RDA - Recommended Dietary Allowances

The intake of energy, protein, fibre, vitamin D and calcium was determined according to the nutritional recommendations for children aged 13-36 months⁶³. Recommendations other than in the nutritional standards were adopted for those elements⁶⁴.

Recommendations for energy and protein intake according to the medical standard

For the proper formulation of recommendations, it is necessary to divide the total energy into individual food components: carbohydrates and fats, and to determine the protein intake.

⁶³ Dobrzańska A., Czerwionka-Szaflarska M., Kunachowicz H., Książek J., Łukas W., Ryżko J., Socha J., Stolarczyk A., Szajewska H., Wąsowska-Królikowska K., Weker H.: Zalecenia dotyczące żywienia dzieci zdrowych w wieku 1-3 lata (13-36 miesięcy) opracowane przez zespół ekspertów powołany przez konsultanta krajowego ds. pediatrii. *Pediatr. Pol.* 2008, 82(1), 93-95

⁶⁴ Jarosz M., Bułhak-Jachymczyk B. (eds): Normy żywienia człowieka. Podstawy prewencji otyłości i chorób niezakaźnych. Wydawnictwo Lekarskie PZWL, Warszawa 2008

Table 4 shows the daily energy intake for children aged 2 - 3 years according to the report of FAO/WHO/UNU of 2004.

Table 4.
Daily energy intake for children aged 13-36 months

Children	2 years / kg of body weight	3 years / kg of body weight	2 years / day	3 years / day
Boys	82 kcal/kg (345 kJ/kg)	84 kcal/kg (350 kJ/kg)	950 kcal (4 MJ)	1125 kcal (4.7 MJ)
Girls	80 kcal/kg (335 kJ/kg)	81 kcal/kg (339 kJ/kg)	850 kcal (3.6 MJ)	1050 kcal (4.4 MJ)

In relation to energy demand, it is useful to determine the need for energy, without taking into account protein - non-protein energy - and, separately, the need for protein.

As seen from the table, the average recommended amount of non-protein energy for children aged 2 - 3 years is 80 kcal/kg/day.

The distribution of non-protein energy intake should be as follows:

- 60% - 65% from carbohydrates

with limited intake of extra sugar for sweetening, to the maximum of 20% of the total energy intake, with recommended lower intake, which in practice means avoiding sweetened foods and beverages

- 35% - 40% from fat

with limited intake of fats containing saturated fatty acids, trans and cholesterol fatty acids

Protein intake in children aged 13 - 36 months should be about 1 g/kg pf body weight. This value results from the analysis of the recommendations in which the average protein intake in children aged 6 months - 10 years ranges from 1.12 g/kg/day at 6 months to 0.74 g/kg/day at the age of 10 years (safe intake is in the range of 0.91 g/kg/day to 1.43 g/kg/day, respectively) .

Recommendations for fibre intake according to the medical standard

The recommended dietary fibre intake should be around 10 - 15 g/day (maximum - 19 g/day), which in practice means eating whole grain products (thick groat, wholemeal bread), vegetables and fruits.

Recommendations for calcium and vitamin D intake according to the medical standard

The diet of children aged 13 - 36 months should include an adequate intake of calcium and vitamin D. The demand for calcium during this period of life is 800 - 1000 mg (equivalent to 400 ml of milk, 150 g of yoghurt and 30 g of cheese). Demand for vitamin D₃ is 400 IU per day.

III. Comprehensive Assessment of Diet of Children Aged 13-36 Months in Poland - Nationwide Study

1. Purpose of the Study

The aim of the conducted study was a comprehensive assessment of diets of children aged 13 - 36 months in Poland in connection with their nutritional status and in relation to the nutritional recommendations.

The research problem included the following specific objectives:

1. Assessment of nutritional status of children on the basis of selected anthropometric characteristics and indicators in relation to WHO standards
2. Assessment of nutrition in children at post-infant age compared with the current nutritional recommendations (2008).
3. The analysis of dietary behaviours of the studied children
4. The analysis of impact of family and environmental factors on the children's diet

2. Methodology

2.1. Selection of Sample

The study was conducted on a random representative sample of children aged 13-36 months.

The criterion for inclusion in the study group was the age of children (13-36 months), while the criterion for exclusion were any diseases requiring nutrition using methods other than oral.

The study project was approved by the Bioethics Commission at the Institute of Mother and Child in Warsaw.

Selection of children for the sample was carried out using a two-stage sampling. In the first stage of sampling, 40 counties were drawn from the sampling frame of 379 counties (simple sampling without replacement). These counties were drawn for the sample with a probability based on their size measured by the number of inhabitants. Data to determine the probability for each county was obtained from the Central Statistical Office (population in 2009).

Then, the second stage of sampling was conducted (simple sampling without replacement using random number tables), where the sampling frame was the base of children aged 13-36 months from 40 randomly selected counties. A sample of 10 participants of the study - children aged 13-36 months - was selected in each county. The survey and the child's nutrition diary were filled in by the mother/father or legal guardian of the child.

Interviewers contacted the selected parents / guardians of children - first by telephone and then directly to instruct how to fill in the survey (part D). The study included all the randomly selected children whose parents agreed to participate in the study. In the case of refusal to participate in the study, another child was selected randomly from the same county, so as to ensure the sample of 400 participants.

Sampling frame was prepared in accordance with the principles of: 1) relevance, 2) completeness, 3) exclusiveness, 4) accuracy, 5) convenience.

The list of counties included in the study is shown in Table 5.

Table 5.
List of counties in which the study was conducted

No.	County	Voivodeship	Number of surveys	Population	Probability of selection
1.	Sopot	Pomeranian	10	38 460	0.10%
2.	Krosno	Subcarpathian	10	47,534	0.12%
3.	Tuchola	Kuyavian-Pomeranian	10	47,622	0.12%
4.	Ryki	Lublin	10	58,342	0.15%
5.	Bielsko-Biała	Silesian (Podlaskie?)	10	58,463	0.15%
6.	Piekary Śląskie	Silesian	10	58,519	0.15%
7.	Opole	Opole (Lublin?)	10	62,048	0.16%
8.	Jelenia Góra	Lower Silesian	10	63,865	0.17%
9.	Krapkowice	Opole	10	66,795	0.18%
10.	Myszków	Silesian	10	71,517	0.19%
11.	Rybnik	Silesian	10	74,509	0.20%
12.	Kłobuck	Silesian	10	85,001	0.22%
13.	Świecie	Kuyavian-Pomeranian	10	97,642	0.26%
14.	Kędzierzyn-Koźle	Opole	10	100,320	0.26%
15.	Bydgoszcz	Kuyavian-Pomeranian	10	103,010	0.27%
16.	Oleśnica	Lower Silesian	10	104,047	0.27%
17.	Lubin	Lower Silesian	10	105,170	0.28%
18.	Krosno	Subcarpathian (Lubuskie?)	10	110,849	0.29%
19.	Wrocław	Lower Silesian	11	111,069	0.29%
20.	Gliwice	Silesian	10	114,093	0.30%
21.	Puławy	Lublin	10	115,860	0.30%
22.	Radomsko	Łódź	9	117,431	0.31%
23.	Otwock	Masovian	10	119,607	0.31%
24.	Zawiercie	Silesian	10	122,628	0.32%
25.	Tychy	Silesian	10	129,449	0.34%
26.	Żywiec	Silesian	10	150,850	0.40%
27.	Oświęcim	Lesser Poland	10	153,602	0.40%
28.	Świdnik	Lower Silesian (Lublin?)	10	159,323	0.42%
29.	Ostrów	Masovian (Greater Poland?)	10	159,332	0.42%
30.	Cieszyn	Silesian	10	172,809	0.45%
31.	Wałbrzych	Lower Silesian	10	179,526	0.47%
32.	Nowy Sącz	Lesser Poland	10	202,701	0.53%
33.	Sosnowiec	Silesian	10	219,300	0.57%
34.	Częstochowa	Silesian	10	239,319	0.63%
35.	Gdynia	Pomeranian	10	247,859	0.65%
36.	Kraków	Lesser Poland	10	253,344	0.66%
37.	Katowice	Silesian	10	308,548	0.81%
38.	Poznań	Greater Poland	10	319,258	0.84%
39.	Gdańsk	Pomeranian	10	456,591	1.20%
40.	Warszawa	Masovian	10	1,714,446	4.49%
	Total		400		

2.2. Study Tool

The study was conducted using the questionnaire by an external company, whose properly trained interviewers verified and assessed the diets of the studied children based on the recording of menus prepared by the parents / guardians.

The study tool was an original survey questionnaire survey with a form to record the children's menus during three consecutive days (Appendix, Annex No. 3).

The questionnaire included four parts:

- part A - collected data on the family - environmental conditions of the enrolled children;
- part B - concerned the data on the nutritional status determined based on anthropometric characteristics (height and body weight), recorded in health certificates and/or from the current measurements in a paediatric clinic in the PHC, as well as data on the child's health and activity obtained from the parents / guardians;
- part C - contains questions relating to diet, including dietary behaviour and food preferences of children;
- part D - a form to record the children's menus during three consecutive days, with instructions regarding recording for their mothers.

The study tool was validated in a pilot study conducted at the end of April and the beginning of May 2010 on a group of 40 mothers of children aged 13-36 months.

2.3. Methodology of Study

The nutritional status of the studied children was assessed based on the anthropometric characteristics - current body weight (kg) and body height (m), entered into the spreadsheet by parents / guardians from health certificate and / or current measurements made at the PHC clinic, which were used to calculate the values of BMI (kg/m²)⁶⁵ and then were standardized in relation to WHO centile ranks^{66,67}, obtaining a standardized BMI z-score⁶⁸ and centile values of body weight, body height and body mass index (BMI) for each child.

The following were used to assess the children's diets:

- answers to the questions in part C of the questionnaire relating to the nutrition - during infancy (retrospectively) and the current diet;
- part D of the questionnaire, mainly the record of children's menus of 3 consecutive days (including one holiday) used to estimate the average daily food ration (DFR) and calculate its energy and nutritional value using a nutritional computer program - Dieta 4.0⁶⁹.

⁶⁵ Body Mass Index BMI $BMI = \frac{\text{masa ciała [kg]}}{\text{wzrost}^2 \text{ ciała}^2 [\text{m}]}$

⁶⁶ WHO child growth standards : length/height-for-age, weight-for-age, weight-for-length, weight-for height and body mass index-for-age: methods and development. WHO 2006. <http://www.who.int/child-growth/standards/en/index.html>

⁶⁷ WHO Anthro for personal computers, version 3.1, 2010: Software for assessing growth and development of the world's children. Geneva: WHO, 2010

⁶⁸ Standardized Body Mass Index BMI z-score
 $BMI \text{ z-score} = \frac{\text{aktualny BMI dziecka} - \text{norma BMI dla danej płci i wieku dziecka}}{\text{odchylenie standardowe dla normy BMI}}$

⁶⁹ Wajszczyk B., Chwojnowska Z., Chabros E., Nasiadko D., Rybaczuk M. Manual of Dieta 4.0 Program for planning and current assessment of individual diet. NFNI, Warszawa 2010.

2.4. Methods of Statistical Analysis

The results obtained in the survey were analysed according to the developed plan (Appendix, Annex No. 4). Analyses carried out at the macroscale level were verified by the following hypotheses:

1. there is a relationship between children's nutritional status and the selected family and environmental factors
2. the children's diet varies depending on their demographic, family and environmental characteristics
3. there is a relationship between children's nutritional status and their diet.

The following statistical procedures were used to verify the above:

- non-parametric tests of differences in the distribution of variables (Mann-Whitney test, Kruskal-Wallis test)
- measure of dependence - Spearman's rank correlation coefficient
- polynomial logistic regression and odds ratio
- cluster analysis using the k-means (Quick Cluster)

Analysis plan in the microscale included:

1. preparation of frequency lists for answers to survey questions for the whole group of children (Appendix, Annex No. 5) and in divisions into subgroups based on age, nutritional status, diet, and family and environmental characteristics;
2. preparation of descriptive statistics for continuous variables in the survey and variables regarding the energy and nutritional value of average daily food rations of the studied children
3. responses to 25 specific study questions (Appendix, Annex No. 4).

The following statistical procedures were used to conduct the above analyses:

- non-parametric tests of differences in the distribution of variables: Mann-Whitney, Kruskal-Wallis tests
- measure of dependence - Spearman's rank correlation coefficient
- Chi-square dependence test
- Fisher's exact test

3. Characteristics of the Study Group

In the group of studied children (n=400) 222 were boys and 178 were girls aged 13-36 months. The average age of children was 23.1 ± 6.8 months. Among the studied children, 79% live in cities, 21% - in rural areas. Children came from families in which 34% of mothers had secondary education, 49% - higher education, whereas the remaining mothers (17%) had primary and vocational education. In Poland the proportion of women with higher education in *median age* of 30 years is 37.1% (source: *Table 59 (94). named "Births in 2009 by the order of birth and educational level of mothers and median age of mothers"*)⁷⁰.

35% of fathers had secondary education, 37% - higher education, and the remaining fathers (28%) had primary and vocational education. The proportion of mothers with secondary or higher education was much higher compared with the percentage of fathers with the same education. Mother of the studied children were better educated than the fathers.

Table 6 presents the characteristics of the study group of children (n=400).

⁷⁰ The Demographic Yearbook of Poland 2010. Central Statistical Office, Warsaw 2010.

Table 6.

Characteristics of the study group children (n=400) aged 13-36 months

No.	Variables	Children 13-36 months (n=400)	
1.	Age of children in months (mean \pm SD)	23.1 \pm 6.8	
2.	Sex girls boys	178 (44.5%) 222 (55.5%)	
3.	Place of residence city village	79% 21%	
4.	Education of parents	mother	father
	primary/vocational	17%	29%
	secondary	34%	34%
	higher	49%	37%
5.	Age of parents in years	mother	father
	mean \pm SD	29.4 \pm 4.82	31.7 \pm 9.49
	median	29	31

Assuming the age of the children in the study group (n=400) as the criterion, it was divided into two subgroups - the children in the second year of life (n=235) and the children in the third year of life (n=165) (Table 7).

Table 7.

Characteristics of the studied children in the 2nd and 3rd year of life

No.	Variables	Children in the second year of life (n=235)		Children in the third year of life (n=165)	
1.	Average age of children [months]	18.3 \pm 3.8		30.0 \pm 3.1	
2.	Sex girls boys	104 (44.3%) 131 (55.7%)		74 (44.9%) 91 (55.1%)	
3.	Place of residence city village	79% 21%		78% 22%	
4.	Education of parents	mother	father	mother	father
	primary/vocational	17.4%	27.2%	16.5%	30.7%
	secondary	31.5%	35.7%	37.2%	32.5%
	higher	51.1%	37.1%	46.3%	36.8%

Assuming the nutritional status assessed through the standardized body mass index BMI z-scores obtained through standardization of body mass index BMI of children to WHO centile ranks ^{71,72} as the criterion, the nationwide representative group (random selection n=400) was divided into five subgroups of children:

⁷¹ WHO child growth standards : length/height-for-age, weight-for-age, weight-for-length, weight-for height and body mass index-for-age : methods and development. WHO 2006. <http://www.who.int/child-growth/standards/en/index.html>

⁷² WHO Anthro for personal computers, version 3.1, 2010: Software for assessing growth and development of the world's children. Geneva: WHO, 2010

- **group I** - children with significant deficiency of body mass index (BMI z-score <-2.0) (n=58)
- **group II** - children with deficiency of body mass index (BMI z-score between -1.0 to -2.0) (n=50)
- **group III** - children with normal body weight (BMI z-score between -1.0 to +1.0) (n=182)
- **group IV** - overweight children (BMI z-score between +1.0 to +2.0) (n=58)
- **group V** - children with obesity (BMI z-score > +2.0) (n=52)

then the analysis of their died was conducted. The characteristics of the children in subgroups are shown in Table 8. Children in all subgroups came mainly from the urban environment, but there was a higher proportion of children with significant deficiency of body weight among the children living in rural areas. Parents of these children had lower education more often.

Table 8.
Characteristics of the studied children aged 13-36 months, taking into account the division into subgroups

Results		Nutritional status of children					
		Children with significant deficiency of body weight (BMI z-score<-2) group I	Children with deficiency of body weight (-2≤BMI z-score≤-1) group II	Children with normal body weight (-1<BMI z-score≤1) group III	Overweight children (1<BMI z-score≤2) group IV	Children with obesity (BMI z-score>+2) group V	
Number		n=58	n=50	n=182	n=58	n=52	
Age (months)		22.5±6.9	23.6±7.2	22.8±6.5	23.6±7.5	23.4±6.4	
Place of residence	city	67%	78%	81%	82%	79%	
	village	33%	22%	19%	18%	21%	
Education of parents	mother	primary	20%	14%	16%	19%	19%
		secondary	33%	28%	35%	30%	40%
		higher	47%	58%	49%	51%	41%
	father	primary	35%	24%	25%	32%	37%
		secondary	32%	35%	37%	30%	31%
		higher	33%	41%	38%	38%	32%

4. Discussion of Results

4.1. Assessment of the Nutritional Status of the Studied Children

Anthropometric data such as current weight (kg) and body height (m) of each child were used to calculate body mass index (BMI) and compare it to WHO standards⁷³⁻⁷⁵. Table 9 and Figure 1 show the number of the children in centile groups according to the values of body mass index (BMI). 33.2% of the study group of children were in the normal range - between the 25th and 75th centile of the BMI value; 47.0% of children were between the 15th and 85th centile. 26.0% of children were below the 15th centile, and 27.0% of children were at the level of the 85th centile or above.

Standardized BMI z-score independent of age and sex, calculated for each child was used to rate the nutritional status of children. It was shown that 45.5% of children had normal nutritional status and their BMI z-score ranged from -1.0 to +1.0. Deficiency of body weight was found in 12.5% of children (BMI z-score between -2.0 and -1.0), and 14.5% of children had significant deficiency (BMI z-score <-2.0). Overweight and obesity were reported in 14.5% and 13.0% of children, respectively. The percentage of children in five subgroups based on the nutritional status was not significantly different when taking into account division into sex or age (age of 2 and 3 years). No significant differences in the nutritional status were found between girls and boys, as well as between children in the 2nd and 3rd year of life (Fig. 2).

The above data indicate that about 54.5% of the studied children were characterized by abnormal nutritional status, which requires an in-depth analysis of the causes of its irregularity, also in conjunction with the nutritional factor.

⁷³ Oblacińska A., Weker H. (eds): Profilaktyka otyłości u dzieci i młodzieży. Od urodzenia do dorosłości. Wydawnictwo Help-Med., Kraków 2008

⁷⁴ WHO child growth standards : length/height-for-age, weight-for-age, weight-for-length, weight-for height and body mass index-for-age : methods and development. WHO 2006. <http://www.who.int/child-growth/standards/en/index.html>

⁷⁵ WHO Anthro for personal computers, version 3.1, 2010: Software for assessing growth and development of the world's children. Geneva: WHO, 2010

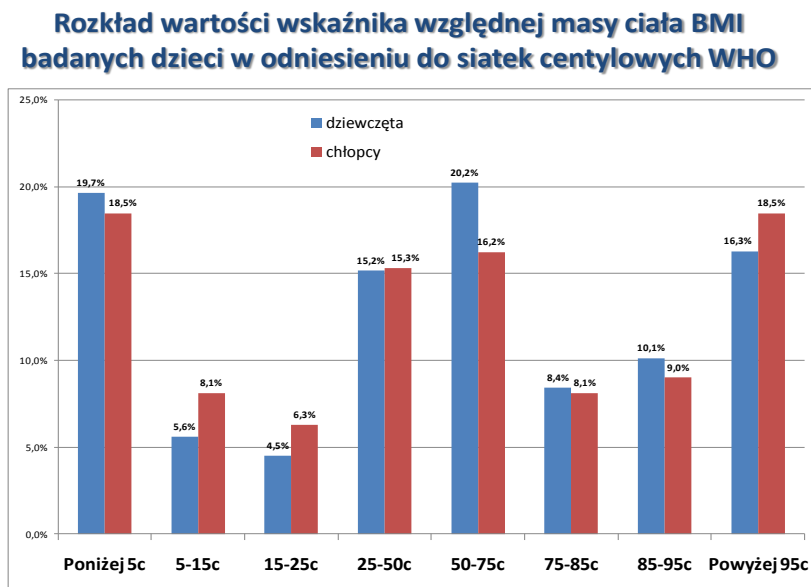
Table 9.

Number of children in centile groups according to BMI values

Age	Sex	Groups size	Number of children / centile BMI values							
			<5	≥5 and <15	≥15 and <25	≥25 and <50	≥50 and <75	≥75 and <85	≥85 and <95	≥95
age of 2 years	girls	104	20	6	5	17	21	10	11	14
	boys	131	26	10	8	22	23	8	6	28
age of 3 years	girls	74	15	4	3	10	15	5	7	15
	boys	91	15	8	6	12	13	10	14	13
Total		400	76	28	22	61	72	33	38	70
[%]		100	19.0	7.0	5.5	15.2	18.0	8.3	9.5	17.5

Fig. 1.

Distribution of the values of relative body mass index (BMI) of the studied children in relation to the WHO centile ranks

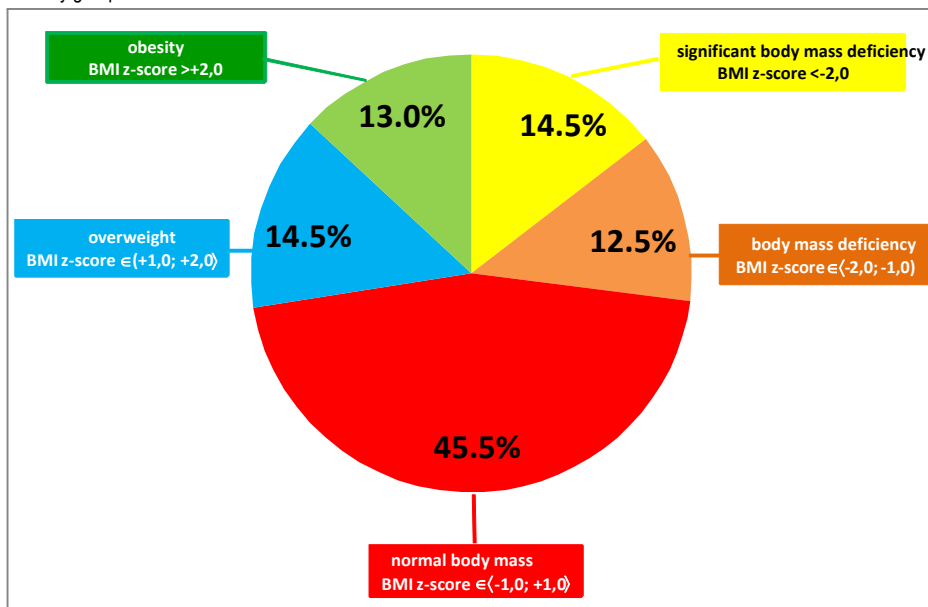


dziewczęta	girls
chłopcy	boys
Poniżej 5c	Below 5c
Powyżej 95c	Above 95c

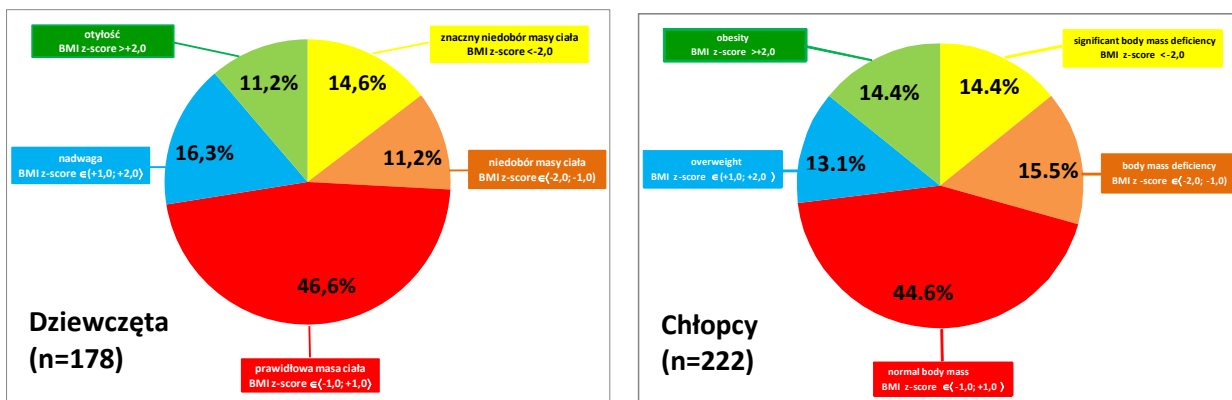
Fig. 2.

Assessment of the nutritional status of children aged 13-36 months (n=400) - BMI in relation to the WHO standard

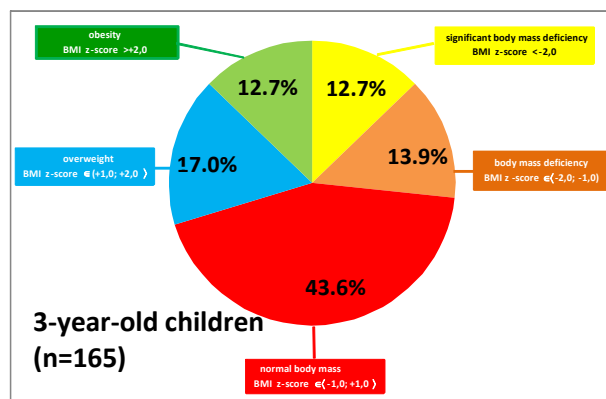
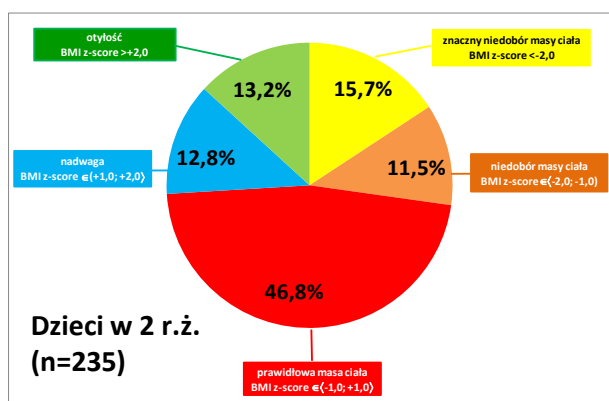
A. Study group n = 400



B. Division into sex



C. Division into age



Dzieci w 2 r.ż.	2-year-old children
Dziewczęta	Boys
Chłopcy	Girls
otyłość	obesity
nadwaga	overweight
prawidłowa masa ciała	normal body mass
niedobór masy ciała	body mass deficiency
znaczny niedobór masy ciała	significant body mass deficiency

4.2. Assessment of diet

4.2.1. The analysis of dietary patterns of the studied children

Dietary patterns, i.e. the frequency of food consumption, the selection of products in the diet, energy and nutritional value of daily diet, dietary behaviour of the studied children were assessed on the basis of data from the survey questionnaire (part C).

Among the studied children 85.25% were breastfed in the first year of life (n=341), including 12.75% only in the first half year (n=51). According to the pattern for artificial feeding of infants, 14.75% of children were fed with modified milk (n=59).

22% of children ate products containing small amounts of gluten before the 5th month of life, 47.75%, in the 5th and 6th month of life, and 29.5% of children in the second half year (Table 10). 76.25% of the children had fish in vegetable meals in the second half year.

Time of introduction of various types of complementary foods was diversified (Table 11). Mothers usually introduced gruel / porridge, puree / fruit and/or vegetable juices as the first products to the children's diets. Unfavourable trends associated with the expansion of diet were found in a significant percentage of studied children. Irregularities related to too quick introduction of complementary foods at the first year of life (gruel, porridge, including with gluten).

Among the studied children aged 13-36 months, 29 (7.25%) were still breastfed. Children were fed mainly using the family table diet (63.25%) and/or meals prepared separately for them (13%) (Tables 10 and 12). A large group of mothers (60%) used ready-made products for infants and young children in the daily diet of their children (Tables 10 and 12).

In the group of studied children, 88.5% were given various snacks between meals - mostly fruits and sweet desserts (Table 10).

Tables 13-15 present the frequency of consumption of various types of food products, milk, dairy products, and drinks.

Table 16 presents how frequently the meals were eaten by the studied children. Breakfast, dinner (usually one course) and supper were given to almost all the children, whereas about 70% and 1/5 of children had second breakfast and high tea, respectively. Every fourth child had a meal or drink at night.

Table 10.
Dietary patterns of the studied children (n=400) - data from the questionnaire

Children age		Number of children	Percentage of children
age of 0-12 months	Breastfeeding		
	yes	341	85.25
	no	59	14.75
	Breastfeeding only for at least 6 months	51	12.75
	Introduction of products containing gluten		
	Before the fifth Month	88	22.00
	In the fifth Month	72	18.00
	In the sixth Month	119	29.75
	In the 7th - 9th month	91	22.75
	In the 9th - 12th month	27	6.75
age of 13-36 months	Introduction of fish	305	76.25
	Breastfeeding + complementary food	29	7.25
	Diet of food prepared separately for the child	52	13.00
	Diet with the use of ready-made food for infants and children	240	60.00
	Family table diet	253	63.25
	Snacks	354	88.50
	Fruits	319	79.75
	Chips, fries	34	8.50
	Sandwiches	119	29.75
	Candies, lollipops	131	32.75
	Chocolate, cookies	182	45.50
	Sweet dairy desserts (cheese, yoghurt, puddings)	252	63.00
	Crisps, salty sticks	221	55.25

Table 11.
Introduction of complementary foods into the diet of the studied children in the first year of life according to the declarations of mothers

Time of the product introduction	First complementary products introduced for the studied children							
	Fruits		Vegetables		Porridge, gruel without milk		Modified milk, milk porridge	
	N	%	N	%	N	%	N	%
first month of life	--	--	--	--	1	0.25	1	0.25
second month of life	--	--	--	--	15	3.75	4	1.00
third month of life	22	5.50	19	4.75	65	16.25	8	2.00
fourth month of life	109	27.25	106	26.50	59	14.75	40	10.00
fifth month of life	86	21.50	88	22.00	39	9.75	32	8.00
sixth month of life	78	19.50	76	19.00	14	3.50	18	4.50
seventieth month of life	20	5.00	29	7.25	2	0.50	6	1.50
eighth month of life	6	1.50	5	1.25	3	0.75	3	0.75
ninth month of life	2	0.50	3	0.75	198	49.50	1	0.25
tenth month of life	1	0.25	2	0.50	202	50.50	1	0.25
Total	324	81.00	328	82.00	400	100.00	114	28.50
No data	76	19.00	72	18.00	1	0.25	286	71.50
Total	400	100.00	400	100.00	15	3.75	400	100.00

Table 12.

Method of preparation of meals for children aged 13-36 months

Meals for the child		Daily	At least 2-4 times a week	Once a week	Less than once a week	Never or almost never	No data
I cook separately for the child	N	52	89	28	48	180	3
	%	13.00	22.25	7.00	12.00	45.00	0.75
I use ready-made preserves for infants and children, including:	N	240	73	21	18	45	3
	%	60.00	18.25	5.25	4.50	11.25	0.75
ready-made soup/meals	N	33	52	36	60	208	11
	%	8.25	13.00	9.00	15.00	52.00	2.75
porridge, gruel	N	131	80	37	27	121	4
	%	32.75	20.00	9.25	6.75	30.25	1.00
fruit purees, puddings	N	94	103	49	35	110	9
	%	23.50	25.75	12.25	8.75	27.50	2.25
juices, beverages	N	185	97	23	26	65	4
	%	46.25	24.25	5.75	6.50	16.25	1.00
teas	N	179	53	30	19	111	8
	%	44.75	13.25	7.50	4.75	27.75	2.00
The child eats meals prepared for the whole family	N	253	85	19	19	20	4
	%	63.25	21.25	4.75	4.75	5.00	1.00
I buy ready-made meals prepared outside the house (e.g. Chinese food, ravioli, pizza, etc.)	N	3	6	16	56	304	15
	%	0.75	1.50	4.00	14.00	76.00	3.75

Table 13.

Frequency of consumption of various food products by the studied children

		Daily	At least 2-4 times a week	Once a week	Less than once a week	Never or almost never	No data
Fresh fruits	N	268	117	3	6	6	--
	%	67.00	29.25	0.75	1.50	1.50	--
Frozen fruits	N	1	18	24	103	247	7
	%	0.25	4.50	6.00	25.75	61.75	1.75
Fruit juices	N	219	132	19	19	11	--
	%	54.75	33.00	4.75	4.75	2.75	--
Vegetable and vegetable - fruit juices	N	62	100	48	79	110	1
	%	15.50	25.00	12.00	19.75	27.50	0.25
Fresh vegetables, including potatoes	N	260	124	10	4	2	--
	%	65.00	31.00	2.50	1.00	0.50	--
Frozen vegetables	N	5	53	83	98	160	1
	%	1.25	13.25	20.75	24.50	40.00	0.25
Poultry meat	N	43	282	54	8	12	1
	%	10.75	70.50	13.50	2.00	3.00	0.25
Red meat	N	8	99	124	87	81	1
	%	2.00	24.75	31.00	21.75	20.25	0.25
Fresh fish	N	4	35	128	83	148	2
	%	1.00	8.75	32.00	20.75	37.00	0.50
Frozen fish	N	4	20	124	114	137	--
	%	1.00	5.00	31.00	28.50	34.25	--
Smoked fish	N	2	6	31	81	280	--
	%	0.50	1.50	7.75	20.25	70.00	--
Canned fish	N	1	2	19	47	329	2
	%	0.25	0.50	4.75	11.75	82.25	0.50
Eggs	N	15	218	116	37	14	--
	%	3.75	54.50	29.00	9.25	3.50	--
Butter	N	256	89	19	8	28	--
	%	64.00	22.25	4.75	2.00	7.00	--
Olive oil	N	30	105	53	76	134	2
	%	7.50	26.25	13.25	19.00	33.50	0.50
Vegetable oils	N	33	128	81	68	88	2
	%	8.25	32.00	20.25	17.00	22.00	0.50
Margarine	N	24	51	42	55	226	2
	%	6.00	12.75	10.50	13.75	56.50	0.50
Cereals	N	57	125	86	43	87	2
	%	14.25	31.25	21.50	10.75	21.75	0.50
Groats (barley, buckwheat)	N	8	68	126	116	80	2
	%	2.00	17.00	31.50	29.00	20.00	0.50
Dark bread	N	28	86	63	85	137	1
	%	7.00	21.50	15.75	21.25	34.25	0.25
Wheat bread	N	215	117	27	23	15	3
	%	53.75	29.25	6.75	5.75	3.75	0.75
Tomato concentrate, paste	N	5	43	139	131	78	4
	%	1.25	10.75	34.75	32.75	19.50	1.00
Stock cubes, broths	N	33	71	51	83	161	1
	%	8.25	17.75	12.75	20.75	40.25	0.25
Vegetable seasoning in the form of granules, powder	N	25	75	35	58	207	--
	%	6.25	18.75	8.75	14.50	51.75	--
Concentrates of soups and sauces in powder	N	2	20	23	48	306	1
	%	0.50	5.00	5.75	12.00	76.50	0.25

Table 14.

Frequency of consumption of various dairy products by the studied children

		Daily	At least 2-4 times a week	Once a week	Less than once a week	Never or almost never	No data
Modified milk	N	203	23	6	12	151	5
	%	50.75	5.75	1.50	3.00	37.75	1.25
High-fat milk (3.5 - 3.2)	N	47	55	28	16	244	10
	%	11.75	13.75	7.00	4.00	61.00	2.50
Semi-skimmed milk (1.5 - 2)	N	36	30	16	22	285	11
	%	9.00	7.50	4.00	5.50	71.25	2.75
Skimmed milk (1.5 - 0.5)	N	3	10	8	6	362	11
	%	0.75	2.50	2.00	1.50	90.50	2.75
Natural yoghurt, kefir	N	16	94	69	56	161	4
	%	4.00	23.50	17.25	14.00	40.25	1.00
Fruit yoghurt	N	97	180	51	19	47	6
	%	24.25	45.00	12.75	4.75	11.75	1.50
Natural cheese / cottage cheese	N	19	112	92	55	114	8
	%	4.75	28.00	23.00	13.75	28.50	2.00
Fruit, flavoured cheese	N	64	168	73	24	64	7
	%	16.00	42.00	18.25	6.00	16.00	1.75
Dairy dessert	N	26	102	62	59	141	10
	%	6.50	25.50	15.50	14.75	35.25	2.50
Hard cheese	N	29	163	63	46	94	5
	%	7.25	40.75	15.75	11.50	23.50	1.25
Other (specify)	N	6	2	7	--	--	385
	%	1.50	0.50	1.75	--	--	96.25

Table 15.

Frequency of consumption of various drinks by the studied children

		Daily	At least 2-4 times a week	Once a week	Less than once a week	Never or almost never	No data
Water	N	267	64	13	15	38	3
	%	66.75	16.00	3.25	3.75	9.50	0.75
Juices, nectars	N	203	135	27	17	15	3
	%	50.75	33.75	6.75	4.25	3.75	0.75
Sweet still and carbonated drinks	N	26	38	27	25	278	6
	%	6.50	9.50	6.75	6.25	69.50	1.50
Tea	N	207	100	20	15	56	2
	%	51.75	25.00	5.00	3.75	14.00	0.50
Chicory coffee (without milk)	N	5	13	15	23	338	6
	%	1.25	3.25	3.75	5.75	84.50	1.50
Compote	N	37	98	74	79	108	4
	%	9.25	24.50	18.50	19.75	27.00	1.00
Homemade soups	N	206	154	25	5	9	1
	%	51.50	38.50	6.25	1.25	2.25	0.25
Other (specify)	N	9	2	--	--	--	389
	%	2.25	0.50	--	--	--	97.25

Table 16.
Frequency of eating meals by the studied children (n=400)

Meals		Daily	At least 2-4 times a week	Once a week	Less than once a week	Never or almost never	No data
1st breakfast	N	394	4	1	0	1	0
	%	98.50	1.00	0.25	0.00	0.25	0.00
2nd breakfast	N	294	78	8	4	11	5
	%	73.50	19.50	2.00	1.00	2.75	1.25
Soup	N	241	140	14	1	4	0
	%	60.25	35.00	3.50	0.25	1.00	0.00
Main course	N	229	148	7	7	7	2
	%	57.25	37.00	1.75	1.75	1.75	0.50
High tea	N	280	95	7	6	10	2
	%	70.00	23.75	1.75	1.50	2.50	0.50
Supper	N	375	21	1	1	1	1
	%	93.75	5.25	0.25	0.25	0.25	0.25
Meal / snack before bedtime	N	83	57	37	66	147	10
	%	20.25	14.25	9.25	16.50	36.75	2.50
Meal/drink at night	N	106	57	22	36	179	10
	%	26.50	11.75	5.50	9.00	44.75	2.50

K-means clustering analysis (Quick Cluster) was used to determine the dietary patterns of the studied children. Clustering/grouping was based on the average daily food rations of the studied children. Five clusters / groups of children (sizes from 37 to 132) with different average ages and diets were obtained (Table 17). Diet of younger children - 2 year old (clusters 2 and 4) and older children - 3 year old (clusters 1, 3 and 5) differed in terms of product selection in their diets. Diets of younger children were characterized by far greater share of products from the group of *foodstuffs for particular nutritional use*, including milk, modified milk, porridges / gruels, fruit purees and juices. Younger children with less educated parents, living mainly in urban areas (cluster 2) consumed significantly more meat, juices, sugar / sweets than children of parents with higher education (focus 4). Diets of older children were identified as milk and carbohydrate diets. The main sources of carbohydrates were juices (clear and purees, including the group of *foodstuffs for particular nutritional use*), fruits, potatoes, vegetables, bread and sugar / sweets. Most sugar / sweets were consumed by the children from the clusters characterized by the highest percentage of children with

excess body weight (cluster 1 - 42.9 g; cluster 3 - 31.3 g; cluster 5 - 41.0 g). It was shown that the nutritional recommendations were not fully implemented in any of five clusters.

Table 17. Characteristic of the current dietary patterns of the studied children - the results of statistical analysis

A. Characteristics of children in five clusters

Variables		Clusters					Total	p
		Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5		
Number		37	37	132	117	77	400	--
Sex	K	45.9%	32.4%	36.4%	51.3%	53.4%	44.5%	0.035
	M	54.1%	67.6%	63.6%	48.7%	46.8%	55.5%	
Age	Mean ± SD	24.27±7.24	22.49±6.93	24.04±6.96	20.57±6.02	24.99±6.37	23.09±6.8	0.0001
	Description	older	younger	older	younger	older	--	
Place of residence	City	89.2%	91.9%	77.3%	77.0%	70.3%	78.4%	0.047
	Village	10.8%	8.1%	22.7%	23.0%	29.7%	21.6%	
	Description	Majority of urban children in relation to the general population	Majority of urban children in relation to the general population	As in the general population	As in the general population	Slightly more rural children than in the general population	--	
Education of mothers	Primary/vocational	13.5%	32.4%	13.7%	11.1%	26.0%	17.0%	0.001
	Secondary	45.9%	21.6%	29.0%	33.3%	42.9%	33.8%	
	Higher	40.5%	45.9%	57.3%	55.6%	31.2%	49.1%	
	Description	More mothers with secondary education in relation to the general population	More less educated mothers in relation to the general population	More mothers with higher education in relation to the general population	More mothers with higher education in relation to the general population	More less educated mothers in relation to the general population	--	
Education of fathers	Primary/vocational	27.0%	43.2%	22.1%	15.5%	53.2%	28.6%	0.0001
	Secondary	21.6%	29.7%	41.2%	37.9%	26.0%	34.4%	
	Higher	51.4%	27.0%	36.6%	46.6%	20.8%	36.9%	
	Description	More fathers with higher education in relation to the general population	More less educated fathers in relation to the general population	As in the general population	More fathers with higher education in relation to the general population	More less educated fathers in relation to the general population	--	
Breastfeeding in the first year of life	YES	86.5%	81.1%	88.6%	86.3%	79.2%	85.3%	0.39
	NO	13.5%	18.9%	11.4%	13.7%	20.8%	14.8%	
Nutritional status	Significant deficiency of BW	16.2%	5.4%	14.4%	14.5%	18.2%	14.5%	0.18
	Deficiency of BW	8.1%	27.0%	10.6%	12.0%	11.7%	12.5%	
	Normal nutritional status	35.1%	48.6%	45.5%	53.0%	37.7%	45.5%	
	Overweight	21.6%	8.1%	14.4%	11.1%	19.5%	14.5%	
	Obesity	18.9%	10.8%	15.2%	9.4%	13.0%	13.0%	
	Description	The highest number of children with excess body weight in relation to the general population	Majority of children with deficiency of body weight	As in the general population	The highest number of children with normal nutritional status	The lowest number of children with normal nutritional status	--	

B. Selection of products in the diets of children from five clusters with different nutrition - final cluster centres (g)

Groups of products	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
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	(n=37)	(n=37)	(n=132)	(n=117)	(n=77)
Bread	60.6	44.6	50.9	37.6	51.8
Groat, rice, cereals	21.0	21.2	21.5	20.0	32.7
Potatoes	132.6	107.0	108.6	83.2	143.5
Vegetables	108.6	132.8	119.9	99.1	108.6
Fruits	170.2	254.3	171.6	128.7	170.2
Juices	487.3	302.8	117.4	64.8	132.3
Drinking milk	227.4	91.4	130.3	64.6	433.4
Modified milk	19.6	410.5	54.8	422.9	22.2
Fermented milk beverages	56.1	36.2	45.9	32.8	46.6
Meat, poultry	46.6	60.1	44.5	38.7	49.2
Cold meat	25.6	14.3	24.0	17.4	19.9
Eggs	19.9	15.6	23.6	16.5	25.2
Butter	8.3	7.8	9.1	6.1	8.9
Margarine	5.5	3.5	3.4	1.5	4.2
Sugar	42.9	32.9	31.3	24.4	41.0

4.2.2. Assessment of share of food products in food rations of children

Analysis of food consumption by children (n = 400) determined on the basis of the 3-day records of menus showed non-compliance with the nutritional recommendations (Table 18). In relation to the most recent food ration model, which is, however, referring to the earlier nutritional standards (2001), prepared at the Institute of Food and Nutrition (2001) ⁷⁶, children consumed less bread, especially wholemeal grains, vegetables, milk and fermented milk beverages. They definitely ate more meat and cold meat.

Analysis of the diets of children at post-infant and preschool age in other countries showed similar trends in terms of nutrition - the wrong choice of products in daily food rations of children and excess products that are sources of animal protein ⁷⁷⁻⁸⁹.

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⁷⁷ Fox M.K., Pac S., Devaney B., Jankowski L.: Feeding infants and toddlers study: what foods are infants and toddlers eating? J. Am. Diet. Assoc. 2004, 104, 22-30

⁷⁸ Mennella J.A., Ziegler P., Briefel R., Novak T.: Feeding infants and toddlers study: the types of foods fed to Hispanic infants and toddlers. J. Am. Diet. Assoc. 2006, 106(1 Suppl 1), S96-106

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⁸¹ Szponar L., Sekuła W., Rychlik E., Oltarzewski M., Figurska K.: Badania indywidualnego spożycia żywności i stanu odżywienia w gospodarstwach domowych. Prace Instytut Żywności i Żywienia, Warszawa 2003

⁸² Szponar L., Rychlik E., Oltarzewski M.: Badania indywidualnego spożycia żywności i stanu odżywienia w gospodarstwach domowych, Works of NFNI 101, Warszawa 2003.

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⁸⁶ Fox M.K., Reidy K., Novak T., Ziegler P.: Sources of energy and nutrients in the diets of infants and toddlers. J. Am. Diet. Assoc. 2006, 106(1 Suppl 1), S28-S42

⁸⁷ Taveras E.M., Berkey C.S., Rifas-Shiman S.L., Ludwig D.S., Rockett H.R., Field A.E., Colditz G.A., Gillman M.W.: Association of consumption of fried food away from home with body mass index and diet quality in older children and adolescents. Pediatrics 2005, 116(4), e518-e524

⁸⁸ Lorson B. A., Melgar-Quinonez H. R., Taylor C. A.: Correlates of fruit and vegetable intakes in US children, J. Am. Diet. Assoc. 2009; 109(3):474-478

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Table 18.

Average daily food ration (DFR) expressed in products for children aged 1-3 years in relation to various standards ⁹⁰⁻⁹²

No.	Groups of products	Units	Study results	Amounts of products according to various recommendations		
			$\bar{x} \pm SD$	Institute of Mother and Child (1998)	Institute of Food and Nutrition (2001)	American Academy of Pediatrics (2005)
1.	Cereal products (based on flour)	g	81.4±33.3			
	bread	g	47.5±30.5	80	70	85
	flour, pasta	g	22.5±15.8	20	20	
	groat, rice, cereals	g	23.2±20.6	20	20	
1A.	Potatoes	g	110.0±74.2	150	150	
2.	Vegetables and fruits	g	278.1±136.3	650	600	2 cups(500 g)
	vegetables	g	111.8±61.5	350	350	1 cups (250 g)
	fruits	g	166.3±103.5	300	250	1 cups (250 g)
3.	Milk and dairy products (based on milk)	g	523.0±222.3			2 cups (500 g)
	milk and fermented milk beverages	g	402.9±197.1	500	600	
	cottage cheese	g	17.3±20.6	40	40	
	rennet cheese	g	4.7±6.0	5	-	
4.	Meat, cold meat, fish based on boneless meat	g	53.8±34.7			56
	meat, poultry	g	45.4±30.7	35	30	
	cold meat	g	20.5±20.0	15	20	
	fish	g	8.4±17.0	-	-	
4A.	Eggs	g /pc	20.7±17.3	¾	¾	
5.	Fats	g	15.9±8.5	25	25	
	animal fats: butter and cream	g	8.0±5.4	20	16	
	Plant fats: oils vegetable fats: oils	g	4.5±4.5	5	9	
6.	Sugar and sweets	g	32.4±21.2	45	30	

Table 19.

Average daily food rations (DFR), expressed in products consumed by the studied children aged 2 and 3 years

No.	Groups of products	Units	Study results	
			Children in the second year of life (n=235)	Children in the third year of life (n=165)
			$\bar{x} \pm SD$	$\bar{x} \pm SD$
1.	bread	g	41.6±29.4	55.9±30.2
	flour, pasta	g	21.3±14.5	24.2±17.3
	groat, rice	g	15.1±18.1	11.1±15.9
	cereals	g	10.0±14.3	9.3±12.4
1A.	Potatoes	g	96.1±66.6	129.7±79.9
2.	Vegetables and fruits	g	262.3±129.1	300.6±143.3
	Milk and dairy products	g	524.5±231.2	520.9±209.6
4.	meat, poultry	g	43.7±30.4	47.7±31.0
	cold meat	g	20.2±21.7	20.9±17.3
	fish	g	7.3±16.4	10.0±17.6
4A.	Eggs	g	18.0±14.6	24.7±19.6
5.	Fats	g	14.0±7.7	18.5±8.8
6.	Sugar and sweets	g	30.3±20.9	35.3±21.3

⁹⁰ Rudzka-Kańtoch Z., Weker H., Strucińska M.: Zalecenia żywieniowe dla małych dzieci (2-3 lata). Med. Wieku Rozw. 1998, II(2), 247-267

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Table 20.

Average daily food rations (DFR), expressed in products consumed by the studied children, divided into subgroups according to the nutritional status

No.	Groups of products	Unit	Study results				
			Children with significant deficiency of body weight (BMI z-score<-2) group I	Children with deficiency of body weight (-2≤BMI z-score≤-1) group II	Children with normal body weight (-1<BMI z-score≤1) group III	Overweight children (1<BMI z-score≤2) group IV	Children with obesity (BMI z-score>+2) group V
			$\bar{x} \pm SD$	$\bar{x} \pm SD$	$\bar{x} \pm SD$	$\bar{x} \pm SD$	$\bar{x} \pm SD$
1. Cereal products	bread	g	44.1 ± 36.4	47.5 ± 31.3	47.0 ± 29.5	45.6±27.4	55.1±29.6
	flour, pasta	g	19,3 ± 13,6	26.4± 20.4	23,0 ± 16,2	21.5±13.6	21.7±13.3
	groat, rice	g	15,5 ± 21,1	12,9 ± 13,7	13,8 ± 18,6	13.9±15.8	10.0±11.5
	cereals	g	10,0 ± 11,9	10,4 ± 15,1	9,7 ± 13,6	9.6±14.8	8.8±12.1
1A.	Potatoes	g	117,0 ± 71,5	107,8 ± 86,7	103,9 ± 70,7	120.9±79.5	113.0±70.4
2.	Vegetables and fruits	g	253,7 ± 125,5	302,6 ± 148,4	286,4 ± 141,6	277.8±133.4	252.8±115.6
3.	Milk and dairy products	g	495,1 ± 184,7	544,5 ± 254,4	532,4 ± 221,0	538.5±228.9	483.0±225.6
4. Meat, cold meat, fish	meat, poultry	g	42,1 ± 26,7	39,6 ± 27,3	48,4 ± 33,0	42.5±31.2	46.8±28.6
	cold meat	g	19,0 ± 15,0	23,9 ± 31,6	19,5 ± 18,2	21.0±17.0	21.9±19.9
	fish	g	5,3 ± 10,6	13,4 ± 22,0	8,3 ± 16,9	6.8±14.0	9.4±19.6
4A.	Eggs	g	20,4 ± 15,5	20,9 ± 18,4	20,5 ± 18,1	19.9±15.2	22.6±18.1
5.	Fats*	g	13,4 ± 8,3	16,7 ± 8,8	16,2 ± 8,4	16.8±9.5	15.5±7.2
6.	Sugar and sweets	g	30,6 ± 19,3	35,3 ± 21,8	33,4 ± 22,9	31.5±21.0	28.7±16.1

*p<0.05

60% of the studied children were given products from the group of foodstuffs for particular nutritional use every day (Table 10). About half of the study group received Junior-type modified milk (45.8%), porridge and gruel (26-37%) and fruit juices (46.3%) (Table 21). Products from the group *meat, cold meat, fish, eggs* and products from the group *milk and dairy products* provided over 70% of protein in the average daily food ration. The main sources of fat were *butter and vegetable oils, milk and dairy products, meat and cold meat*. Cereal products (porridge/gruel), potatoes, fruit (juice), sugar and sweets provided carbohydrates. The sources of iron were mostly the products enriched with this element (modified milk, porridge/dairy desserts). These products were also the primary sources of calcium and vitamin D. The diets of children were characterized by a significant share of fruits and vegetables rich in carotene (vegetable puree/soup - carrot, pumpkin, carrot and apricot-based juice) (Fig. 3).

Table 21.

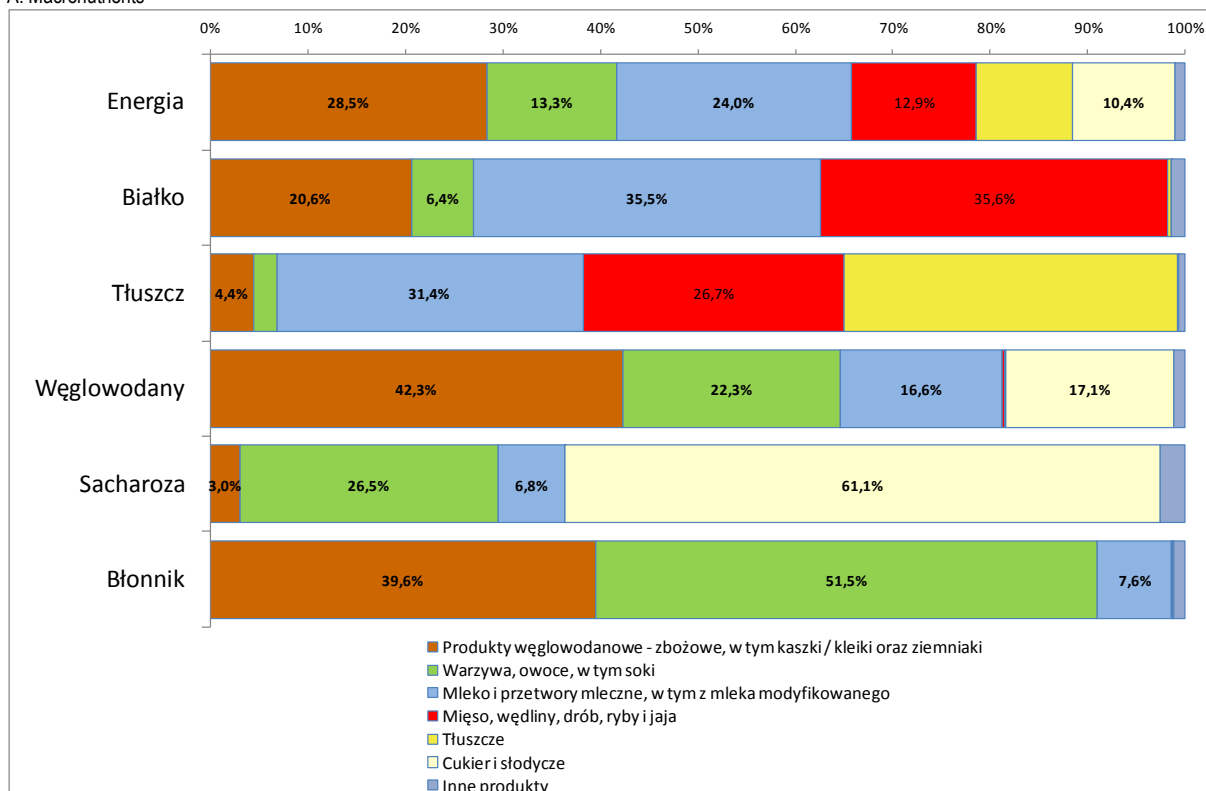
Average consumption of various ranges of products from the group of foodstuffs for particular nutritional use in the group of studied children (n = 400)

Groups of foodstuffs	No.	Range of products	Unit	Number of children consuming the product	Percentage of children consuming the product (n=400)	Average consumption
Modified milk / milk replacers	1.	Preparations for further feeding of infants / children	ml	32	8.0%	277.1
	2.	Modified milk for children aged 13-36 months	ml	183	45.8%	309.8
	3.	Milk replacers	ml	18	4.5%	390.8
Complementary food	1.	Porridge / gruel without milk	g	104	26.0%	20.1
	2.	Milk and cereal porridge / gruel	g	148	37.0%	40.5
	3.	Biscuits / sponge cakes	g	26	6.5%	9.5
Complementary foods - other than cereal	1.	Canned vegetables / vegetables and meat (soups / dinners)*	g	33	8.3%	190.0
	2.	Fruit purees, puddings*	g	94	23.5%	150.0
	3.	Teas	ml	131	32.8%	181.0
	4.	Juices*	ml	185	46.3%	156.0

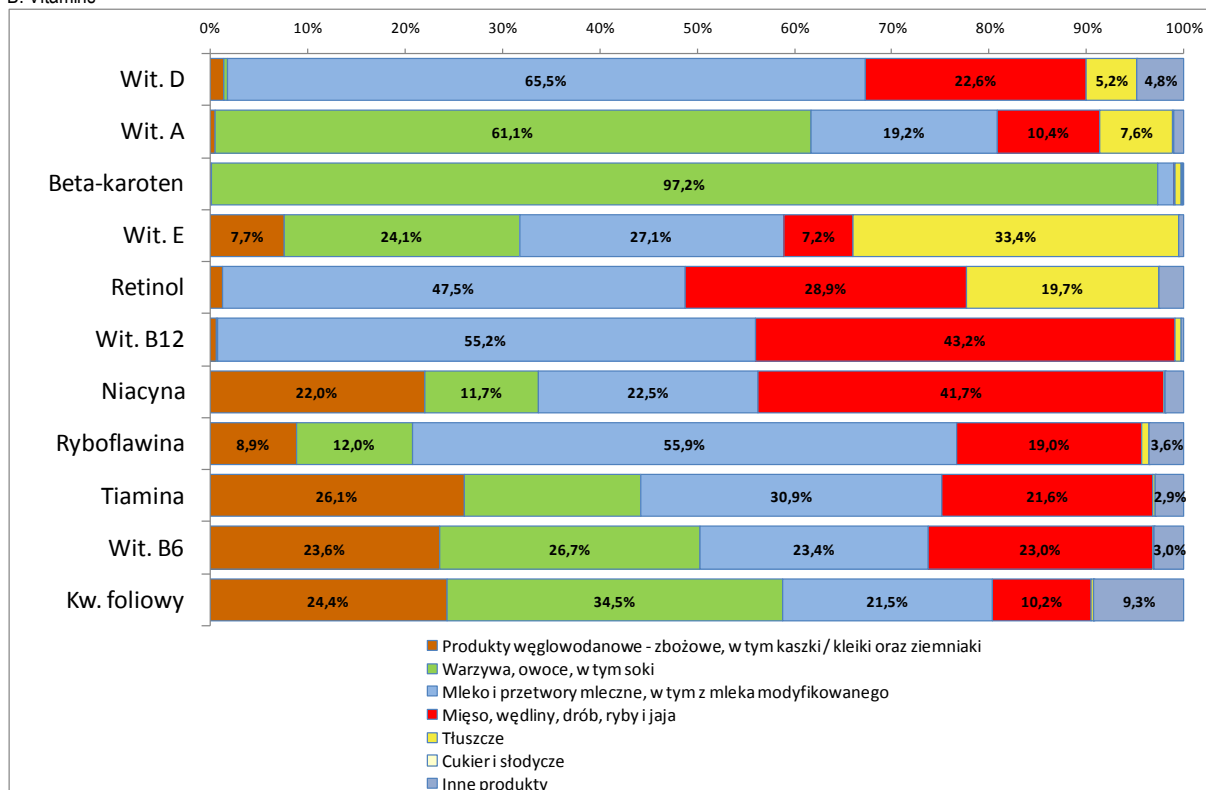
*data from the questionnaire

Fig. 3.
Main sources of nutrients in the children's diets

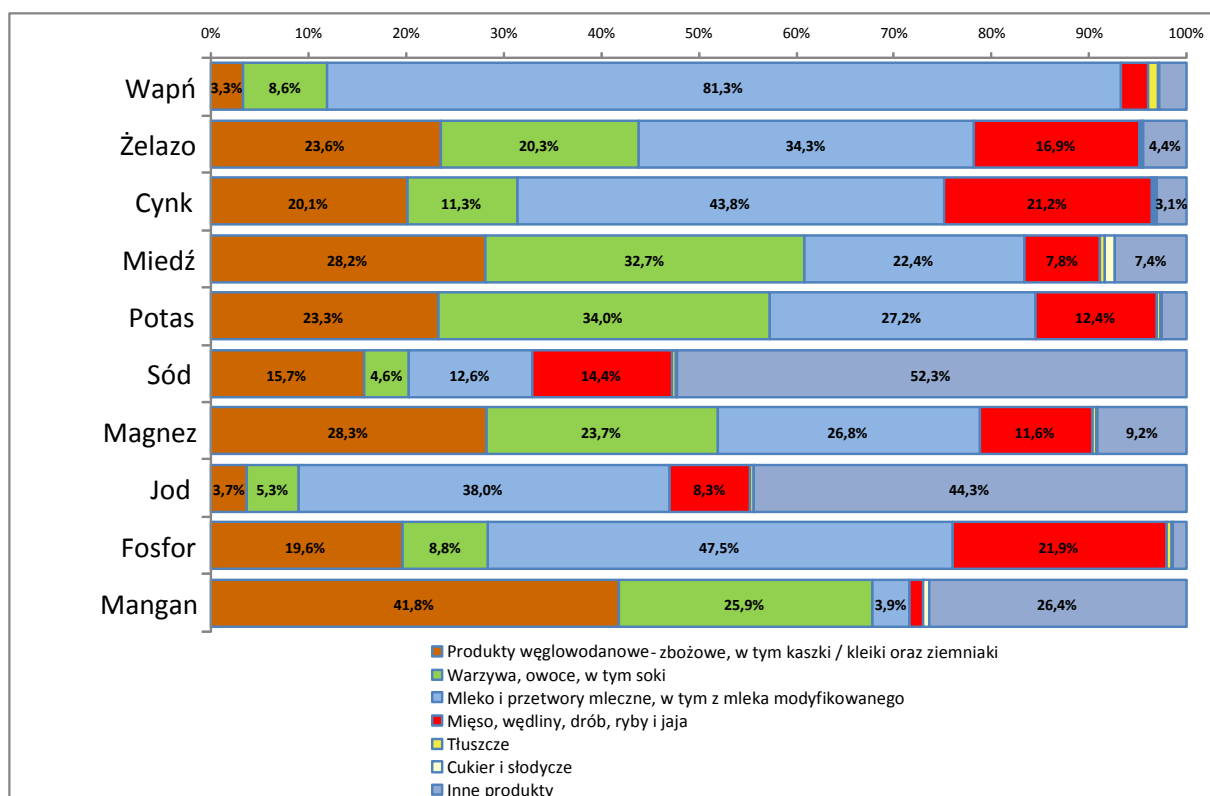
A. Macronutrients



B. Vitamins



C. Minerals



Energia	Energy
Białko	Protein
Tłuszcz	Fat
Węglowodany	Carbohydrates
Sacharoza	Saccharose
Błonnik	Fibre
Wit. D	Vitamin D
Wit. A	Vitamin A
Beta-karoten	Beta-carotene
Wit. E	Vitamin E
Retinol	Retinol
Wit. B12	Vitamin B12
Niacyna	Niacin
Ryboflawina	Riboflavin

Tiamina	Thiamine
Wit. B6	Vitamin B6
Kw. foliowy	Folic acid
Wapń	Calcium
Żelazo	Iron
Cynk	Zinc
Miedź	Copper
Potas	Potassium
Sód	Sodium
Magnez	Magnesium
Jod	Iodine
Fosfor	Phosphorus
Mangan	Manganese
Produkty węglowodanowe: zbożowe, w tym kaszki / kleiki oraz ziemniaki	Carbohydrate products: cereals, including porridge / gruel and potatoes
Warzywa, owoce, w tym soki	Vegetables, fruits, including juices
Mleko i przetwory mleczne, w tym z mleka modyfikowanego	Milk and dairy products, including from modified milk
Mięso, wędliny, drób, ryby i jaja	Meat, cold meat, poultry, fish and eggs
Tłuszcze	Fats
Cukier i słodycze	Sugar and sweets
Inne produkty	Other products

4.2.3. Assessment of the energy and nutritional value of daily food rations

The energy and nutritional value of the average DFR strongly deviated from the standards for most nutrients (Table 22). Comparison of the energy and nutritional value of the average daily food ration of children with the current standards showed a significant excess protein and vitamins A, B and C, as well as magnesium, zinc, copper

and sodium. The diets of the children showed deficiency of vitamin D in relation to the recommendations of the National Consultant in Paediatrics regarding the prevention of rickets and osteoporosis ^{93,94}. The amount of protein in the average DFR was threefold higher in relation to the current standards. Similarly, the content of vitamin A, and vitamins from group B (B₂, B₆, B₁₂, PP), vitamin C, phosphorus, magnesium, zinc and copper in the average food ration was twice - trice higher than in the standards. In the total pool of energy the share of energy was as follows: 14.1±2.5% from protein, 28.9±5.2% from fat, 57.0±6.1% from carbohydrates. Such a significant share of energy from protein, as well as sucrose (14.3 vs. 10% in standards) may contribute to excessive weight gain in children ⁹⁵⁻¹⁰⁰. Figure 4 shows the comparison of the energy and nutritional value in the average daily food ration of the studied children with the current and previous nutritional standards, expressed as a percentage of their implementation. The energy value and nutrient content in the average DFR of the studied children significantly exceeded the current dietary standards (from 2008); the obtained results were approximate to the previous recommendations (2001).

Table 22.

Energy and nutritive value of the average daily food ration (DFR) of the surveyed children (n=400) aged 13-36 months

A. Energy value and macronutrients

No.	Energy value Nutrients	Units	Study results					Standards of 2008 (RDA)	Standards 2001
			\bar{x}	SD	me	1Q	3Q		
1.	Energy	kcal	1217.5	331.8	1202.5	987.3	1400.8	1000	1000-1500
		kJ	5103.5	1389.8	5042.4	4136.7	5872.6		
2.	Total protein animal protein	g	42.5	12.9	41.7	33.9	49.4	14	45
		g	25.4	11.6	24.5	17.1	32.0		
3.	Total fat	g	39.9	13.1	38.2	30.4	46.7	33-39	36-53

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	saturated fatty acids	g	15.3	6.3	15.0	11.1	18.4		
	monounsaturated fatty acids	g	13.9	6.0	13.1	9.7	17.1		
	polyunsaturated fatty acids	g	4.5	1.9	4.2	3.1	5.6		
4.	Cholesterol	mg	162.1	80.5	151.4	109.1	204.3		
5.	Total carbohydrates	g	180.8	53.0	176.0	144.8	213.5	130	165-180
	starch	g	60.5	26.3	57.0	41.8	77.3		
	saccharose	g	44.6	24.5	39.4	27.2	57.1		
	lactose	g	19.6	11.6	18.1	10.8	27.6		
6.	Dietary fibre	g	10.3	3.7	9.8	7.6	12.8		
7.	Energy share from protein	%	14.1	2.5	13.9	12.6	15.5		
	from fat	%	28.9	5.2	28.9	25.0	32.4	30	32
	from carbohydrates	%	57.0	6.1	57.0	53.2	61.5		
	- including sucrose	%	14.3	5.7	13.9	10.4	17.5	≤10	≤10

B. Vitamins

No.	Vitamins	Units	Study results					Standards of 2008 (RDA)	Standards of 2001
			\bar{x}	SD	me	1Q	3Q		
Fat-soluble vitamins									
1.	Vitamin A	µg	1080.1	663.4	937.0	683.4	1308.7	400	400
2.	Vitamin E	mg	5.7	2.3	5.4	4.1	7.0	6	6
3.	Vitamin D	µg	5.1	3.6	4.7	1.7	7.6	5	15
Water-soluble vitamins									
4.	Vitamin B ₁	mg	0.8	0.3	0.8	0.6	1.0	0.5	0.9
5.	Vitamin B ₂	mg	1.2	0.5	1.1	0.9	1.4	0.5	1.0
6.	Folic acid	µg	180.1	123.7	165.7	138.1	205.9	150	70
7.	Vitamin B ₁₂	mg	2.4	1.8	2.1	1.6	2.7	0.9	2.0
8.	Vitamin C	mg	96.5	66.9	85.3	63.1	118.2	40	40-45
9.	Vitamin PP	mg	11.6	4.5	11.1	8.6	14.0	6	11
10.	Vitamin B ₆	mg	1.3	0.4	1.2	1.0	1.6	0.5	1.2

C. Minerals

No.	Minerals	Units	Study results					Standards of 2008 (RDA)	Standards of 2001
			\bar{x}	SD	me	1Q	3Q		
1.	Calcium	mg	654.3	232.9	645.7	503.7	779.5	500 (AI)	800-1000
2.	Phosphorus	mg	740.1	232.7	723.7	582.4	865.9	460	1000
3.	Magnesium	mg	159.6	52.1	154.2	123.6	188.4	80	100-150
4.	Iron	mg	8.5	3.0	8.2	6.5	10.2	7	10
5.	Zinc	mg	6.2	2.0	5.8	4.9	7.3	3	10
7.	Copper	mg	0.6	0.2	0.6	0.5	0.8	0.3	0.7-1.0
9.	Manganese	mg	1.8	0.9	1.7	1.2	2.3		
10.	Iodine	µg	90.0	36.6	85.1	62.3	112.8	90	70
11.	Potassium	mg	1910.6	603.0	1823.6	1500.9	2292.7	2400	550-1650
12.	Sodium	mg	1640.7	613.7	1631.4	1235.0	2002.4	750	325-375

AI - Adequate Intake

RDA - Recommended Dietary Allowances

Table 23.

Energy and nutritive value of the average daily food ration (DFR) of children in the second and third year of life

A. Energy value and macronutrients

No.	Energy value Nutrients	Units	Study results					
			Children in the second year of life (n=235)			Children in the third year of life (n=165)		
			Mean \bar{x}	SD	Median	Mean \bar{x}	SD	Median
1.	Energy	kcal	1155.6	1369.0	1125.0	1305.7	319.7	1276.6
		kJ	4845.1	1369.0	4723.0	5471.5	1339.0	5349.1
2.	Total protein	g	40.0	12.9	39.9	45.9	12.3	44.0
	animal protein	g	23.1	11.7	22.6	28.6	10.8	27.7
3.	Total fat	g	37.7	13.0	35.9	42.9	12.6	42.1
	saturated fatty acids	g	14.0	6.3	13.9	17.0	6.0	16.6
	monounsaturated fatty acids	g	12.6	5.9	12.0	15.7	5.5	15.2
	polyunsaturated fatty acids	g	4.1	1.8	4.0	5.0	2.0	4.7
4.	Cholesterol	mg	146.7	71.7	136.5	184.1	87.4	169.8
5.	Total carbohydrates	g	172.1	52.5	166.0	193.3	51.4	190.4
	starch	g	53.5	25.0	49.5	70.4	24.8	67.2
	saccharose	g	40.6	24.5	35.2	50.3	23.5	45.7
	lactose	g	20.2	12.5	19.0	18.7	10.2	17.5
6.	Dietary fibre	g	9.8	3.8	9.2	10.9	3.5	10.4
7.	Energy share from protein	%	14.0	2.7	13.8	14.3	2.2	14.2
	from fat	%	28.8	5.3	28.7	29.1	4.9	29.0
	from carbohydrates	%	57.2	6.6	57.3	56.7	5.4	56.6
	- including sucrose	%	13.7	6.2	13.1	15.1	4.9	15.0

B. Vitamins

No.	Vitamins	Units	Study results					
			Children in the second year of life (n=235)			Children in the third year of life (n=165)		
			Mean \bar{x}	SD	Median	Mean \bar{x}	SD	Median
Fat-soluble vitamins								
1.	Vitamin A	μg	1078.6	573.0	956.2	1082.1	776.1	912.4
2.	Vitamin E	mg	5.6	2.4	5.4	5.8	2.2	5.7
3.	Vitamin D	μg	5.7	3.6	5.8	4.1	3.4	2.6
Water-soluble vitamins								
4.	Vitamin B ₁	mg	0.8	0.3	0.8	0.9	0.3	0.8
5.	Vitamin B ₂	mg	1.1	0.4	1.1	1.4	0.5	1.3
6.	Folic acid	μg	165.3	50.3	160.2	201.3	181.3	174.8
7.	Vitamin B ₁₂	mg	2.2	1.1	2.0	2.7	2.5	2.2
8.	Vitamin C	mg	96.0	77.1	85.2	97.2	49.2	86.9
9.	Vitamin PP	mg	11.6	4.7	10.8	11.6	4.1	11.4
10.	Vitamin B ₆	mg	1.2	0.4	1.2	1.4	0.4	1.3

C. Minerals

No.	Minerals	Units	Study results					
			Children in the second year of life (n=235)			Children in the third year of life (n=165)		
			Mean \bar{x}	SD	Median	Mean \bar{x}	SD	Median
1.	Calcium	mg	650.4	242.2	644.7	659.8	219.7	646.0
2.	Phosphorus	mg	698.2	234.8	693.4	799.8	216.7	779.3
3.	Magnesium	mg	147.1	50.9	143.3	177.4	48.5	172.7
4.	Iron	mg	8.6	3.2	8.2	8.4	2.7	8.1
5.	Zinc	mg	6.1	2.1	5.8	6.2	2.0	5.8
7.	Copper	mg	0.6	0.2	0.6	0.7	0.2	0.7
9.	Manganese	mg	1.7	1.0	1.6	2.0	0.7	1.9
10.	Iodine	μg	91.1	38.0	86.3	88.4	34.6	85.0
11.	Potassium	mg	1777.3	584.0	1714.4	2100.5	579.9	1962.4
12.	Sodium	mg	1483.9	597.4	1447.2	1864.1	567.1	1812.8

Table 24.

Energy and nutritive value of the average daily food ration (DFR) of the surveyed children with various nutritional status

A. Energy value and macronutrients

No.	Energy value Nutrients	Unit	Study results														
			Children with significant deficiency of body weight (BMI z-score<-2) group I			Children with deficiency of body weight (-2≤BMI z-score≤-1) group II			Children with normal body weight (-1<BMI z-score≤1) group III			Overweight children (1<BMI z-score≤2) group IV			Children with obesity (BMI z-score>+2) group V		
			x	SD	me	x	SD	me	x	SD	me	x	SD	me	x	SD	me
1.	Energy*	kcal	1121.4	337.0	1077.8	1282.7	411.2	1175.1	1234.1	333.7	1227.6	1233.4	263.6	1257.2	1186.6	286.8	1168.1
		kJ	4700.9	1411.0	4515.0	5376.4	1722.1	4927.7	5172.9	1398.4	5149.4	5169.8	1102.6	5271.6	4973.2	1200.3	4894.3
2.	Total protein	g	39.7	13.3	40.2	43.3	15.2	41.3	43.0	13.3	41.7	42.6	10.6	41.7	42.5	11.1	42.2
3.	Total fat*	g	36.2	13.7	35.7	42.1	16.6	38.5	40.7	12.4	40.2	40.1	12.1	37.4	38.6	11.4	37.4
4.	Cholesterol	mg	159.2	82.2	149.9	160.1	88.8	142.5	162.1	80.8	154.1	160.0	77.2	144.3	169.8	75.6	167.3
5.	Total carbohydrates	g	167.0	54.1	155.3	191.3	61.8	176.0	182.9	53.5	181.6	183.7	43.3	184.0	176.0	48.9	169.5
6.	Dietary fibre	g	9.5	3.8	9.5	10.4	4.1	9.6	10.6	3.8	10.1	9.9	3.3	10.1	10.3	3.4	8.9
7.	Energy share																
	• from protein	%	14.3	2.7	13.8	13.6	2.3	13.6	14.1	2.3	13.8	14.0	2.5	13.9	14.6	3.1	14.4
	• from fat	%	28.5	5.7	28.5	28.7	5.4	28.9	29.1	4.6	28.9	28.7	5.5	29.5	28.8	5.8	29.0
	• from carbohydrates	%	57.2	7.1	57.0	57.6	6.5	57.4	56.8	5.6	56.9	57.3	6.1	57.0	56.6	6.5	56.5
	- including sucrose	%	14.0	5.2	14.9	14.1	5.2	14.5	14.5	5.9	13.6	14.4	6.2	13.4	14.0	5.8	13.6

*p<0.05

B. Vitamins

No.	Vitamins	Unit	Study results														
			Children with significant deficiency of body weight (BMI z-score<-2) group I			Children with deficiency of body weight (-2≤BMI z-score≤-1) group II			Children with normal body weight (-1<BMI z-score≤1) group III			Overweight children (1<BMI z-score≤2) group IV			Children with obesity (BMI z-score>+2) group V		
			x	SD	me	x	SD	me	x	SD	me	x	SD	me	x	SD	me
1.	Vitamin A*	µg	889.0	385.3	830.9	1094.2	489.8	988.9	1125.2	739.9	951.0	1077.8	806.0	859.3	1124.4	571.8	961.2
2.	Vitamin E*	mg	4.8	2.2	4.6	6.2	2.5	5.8	6.0	2.3	6.0	5.7	2.5	5.4	4.9	1.6	4.7
3.	Vitamin D*	µg	4.3	3.5	3.2	5.8	3.7	6.1	5.2	3.3	5.1	5.0	4.6	3.5	4.5	3.2	3.5
4.	Vitamin B ₁	mg	0.8	0.3	0.7	0.8	0.3	0.8	0.8	0.3	0.8	0.8	0.3	0.8	0.8	0.3	0.8
5.	Vitamin B ₂	mg	1.2	0.4	1.1	1.2	0.5	1.1	1.2	0.5	1.1	1.3	0.5	1.2	1.2	0.4	1.2
6.\	Folic acid	µg	161.1	51.4	162.4	176.4	49.5	166.7	178.5	91.8	164.3	220.1	268.2	171.2	166.3	41.1	166.5
7.	Vitamin B ₁₂	mg	2.1	0.9	1.9	2.3	1.1	2.0	2.5	2.1	2.1	2.6	2.5	2.2	2.2	1.0	2.1
8.	Vitamin C	mg	83.3	40.8	78.5	101.8	42.4	92.7	100.7	86.6	88.1	97.0	45.6	100.9	91.1	46.8	80.0
9.	Vitamin PP	mg	10.6	4.1	10.1	11.7	4.2	11.4	11.9	4.8	11.6	11.5	4.9	10.7	11.4	3.6	10.6
10.	Vitamin B ₆	mg	1.2	0.4	1.2	1.4	0.5	1.2	1.3	0.4	1.2	1.4	0.5	1.3	1.3	0.4	1.3

*p<0.05

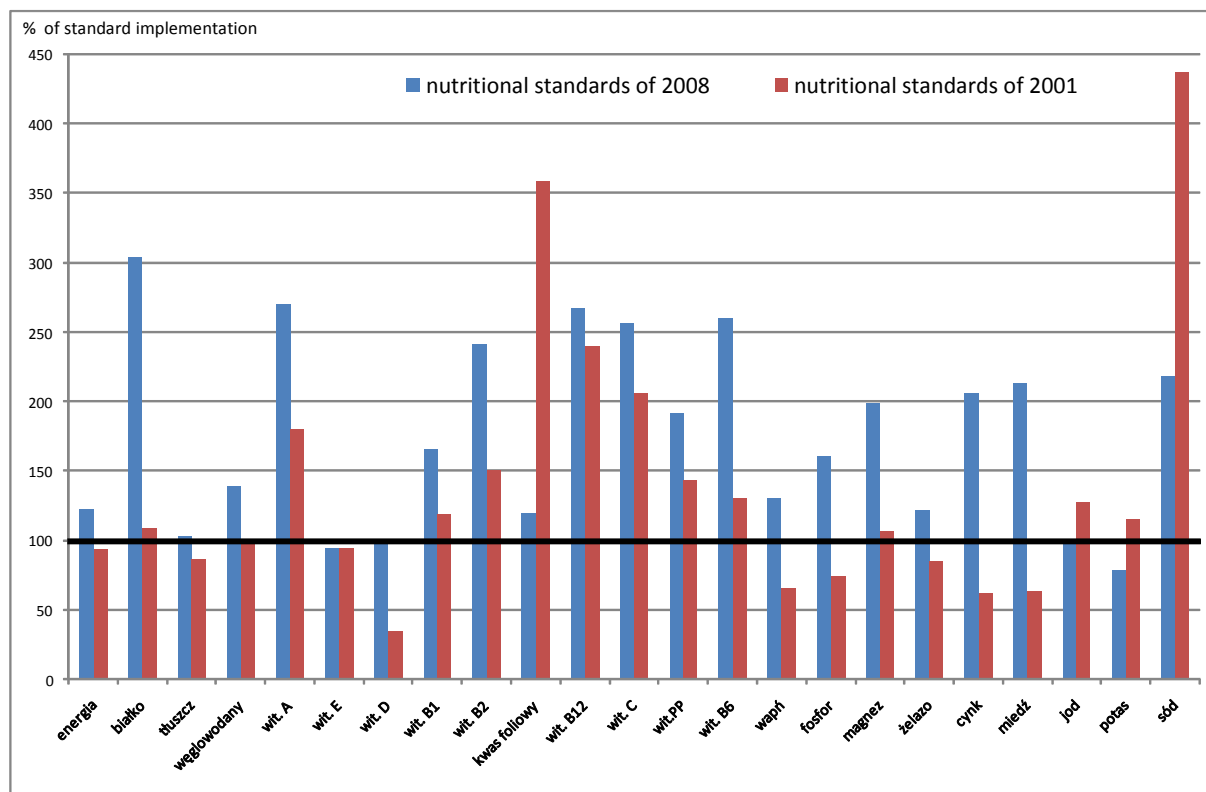
C. Minerals

No.	Minerals	Unit	Study results														
			Children with significant deficiency of body weight (BMI z-score<-2) group I			Children with deficiency of body weight (-2≤BMI z-score≤-1) group II			Children with normal body weight (-1<BMI z-score≤1) group III			Overweight children (1<BMI z-score≤2) group IV			Children with obesity (BMI z-score>+2) group V		
			x	SD	me	x	SD	me	x	SD	me	x	SD	me	x	SD	me
1.	Calcium	mg	624.6	200.6	630.6	685.9	259.6	647.0	655.7	230.8	645.8	667.8	232.4	635.9	636.8	250.7	654.0
2.	Phosphorus	mg	708.6	239.4	692.0	746.4	290.4	723.5	749.1	231.8	728.0	737.6	191.9	727.1	740.4	212.4	714.0
3.	Magnesium	mg	150.7	53.9	140.8	165.4	68.7	148.6	160.1	51.2	157.1	163.1	42.0	163.0	158.2	44.9	160.8
4.	Iron*	mg	7.6	2.7	7.5	8.9	2.7	8.6	8.8	3.2	8.8	8.5	3.2	8.2	8.0	2.3	7.8
5.	Zinc*	mg	5.6	1.8	5.4	6.4	1.9	5.9	6.3	2.0	6.2	6.2	2.3	5.4	6.0	1.8	5.5
6.	Copper	mg	0.6	0.2	0.6	0.7	0.3	0.7	0.7	0.2	0.6	0.6	0.2	0.6	0.6	0.2	0.6
7.	Manganese	mg	1.7	0.8	1.8	1.9	1.2	1.5	1.8	0.8	1.7	1.9	0.9	1.9	1.8	0.8	1.7
8.	Iodine*	µg	82.2	28.9	77.6	98.6	36.4	102.3	92.8	39.3	92.1	88.8	39.2	79.7	81.8	29.4	78.0
9.	Potassium	mg	1813.4	586.2	1750.9	1972.1	741.9	1765.1	1894.6	603.3	1794.5	1991.3	515.4	1971.7	1925.8	565.9	1949.8
10.	Sodium	mg	1553.5	606.6	1611.4	1675.0	820.9	1509.4	1668.5	616.3	1624.9	1601.6	482.6	1662.9	1651.7	515.0	1646.6

*p<0.05

Fig. 4.

Comparison of energy and nutritional value of the average daily food ration of the surveyed children with current and previous standards^{101 102}



energia	energy
białko	protein
tłuszcz	fat
węglowodany	carbohydrates
wit. A	vitamin A
wit. E	vitamin E
wit. D	vitamin D
wit. B1	vitamin B1
wit. B2	vitamin B2
kwas foliowy	folic acid
wit. B12	vitamin B12

¹⁰¹ Jarosz M., Bułhak-Jachymczyk B. (eds): Normy żywienia człowieka. Podstawy prewencji otyłości i chorób niezakaźnych. Wydawnictwo Lekarskie PZWL, Warszawa 2008

¹⁰² Ziemiański Ś. [ed]: Normy żywienia człowieka. Fizjologiczne podstawy. Wydawnictwo Lekarskie PZWL, Warszawa 2001

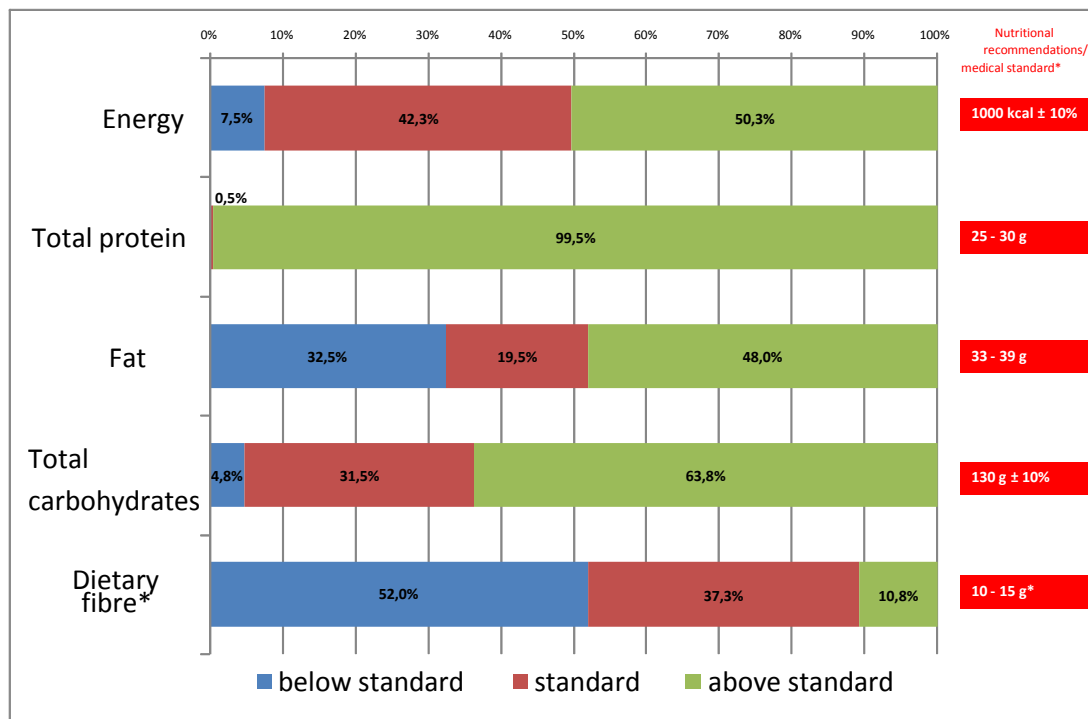
wit. C	vitamin C
wit. PP	vitamin PP
wit. B6	vitamin B6
wapń	calcium
fosfor	phosphorus
magnez	magnesium
żelazo	iron
cynk	zinc
miedź	copper
jod	iodine
potas	potassium
sód	sodium

The analysis of the implementation of nutritional standards of 2008 in the surveyed population of children is shown in Figure 5.

Fig. 5.

The analysis of the implementation of nutritional standards¹⁰³ in the surveyed population of children

A. Macronutrients

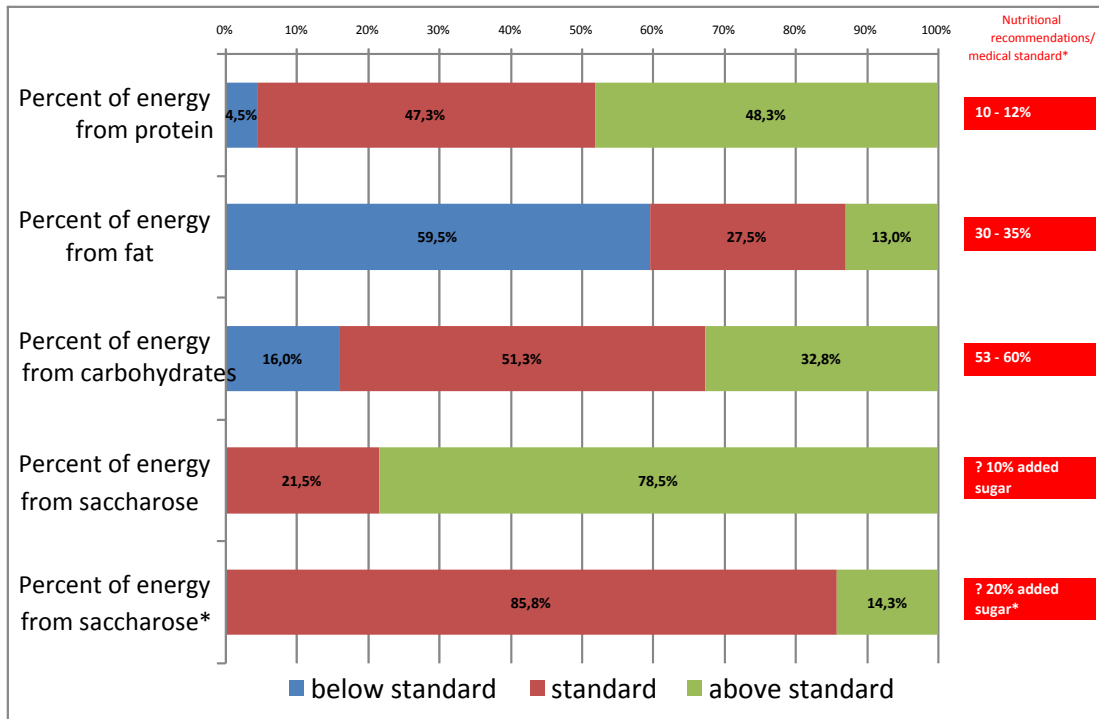


Dietary fibre* - according to medical standard¹⁰⁴

B. Distribution of energy pool

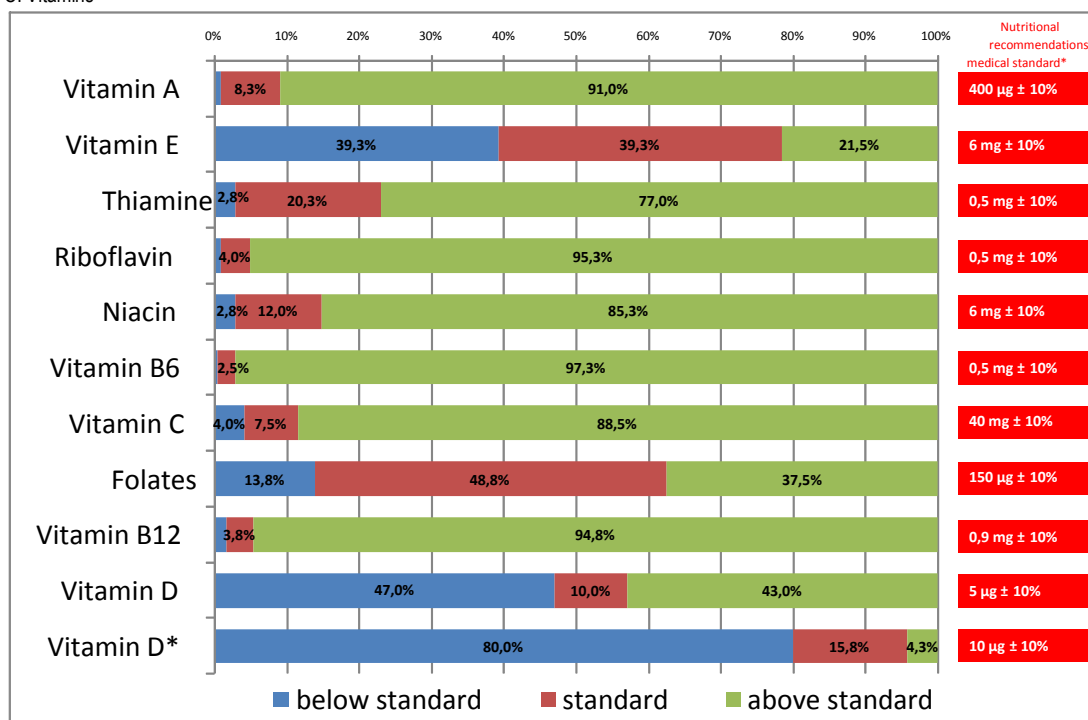
¹⁰³ Jarosz M., Bułhak-Jachymczyk B. (eds): Normy żywienia człowieka. Podstawy prewencji otyłości i chorób niezakaźnych. Wydawnictwo Lekarskie PZWL, Warszawa 2008

¹⁰⁴ Dobrzańska A., Czerwionka-Szaflarska M., Kunachowicz H., Książyk J., Lukas W., Ryżko J., Socha J., Stolarczyk A., Szajewska H., Wąsowska-Królikowska K., Weker H.: Zalecenia dotyczące żywienia dzieci zdrowych w wieku 1-3 lata (13-36 miesięcy) opracowane przez zespół ekspertów powołany przez konsultanta krajowego ds. pediatrii. *Pediatr. Pol.* 2008, 82(1), 93-95



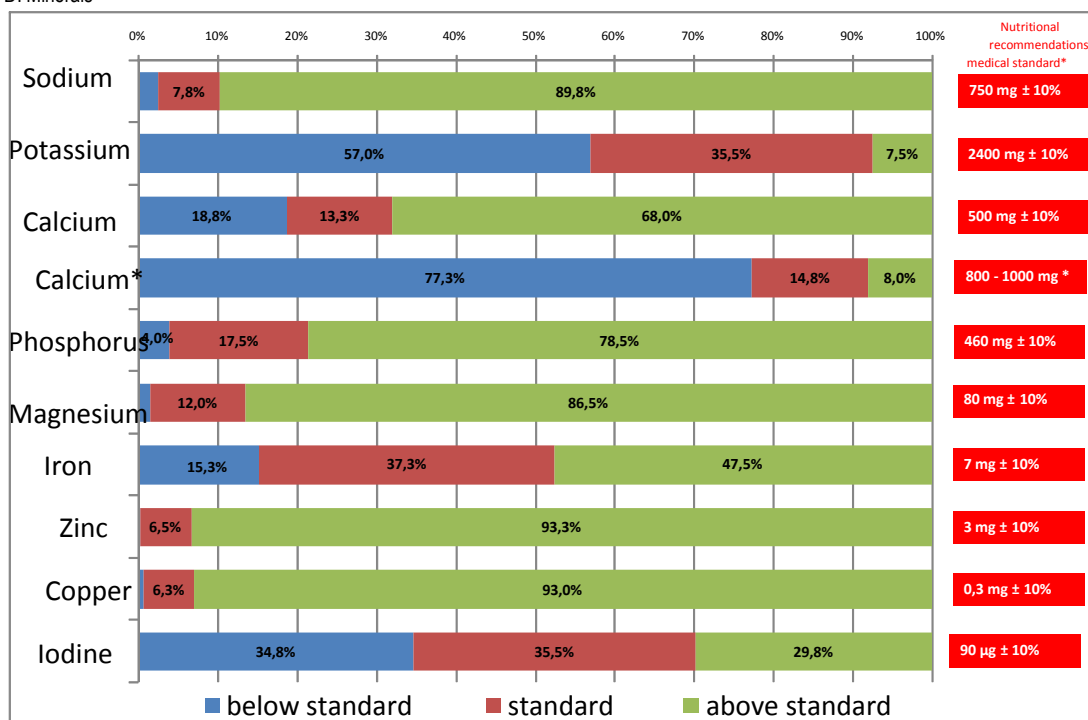
Percentage of energy from sucrose* - according to medical standard ¹⁰⁴

C. Vitamins



Vitamin D* - according to medical standard ¹⁰⁵

D. Minerals



Calcium* - according to medical standard ¹⁰⁵

¹⁰⁵ Dobrzańska A., Czerwionka-Szaflarska M., Kunachowicz H., Książyk J., Lukas W., Ryzko J., Socha J., Stolarczyk A., Szajewska H., Wąsowska-Królikowska K., Weker H.: Zalecenia dotyczące żywienia dzieci zdrowych w wieku 1-3 lata (13-36 miesięcy) opracowane przez zespół ekspertów powołany przez konsultanta krajowego ds. pediatrii. *Pediatr. Pol.* 2008, 82(1), 93-95

4.2.4. Identification of factors affecting the nutritional status of children

The multinomial logistic regression method was used to assess the relation between the nutritional status of children and their diet. Three values obtained on the basis of classification of body mass index (BMI) were assumed for dependent variable. The group with normal nutritional status (BMI z-score of -1 to +1) was a benchmark. Such a polynomial logistic regression model enabled the selection of the most important predictors of body weight deficiency (BMI z-score \leq -1) and excess body mass (BMI z-score $>$ +1). Potential explanatory variables were determined by the child's age (continuous variable in months) and energy and nutritional value of the average daily food ration (selected micro- and macronutrients), which were categorized as three levels corresponding to the following values: *normal*, *below normal* and *above normal*. The reference group in the logistic regression model were children who ate the particular nutrient within normal limits. The presentation of results is limited to the variables significant in multivariate model. Table 25 presents the most important factors for abnormal nutritional status of the surveyed children. It includes the parameters of logistic function, standard error, the value of Wald chi-square test with the significance level.

Table 25.
The most important factors for abnormal nutritional status of the surveyed children - the results of statistical analysis

Type of model		Regression coefficient (β)	Standard error (β)	Statistics	Significance level	Type of analysis
Dependent variable	Explanatory variable					
Deficiency of body weight BMI z-score \leq -1	Protein intake <25 g / day	1.97	0.85	Wald Chi ² (df=1) = 5.37	0.021	Polynomial logistic regression
Excess body weight BMI z-score $>$ 1	Energy share from carbohydrates \geq 60%	1.13	0.44	Wald Chi ² (df=1) = 6.74	0.009	Polynomial logistic regression

It was found that protein intake below 25 g/day and the energy share from carbohydrates equal to and above 60% are the major risk factors for abnormal nutritional status in children aged 13-36 months.

Table 26 includes the odds ratio for abnormal nutritional status of the surveyed children with 95% confidence interval. The chance of deficiency of body weight in children past infancy is increased sevenfold when protein intake is less than 2 g/1 kg body weight (average body weight of children aged 2 years - 13 kg; protein intake <25 g; amount of protein in diet per 1 kg of body weight - 1.92 g).

The risk of overweight or obesity is increased threefold in children aged 13-36 months with the energy share from carbohydrates equal to or above 60% of the total energy pool of diet.

Table 26.

The odds ratio for abnormal nutritional status of the surveyed children - the results of statistical analysis

Dependent variable	Explanatory variable	Odds ratio	95% CI
Deficiency of body weight BMI z-score \leq -1	Protein intake <25 g / day	7.17	1.35 - 37.97
Excess body weight BMI z-score>1	Energy share from carbohydrates \geq 60%	3.09	1.32 - 7.25

IV. Summary and Conclusions

The results of work of many authors confirm the significant relations between the diet of children and their nutritional status ¹⁰⁶⁻¹²⁰. There are also reports indicating that feeding behaviours are shaped already during the early childhood. ¹²¹⁻¹²⁵ Therefore, a properly targeted nutrition not only affects the child's healthy psychosomatic development, but it can also be one of the major factors in reducing the risk of diet-related diseases in adulthood.

The results of individual studies on the nutritional status and diet of children in the first year of life, the diet of children aged 1-18 years and group of children aged 4 years, as well as the results of assessment of the nutrition in infants and young children

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¹¹⁹ Barton B.A., Eldridge A.L., Thompson D., Affenito S.G., Striegel-Moore R.H., Franko D.L., Albertson A.M., Crockett S.J.: The relationship of breakfast and cereal consumption to nutrient intake and body mass index. *The National Heart, Lung, and Blood Institute Growth and Health Study. J. Am. Diet. Assoc.* 2005, 105(9), 1383-1389

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¹²¹ Birch L.L., Fisher J.O.: Appetite and eating behavior in children. *Pediatr. Clin. N. Am.* 1995, 42(4), 931-951

¹²² ESPGHAN Committee on Nutrition. Breast-feeding: A Commentary by the ESPGHAN Committee on Nutrition. *J. Pediatr. Gastroenterol. Nutr.* 2009, 49(1), 112-125

¹²³ ESPGHAN Committee on Nutrition. Complementary Feeding: A Commentary by the ESPGHAN Committee on Nutrition Medical Position Paper. *J. Pediatr. Gastroenterol. Nutr.* 2008, 46(1), 99-110

¹²⁴ European Food Safety Authority. Scientific opinion on the appropriate age for introduction of complementary feeding in infants. *EFSA Journal* 2009, 7, 1-38

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are known in Poland¹²⁶⁻¹³¹. The authors of the above-cited studies demonstrated the unfavourable trends and practical difficulties in expanding children's diets, improper product selection, lack of nutritional balance, and the effect of diet on child's nutritional status, including excess or deficiency of body weight.

The conducted study shows that the energy and nutritional value of diets of children aged 13-36 months varied and differed from the current nutritional standards (adopted in 2008¹³²), especially for energy and protein, as well as vitamin A and vitamins of group B. The same results compared with the nutritional standards of 2001^{133, 134} very clearly indicate that the diets of children in this age range were better balanced (Fig. 4). The studies assessing the nutrition of children (n = 1692) conducted in 2008 on children in nurseries in Warsaw obtained results comparable to the ones in this report in relation to the past and current nutritional standards¹³⁵.

The question is therefore how to assess the obtained data, since the nutritional status of 45.5% of children indicates their proper nutrition, 27.0% of children have deficiencies, including significant deficiency of body weight, and 27.5% of children have excess body weight. Verification of nutritional standards for children may be an attempt to answer that question.

¹²⁶ Szponar L., Rychlik E., Ołtarzewski M.: Badania indywidualnego spożycia żywności i stanu odżywienia w gospodarstwach domowych, Works of NFNI 101, Warszawa 2003.

¹²⁷ Szponar L., Sekuła W., Rychlik E., Ołtarzewski M., Figurska K.: Badania indywidualnego spożycia żywności i stanu odżywienia w gospodarstwach domowych. Prace Instytut Żywności i Żywienia, Warszawa 2003

¹²⁸ Weker H., Hamułka J., Więch M., Głowacka K.: Analysis of nutrition of children in Warsaw day nurseries in view of current recommendations. Journal of Pre-Clinical and Clinical Research 2010, 4(1), 063-067

¹²⁹ Charzewska J., Weker H.: Ogólnopolskie badanie nad zawartością wapnia i witaminy D w dietach dzieci w wieku 4 lat. *Pediatr. Współ. Gastroenterol., Hepatol. Żyw. Dziecka* 2006, 8 (2), 107-109

¹³⁰ Zagórecka E., Motkowski R., Stolarczyk A., Socha P., Piotrowska-Jastrzębska J., Socha J.: Realizacja zaleceń żywienia uzupełniającego w grupie niemowląt uczestniczących w projekcie „Nawyki żywieniowe a stan odżywienia niemowląt w Polsce”. *Pediatr. Pol.* 2008, 83(2), 136-149

¹³¹ Weker H., Barańska M., Riahi A.: Problemy matek dotyczące żywienia uzupełniającego u niemowląt karmionych piersią. *Pediatr. Pol.* 2008, 83(6), 682-686

¹³² Jarosz M., Bułhak-Jachymczyk B. (eds): Normy żywienia człowieka. Podstawy prewencji otyłości i chorób niezakaźnych. Wydawnictwo Lekarskie PZWL, Warszawa 2008

¹³³ Ziemiański Ś. [ed]: Normy żywienia człowieka. Fizjologiczne podstawy. Wydawnictwo Lekarskie PZWL, Warszawa 2001

¹³⁴ Szotowa W., Socha J., Charzewska J., Dłużniewska K., Jabłoński E., Kunachowicz H. et al.: Dienne zalecenia żywieniowe dla dzieci i młodzieży. *Pediatr. Pol.* 1995; 71: 1-12

¹³⁵ Weker H., Hamułka J., Więch M., Głowacka K.: Analysis of nutrition of children in Warsaw day nurseries in view of current recommendations. Journal of Pre-Clinical and Clinical Research 2010, 4(1), 063-067

In summary:

- Diet of children aged 13-36 months varied in relation to the current nutritional recommendations, and did not raise any objections in 45.5% of children.
- The average daily food ration of the studied children differed from model food ration for this age group.
- The source of nutrients in the diets of children was food from various product groups, including the group of foodstuffs for particular nutritional use.
- The average daily food rations of the studied children had improper share of essential nutrients, especially protein, in relation to the nutritional standards, which in the long term may result in the risk of diseases, including diet-related.
- The content of vitamins and minerals in diets of the studied children significantly exceeded the nutritional standards (2008); thus, there is a need to modify the addition of these substances to food for the youngest children.
- Verification of the current nutritional recommendations and nutritional standards in relation to diet of children aged 13-36 months and their promotion is justified.

Conclusions:

1. Family and environmental factors (education of parents, place of residence) have an impact on nutritional status and diet of children aged 13-36 months.
2. The nutritional status of 45.5% of children was correct, while 27.5% of children had excess body weight, and 27% of them - deficiency of body weight, which requires an in-depth analysis of the causes of these irregularities.
3. Among the analysed dietary factors, two were found to be associated with the risk of eating disorders in children aged 1-3 years:
 - the risk of deficiency of body weight in children aged 13-36 months is associated with protein intake below 25 g/day;
 - the risk of overweight and obesity in children of the same age is associated with the share of energy from carbohydrates above 60% of the total energy pool of diet.
4. Nutritional patterns were dependent on the age of children and differed significantly in the selection of products and nutritional value of the average daily food rations.

V. Suggestions regarding solutions for the implementation of nutritional recommendations for children aged 13-36 months

The report shows that only 45.5% of the studied children had correct nutritional status. Therefore, there is an existing problem of nutrition in the group of children with deficiencies and excess body weight, who are a group potentially at risk of developing various diseases, including diet-related.

It is therefore necessary to:

1. continuously monitor the nutritional status and diet of children aged 13-36 months in paediatric clinics, including rapid intervention of doctors looking after children, aimed at normalization of the body weight;
2. make mothers/parents/guardians aware of the importance of proper diet of children in terms of investment in their health through responsible media (TV, radio, newspapers) and/or educational programs;
3. oblige the food industry that produces foodstuffs for particular nutritional use for infants and young children to modify the composition of these products in terms of both quantity and quality, taking into account the current results of studies on nutrition.

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Annex 3 Survey Questionnaire

SURVEY QUESTIONNAIRE

Ladies and Gentlemen,

A study regarding the assessment of diet of children aged 13-36 months is conducted at the Institute of Mother and Child in the Department of Nutrition. The study is conducted using a survey. The questionnaire is anonymous and your responses will be used to verify the nutritional recommendations.

Thank you for filling in the survey.

Part A. Information about family and environment

A.1. Date of filling the survey

A.2. Date of child's birth

A.3. Child's sex

male female

A.4. Place of residence

- urban agglomerations above 500 thousand residents
- large city above 100 thousand to 500 thousand residents
- medium city - from 50 thousand to 100 thousand residents
- small town of less than 50 thousand residents
- village

A.5. Age of mother (in years)

A.6. Age of father (in years)

A.7. Education of parents

Mother

- primary
- vocational
- secondary
- licentiate

Father

- primary
- vocational
- secondary
- licentiate

higher

higher

A.8. Number of persons in the household, including number of children (to 18 years of age)
Please provide information about the child's siblings, giving gender and age (e.g., a 13-year-old girl - "gi-13"; a 2-year-old boy - "bo-2").....

A.9. Who works in the family? Please select all the correct answers.

- both parents
- father only
- mother only
- none of parents
- other persons, who?

A.10. Please specify your family's financial situation. Please select one answer.

- very bad
- bad
- average (neither good nor bad)
- good
- very good

A.11. Does your child go a nursery/kindergarten?

- YES
- NO

If NO, who looks after the child during the day? Please select all the correct answers.

- mother
- father
- grandmother
- babysitter
- other persons, who?

A.12. From what sources do you acquire knowledge of child nutrition? Please select all the correct answers.

- doctor/midwife/dietician
- TV, radio
- the Internet
- books, magazines
- brochures/leaflets
- mother or grandmother/other family members
- friends
- I am not interested in these issues

A.13. There are some statements about child nutrition below. Please indicate whether you agree with them or not. Please select only one answer in each row.

Child aged 13-36 months should:	YES	NO
eat no more than 5 meals a day	<input type="checkbox"/>	<input type="checkbox"/>
drink at least 1 litre of liquids a day (including water, juice, milk and soups)	<input type="checkbox"/>	<input type="checkbox"/>
drink no less than ½ litre of milk a day	<input type="checkbox"/>	<input type="checkbox"/>
drink at least 3 glasses of juice every day	<input type="checkbox"/>	<input type="checkbox"/>
have fruit and vegetables in each meal	<input type="checkbox"/>	<input type="checkbox"/>
have a sweet snack every day	<input type="checkbox"/>	<input type="checkbox"/>
eat a whole egg every day	<input type="checkbox"/>	<input type="checkbox"/>
have an egg 3-4 times a week	<input type="checkbox"/>	<input type="checkbox"/>
eat food with a limited amount of salt and sugar	<input type="checkbox"/>	<input type="checkbox"/>
eat meals with no added fat	<input type="checkbox"/>	<input type="checkbox"/>

Part B. Nutritional status

B.1. Child's anthropometric data

- a) Body weight [kg]
 birth
 current
- b) Body length [cm]
 birth
 current

B.2. How would you describe the overall health of your child? Please select one answer.

- my child almost never gets sick
 my child rarely gets sick
 my child very often suffers from
 other (specify)

B.3. How would you describe the physical activity level of your child? Please select one answer.

- comparable with peers
 less active compared with peers
 more active than peers
 other (specify)

Part C. Diet, dietary behaviour, nutritional preferences

C.1. Was the child breastfed during the first year of life (from birth to 12 months of age)?

- YES NO

If YES, how long the baby was only breastfed (months)?

C.2. Is the child currently breastfed?

- YES NO

If YES, please indicate how many times a day the baby is breastfed, including how many times at night

If NO, please specify for how long the child was breastfed (months)

C.3. When (in which month of age) the first complementary products were introduced to the child's diet and what products were they (e.g. gruel, porridge, fruit and vegetable purees, etc.)?

.....
.....
.....

C4. In which month of age the products containing gluten (e.g. wheat gluten/porridge, semolina, bread crust) were introduced to the child's diet?

- before the 5th month
- in the 5th month
- in the 6th month
- in the 7th - 9th month
- in the 9th - 12th month
- Gluten products have not yet been introduced to the child's diet

C5. Were fish introduced to the child's diet in the second half year of his/her life?

- YES NO

If YES, in what form?

.....

If NO, why?

.....

.....

C.6. Please select which meals are eaten by your child and how often. Please select only one answer in each row.

	daily	at least 2-4 times a week	once a week	less than once a week	never or almost never
1st breakfast	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2nd breakfast	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soup	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Main course	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High tea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meal / snack before bedtime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Meal/drink at night	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C.7. Does your child eat snacks between meals?

YES

NO

If YES, they are usually **the following*** (please read the information below the table):

Type	How many times a day	Quantity
Fruits		
Chips, fries		
Sandwiches		
Candies, lollipops		
Chocolate, cookies		
Sweet dairy desserts (cheese, yoghurt, puddings)		
Crisps, salty sticks		
Other (specify)		

* Please indicate the number of portions per day (e.g. fruits - 2 portions) in the "How many times a day" column, and the approximate size of all portions (e.g. half a banana, ¼ of peeled apple) and / or quantity in grams (e.g. dairy desserts - 3 portions per day: vanilla cream cheese 150 g; fruit yoghurt 4 spoons; pudding ½ cup) in the "Quantity" column.

C.8. Please specify how often the meals are prepared for your child. Please select only one answer in each row.

Meals for the child	daily	at least 2-4 times a week	Once a week	less than once a week	never or almost never
I cook separately for the child	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I use ready-made preserves for infants and children, including:					
• ready-made soup/meals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• porridge, gruel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• fruit purees, puddings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• juices, beverages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• teas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The child eats meals prepared for the whole family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I buy ready-made meals prepared outside the house (e.g. Chinese food, ravioli, pizza, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C9. Does your child eat "fast food" in restaurants / fast food bars?

- YES NO

If YES, how often?

- 1-2 times a month
 1-2 times a week
 other, how often?

What and how much does your child eat?

.....
.....

C.10. Please specify how often the products listed below are used in the meals eaten by your child.
Please select one answer in each row.

	daily	at least 2-4 times a week	Once a week	less than once a week	never or almost never
Fresh fruits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen fruits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruit juices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vegetable and vegetable - fruit juices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fresh vegetables, including potatoes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen vegetables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Poultry meat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Red meat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fresh fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Smoked fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Canned fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eggs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Butter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Olive oil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vegetable oils	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Margarine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cereals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Groat (barley, buckwheat)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dark bread	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wheat bread	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tomato concentrate, paste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stock cubes, broths	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vegetable seasoning in the form of granules, powder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Concentrates of soups and sauces in powder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C.11. What and how much dairy products do you use in your child's diet? Please select one answer in each row and give approximate size of portion (in cups, spoons, slices or grams).

	daily	at least 2-4 times a week	Once a week	less than once a week	never or almost never	Portion size
modified milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	how many cups?
high-fat milk (3.5% - 3.2%)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	how many cups?
semi-skimmed milk (1.5% - 2%)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	how many cups?
skimmed milk (0.5%)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	how many cups?
natural yoghurt, kefir	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	how much?.....
fruit yoghurt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	how much?.....
natural cheese / cottage cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	how much?.....
fruit, flavoured cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	how much?
dairy dessert	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	how much?.....
hard cheese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	how much?.....
other (specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	how much?

If you do not use any dairy products in your child's diet, please specify why.

.....

.....

.....

.....

C.12. Please specify what other liquids (except for milk and milk beverages) does your child drink and in what amounts. Please select one answer in each row and give approximate size of portion (in cups).

	daily	at least 2-4 times a week	Once a week	less than once a week	never or almost never	Portion size
water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	how many cups?
juices, nectars	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	how many cups?
sweet still and carbonated drinks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	how many cups?
tea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	how many cups?
chicory coffee (without milk)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	how many cups?
compote	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	how many cups?
homemade soups	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	how many cups?
other (specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	how many cups?

C.13. Do you add salt to meals of your child? Please select one answer.

- I do not use salt for my child's meals
- I add salt to all of my child's meals
- I add salt only to homemade meals
- I add salt to ready-made products for children

C.14. In terms of nutrition you observe that your child:

- | | | | |
|--------------------------------------|-----------------------------------|-----------------------------------|--------------------------------------|
| EATS: | MEAT DISHES: | VEGETABLES: | LEARNS NEW FLAVOURS: |
| <input type="checkbox"/> regularly | <input type="checkbox"/> likes | <input type="checkbox"/> likes | <input type="checkbox"/> willingly |
| <input type="checkbox"/> irregularly | <input type="checkbox"/> dislikes | <input type="checkbox"/> dislikes | <input type="checkbox"/> unwillingly |

C.15. Please indicate how your child is usually fed. Please select one answer.

- eats at least one meal a day at table with his/her family
- is fed separately, at other times of day than the family
- is fed while watching TV
- is fed during play / has to be convinced to eat
- other/none of the above

C.16. How do you usually behave when your child refuses to eat new meals? Please select one answer.

- I feed with determination, I insist that he/she eats
- I feed by entertaining and distracting from the food
- I act patiently and gradually until the child gets used to the new taste
- I introduce the new dish again after some time
- I do not introduce this dish to the menu
- other (specify)

.....

C.17. Did the child take any vitamin and/or iron, vitamin and mineral or other preparations (e.g. cod liver oil, probiotics)?

	Age of 0-6 months	Age of 7-12 months	Age of 13-18 months	Age over 18 months
Vitamin D	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vitamin K	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cod-liver oil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Probiotics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

C.18. Does the child currently take any vitamin and/or iron, vitamin and mineral or other preparations (e.g. cod liver oil, probiotics)?

- YES NO

If YES, what kind? (please give trade names)

who recommended it?

.....

C.19. Is the child on any special (e.g. elimination, non-standard) diet?

- YES NO

If YES, what diet is it? Please select all the correct answers.

- without milk (Recommended by the doctor? Yes No)
- without eggs (Recommended by the doctor? Yes No)
- without gluten (Recommended by the doctor? Yes No)
- vegetarian (Is the diet monitored by the doctor? Yes No)

other - what type?(Recommended by the doctor?
Yes No)

Part D. Record of the Diet

Instructions for filling in the nutrition diary

Please record your child's daily diet (beginning at 6:00 am, with the possibility of changing the time by about half an hour in either direction).

The diet should be written in the attached tables, according to the instructions.

The record of child's diet must include three days, including one weekend day / holiday (e.g. Saturday, Sunday). Please record everything the child ate during the day. If your child goes to any care and educational institution (e.g. nursery, kindergarten), please provide the menu from the nursery / kindergarten and supplement it with home meals.

Please name the meals identified by you (e.g. dinner). If you can not name all the meals, please number them, always giving the time of consumption.

Breast-feeding, both during the day and at night, should also be recorded.

Please write down everything the child ate during the day, giving the approximate portion sizes:

- in cups, tablespoons, spoons,
- slices,
- pieces (e.g. small / medium apple)

or portion size in grams, if possible.

The diet should include the size of portion eaten by the child, not given to the child.

Please briefly describe how the meals are prepared, i.e. soup prepared in stock of meat such as poultry, vegetables, with pasta, rice, groat, etc., boiled or refried potatoes, puree with butter, etc., also paying attention to the product type (e.g. wholemeal or wheat bread, etc.; milk with 3.2% of fat) and food additives, e.g. whether a soup is with cream or butter; whether sandwiches included butter or margarine; whether tea is sweetened and how much; how is a sauce to salads prepared, etc.

The information regarding the product manufacturer or trade name, particularly in the case of ready-made preparations for children (jars, porridges, juices) is also important.

Annex 4 Analysis Plan with the List of Results Obtained From Biostat

Analysis Plan

The ordered project called "Comprehensive Assessment of Diet of Children Aged 13-36 Months" assumes:

I. In the macro-scale:

<p>1. Assessment of the relationship between categorized quality variables (variables from part A and part C of the survey) and the standardized relative body mass index of the studied children, independent of sex and age, BMI z-score (<i>file BIOSTAT_03 - variable: <bmi to age z-score AKT></i>)</p>	<p>File: pkt1-1 - BMI x czA oraz czC ankiety.xls</p> <p>The methods used: Non-parametric Mann-Whitney and Kruskal-Wallis tests were used.</p> <p>Conclusions: The tests showed significant differences in the distributions of BMI z-score variable for the following questions</p> <ul style="list-style-type: none"> • A.12. books, magazines • C.4. In which month of age the products containing gluten were introduced to the child's diet • C.8. juices, beverages • C.10. Fresh fish • C.10. Canned fish • C.10. Vegetable oils • C.10. Tomato concentrate, paste • C.10. Vegetable seasoning in the form of granules, powder • C.12. water (frequency) • C.17. Age of 7-12 months (Probiotics) • C.19. vegetarian
<p>2. Determining the significance of differences between diet indicators in children (number of meals, dietary behaviour, nutritional value of daily food ration, consumption in the product groups) <i>File BIOSTAT_01 - variables:</i> frequency of consumption of particular meals: <C.6. 1st breakfast>, <C.6. 2nd breakfast>, <C.6. Soup>, <C.6. Main course>, <C.6. High tea>, <C.6. Supper>, <C.6. Meal / snack before bedtime>, <C.6. Meal/drink at night>; snacks: <C.7. Does your child eat snacks between meals?> then - what and how many times a day (C.7.); dietary behaviour: <C.14. Eats>, <C.14. Meat dishes>, <C.14. Vegetables>, <C.14. Learns new flavours>; <i>File BIOSTAT_02_POPR - nutritional value of the average daily food ration and particular meals - all variables</i> <i>File BIOSTAT_04 - consumption of product groups - all variables in relation to</i> age (<i>file BIOSTAT_03, variable <Age CORRECTION (month)></i>), sex (<i>File BIOSAT_01, variable <A.3. Child's sex></i>), place of residence (<i>File BIOSAT_01, variable < A.4. Place of residence></i>), education of parents (<i>File BIOSAT_01, variables: <A.7. Education of mother>, <A.7. Education of father></i>).</p>	<p>Files: pkt1-2 - czestość spożycia poszczególnych posiłków x Demografia.xls pkt1-2 - snack.xls pkt1-2 - wartość odżywcza oraz spożycie grup produktów x Demografia.xls pkt1-2 - zachowania żywieniowe.xls</p> <p>The methods used: Non-parametric Mann-Whitney and Kruskal-Wallis tests, as well as Spearman's rank correlation were used</p> <p>Conclusions for the number of meals: Number of meals in relation to age is significantly dependent in the following case:</p> <ul style="list-style-type: none"> • C.6. Supper • C.6. Meal / snack before bedtime • C.6. Meal/drink at night <p>Number of meals in relation to sex is significantly dependent in the following case:</p> <ul style="list-style-type: none"> • C.6. Main course <p>Number of meals in relation to place of residence is significantly dependent in the following case:</p> <ul style="list-style-type: none"> • Lack of identified relations <p>Number of meals in relation to education of mother is significantly dependent in the following case:</p> <ul style="list-style-type: none"> • C.6. Meal / snack before bedtime <p>Number of meals in relation to education of father is significantly dependent in the following case:</p> <ul style="list-style-type: none"> • C.6. Meal/drink at night <p>Conclusions for dietary behaviour, including snacks: Dietary behaviour in relation to age:</p> <ul style="list-style-type: none"> • A positive correlation was shown between age and the regularity of eating vegetables and willingness to learn new flavours. This

relation was not confirmed by the Chi-square independence test .

Dietary behaviour in relation to Sex:

- Lack of identified relations

Dietary behaviours in relation to education of mother are significantly different in the following variables :

- C.14. Eats
- C.14. Learns new flavours

Dietary behaviours in relation to education of father are significantly different in the following variables :

- C.14. Eats
- C.14. Learns new flavours

Dietary behaviours in relation to place of residence are significantly different in the following variables :

- C.14. Eats
- C.7. Does your child eat snacks between meals?

Conclusions for the nutritional value of daily food ration and consumption of product groups:

Negative correlations with age were found in the following cases:

- Vitamin D (B_02_WO_DFR)
- Taurine (B_02_WO_DFR)
- L-carnitine (B_02_WO_DFR)
- Percentage of energy from carbohydrates (B_02_WO_DFR)
- S1-Vitamin E (alpha-tocopherol equivalent) (B_02_WO_breakfast1)
- S1-Vitamin C (B_02_WO_breakfast1)
- S1-vitamin D (B_02_WO_breakfast1)
- S1-Iodine (B_02_WO_breakfast1)
- S1-Taurine (B_02_WO_breakfast1)
- S1-L-carnitine (B_02_WO_breakfast1)
- S1-Percentage of energy from carbohydrates (B_02_WO_breakfast1)
- S2-vitamin D (B_02_WO_breakfast2)
- S2-Percent of energy from fat (B_02_WO_breakfast2)
- POD-Taurine (B_02_WO_high_tea)
- POD-L-carnitine (B_02_WO_high_tea)
- K-Iron (B_02_WO_supper)
- K-Vitamin E (alpha-tocopherol equivalent) (B_02_WO_supper)
- K-Vitamin C (B_02_WO_supper)
- K-vitamin D (B_02_WO_supper)
- K-Iodine (B_02_WO_supper)
- K-Taurine (B_02_WO_supper)
- K-L-carnitine (B_02_WO_supper)
- K-Percentage of energy from carbohydrates (B_02_WO_supper)
- ŻYW-Iron (B_02_B_wiSMzZnW)
- ŻYW-vitamin D (B_02_B_wiSMzZnW)
- Groat and rice P3 (B_04_Product_consumption)
- Milk and sweet milk beverages P2 (B_04_Product_consumption)
- Nutrition for infants and young children P3 (B_04_Product_consumption)

Positive correlations with age were found in the following cases:

- Waste (B_02_WO_DFR)
- Energy kJ (B_02_WO_DFR)
- Energy kcal (B_02_WO_DFR)
- Water (B_02_WO_DFR)
- Total protein (B_02_WO_DFR)
- Animal protein (B_02_WO_DFR)
- Vegetable protein (B_02_WO_DFR)
- Fat (B_02_WO_DFR)
- Total carbohydrates (B_02_WO_DFR)
- Ash (B_02_WO_DFR)
- Sodium (B_02_WO_DFR)
- Potassium (B_02_WO_DFR)
- Phosphorus (B_02_WO_DFR)
- Magnesium (B_02_WO_DFR)
- Copper (B_02_WO_DFR)
- Manganese (B_02_WO_DFR)
- Thiamin (B_02_WO_DFR)
- Riboflavin (B_02_WO_DFR)
- Vitamin B6 (B_02_WO_DFR)
- Fatty acids: 4:0 (B_02_WO_DFR)
- Fatty acids: 6:0 (B_02_WO_DFR)

- Fatty acids: 8:0 (B_02_WO_DFR)
- Fatty acids: 10:0 (B_02_WO_DFR)
- Fatty acids: 12:0 (B_02_WO_DFR)
- Fatty acids: 14:0 (B_02_WO_DFR)
- Fatty acids: 15:0 (B_02_WO_DFR)
- Fatty acids: 16:0 (B_02_WO_DFR)
- Fatty acids: 17:0 (B_02_WO_DFR)
- Fatty acids: 18:0 (B_02_WO_DFR)
- Fatty acids: 20:0 (B_02_WO_DFR)
- Fatty acids: total saturated (B_02_WO_DFR)
- Fatty acids: 14:1 (B_02_WO_DFR)
- Fatty acids: 15:1 (B_02_WO_DFR)
- Fatty acids: 16:1 (B_02_WO_DFR)
- Fatty acids: 17:1 (B_02_WO_DFR)
- Fatty acids: 18:1 (B_02_WO_DFR)
- Fatty acids: 20:1 (B_02_WO_DFR)
- Fatty acids: 22:1 (B_02_WO_DFR)
- Fatty acids: Total monounsaturated (B_02_WO_DFR)
- Fatty acids: 18:2 (B_02_WO_DFR)
- Fatty acids: 18:3 (B_02_WO_DFR)
- Fatty acids: 20:4 (B_02_WO_DFR)
- Fatty acids: 22:6 (B_02_WO_DFR)
- Fatty acids: Total polyunsaturated (B_02_WO_DFR)
- Cholesterol (B_02_WO_DFR)
- Isoleucine (B_02_WO_DFR)
- Leucine (B_02_WO_DFR)
- Lysine (B_02_WO_DFR)
- Methionine (B_02_WO_DFR)
- Cystine (B_02_WO_DFR)
- Phenylalanine (B_02_WO_DFR)
- Tyrosine (B_02_WO_DFR)
- Threonine (B_02_WO_DFR)
- Tryptophan (B_02_WO_DFR)
- Valine (B_02_WO_DFR)
- Arginine (B_02_WO_DFR)
- Histidine (B_02_WO_DFR)
- Alanine (B_02_WO_DFR)
- Aspartic acid (B_02_WO_DFR)
- Glutamic acid (B_02_WO_DFR)
- Glycine (B_02_WO_DFR)
- Proline (B_02_WO_DFR)
- Serine (B_02_WO_DFR)
- Sucrose (B_02_WO_DFR)
- Starch (B_02_WO_DFR)
- Dietary fibre (B_02_WO_DFR)
- Foliates/folic acid (B_02_WO_DFR)
- Vitamin B12 (B_02_WO_DFR)
- Long-chain polyunsaturated fatty acids (B_02_WO_DFR)
- Digestible carbohydrates (B_02_WO_DFR)
- Nicotinamide (B_02_WO_DFR)
- Percentage of energy from protein (B_02_WO_DFR)
- Percentage of energy from sucrose (B_02_WO_DFR)
- S1-Waste (B_02_WO_breakfast1)
- S1-Energy kj (B_02_WO_breakfast1)
- S1-Energy kcal (B_02_WO_breakfast1)
- S1-Water (B_02_WO_breakfast1)
- S1-Total protein (B_02_WO_breakfast1)
- S1-Animal protein (B_02_WO_breakfast1)
- S1-Vegetable protein (B_02_WO_breakfast1)
- S1-Fat (B_02_WO_breakfast1)
- S1-Total carbohydrates (B_02_WO_breakfast1)
- S1-Ash (B_02_WO_breakfast1)
- S1-Sodium (B_02_WO_breakfast1)
- S1-Potassium (B_02_WO_breakfast1)
- S1-Phosphorus (B_02_WO_breakfast1)
- S1-Magnesium (B_02_WO_breakfast1)
- S1-Manganese (B_02_WO_breakfast1)
- S1-Beta-carotene (B_02_WO_breakfast1)
- S1-Thiamin (B_02_WO_breakfast1)
- S1-Riboflavin (B_02_WO_breakfast1)
- S1-Vitamin B6 (B_02_WO_breakfast1)
- S1-Fatty acids: 4:0 (B_02_WO_breakfast1)
- S1-Fatty acids: 6:0 (B_02_WO_breakfast1)
- S1-Fatty acids: 8:0 (B_02_WO_breakfast1)
- S1-Fatty acids: 10:0 (B_02_WO_breakfast1)
- S1-Fatty acids: 12:0 (B_02_WO_breakfast1)
- S1-Fatty acids: 14:0 (B_02_WO_breakfast1)
- S1-Fatty acids: 15:0 (B_02_WO_breakfast1)

- S1-Fatty acids: 16:0 (B_02_WO_breakfast1)
- S1-Fatty acids: 17:0 (B_02_WO_breakfast1)
- S1-Fatty acids: 18:0 (B_02_WO_breakfast1)
- S1-Fatty acids: 20:0 (B_02_WO_breakfast1)
- S1-Fatty acids: total saturated (B_02_WO_breakfast1)
- S1-Fatty acids: 14:1 (B_02_WO_breakfast1)
- S1-Fatty acids: 15:1 (B_02_WO_breakfast1)
- S1-Fatty acids: 16:1 (B_02_WO_breakfast1)
- S1-Fatty acids: 17:1 (B_02_WO_breakfast1)
- S1-Fatty acids: 18:1 (B_02_WO_breakfast1)
- S1-Fatty acids: total monounsaturated (B_02_WO_breakfast1)
- S1-fatty acids: total polyunsaturated (B_02_WO_breakfast1)
- S1-Cholesterol (B_02_WO_breakfast1)
- S1-Isoleucine (B_02_WO_breakfast1)
- S1-Leucine (B_02_WO_breakfast1)
- S1-Lysine (B_02_WO_breakfast1)
- S1-Methionine (B_02_WO_breakfast1)
- S1-Cystine (B_02_WO_breakfast1)
- S1-Phenylalanine (B_02_WO_breakfast1)
- S1-Tyrosine (B_02_WO_breakfast1)
- S1-Threonine (B_02_WO_breakfast1)
- S1-Tryptophan (B_02_WO_breakfast1)
- S1-Valine (B_02_WO_breakfast1)
- S1-Arginine (B_02_WO_breakfast1)
- S1-Histidine (B_02_WO_breakfast1)
- S1-Alanine (B_02_WO_breakfast1)
- S1-Aspartic acid (B_02_WO_breakfast1)
- S1-Glutamic acid (B_02_WO_breakfast1)
- S1-Glycine (B_02_WO_breakfast1)
- S1-Proline (B_02_WO_breakfast1)
- S1-Serine (B_02_WO_breakfast1)
- S1-Sucrose (B_02_WO_breakfast1)
- S1-Starch (B_02_WO_breakfast1)
- S1-Dietary fibre (B_02_WO_breakfast1)
- S1-Folates/folic acid (B_02_WO_breakfast1)
- S1-Vitamin B12 (B_02_WO_breakfast1)
- S1-Digestible carbohydrates (B_02_WO_breakfast1)
- S1-Percentage of energy from protein (B_02_WO_breakfast1)
- S1-Percentage of energy from sucrose (B_02_WO_breakfast1)
- S2-Waste (B_02_WO_breakfast2)
- S2-Vegetable protein (B_02_WO_breakfast2)
- S2-Total carbohydrates (B_02_WO_breakfast2)
- S2-Ash (B_02_WO_breakfast2)
- S2-Potassium (B_02_WO_breakfast2)
- S2-Phosphorus (B_02_WO_breakfast2)
- S2-Magnesium (B_02_WO_breakfast2)
- S2-Copper (B_02_WO_breakfast2)
- S2-Manganese (B_02_WO_breakfast2)
- S2-Beta-carotene (B_02_WO_breakfast2)
- S2-Riboflavin (B_02_WO_breakfast2)
- S2-Vitamin B6 (B_02_WO_breakfast2)
- S2-Fatty acids: 18:3 (B_02_WO_breakfast2)
- S2-Lysine (B_02_WO_breakfast2)
- S2-Valine (B_02_WO_breakfast2)
- S2-Histidine (B_02_WO_breakfast2)
- S2-Aspartic acid (B_02_WO_breakfast2)
- S2-Glutamic acid (B_02_WO_breakfast2)
- S2-Proline (B_02_WO_breakfast2)
- S2-Serine (B_02_WO_breakfast2)
- S2-Sucrose (B_02_WO_breakfast2)
- S2-Dietary fibre (B_02_WO_breakfast2)
- S2-Folates/folic acid (B_02_WO_breakfast2)
- S2-Digestible carbohydrates (B_02_WO_breakfast2)
- S2 - Percentage of energy from carbohydrates (B_02_WO_breakfast2)
- S2 - Percentage of energy from sucrose (B_02_WO_breakfast2)
- OB-Waste (B_02_WO_dinner)
- OB-Energy kJ (B_02_WO_dinner)
- OB-Energy kcal (B_02_WO_dinner)
- OB-Water (B_02_WO_dinner)
- OB-Total protein (B_02_WO_dinner)
- OB-Animal protein (B_02_WO_dinner)
- OB-Vegetable protein (B_02_WO_dinner)
- OB-Fat (B_02_WO_dinner)
- OB-Total carbohydrates (B_02_WO_dinner)
- OB-Ash (B_02_WO_dinner)
- OB-Sodium (B_02_WO_dinner)
- OB-Potassium (B_02_WO_dinner)
- OB-Calcium (B_02_WO_dinner)

- OB-Phosphorus (B_02_WO_dinner)
- OB-Magnesium (B_02_WO_dinner)
- OB-Iron (B_02_WO_dinner)
- OB-Zinc (B_02_WO_dinner)
- OB-Copper (B_02_WO_dinner)
- OB-Manganese (B_02_WO_dinner)
- OB-Vitamin E (alpha-tocopherol equivalent) (B_02_WO_dinner)
- OB-Thiamin (B_02_WO_dinner)
- OB-Riboflavin (B_02_WO_dinner)
- OB-Niacin (B_02_WO_dinner)
- OB-Vitamin B6 (B_02_WO_dinner)
- OB-Vitamin C (B_02_WO_dinner)
- OB-Fatty acids: 4:0 (B_02_WO_dinner)
- OB-Fatty acids: 6:0 (B_02_WO_dinner)
- OB-Fatty acids: 8:0 (B_02_WO_dinner)
- OB-Fatty acids: 10:0 (B_02_WO_dinner)
- OB-Fatty acids: 12:0 (B_02_WO_dinner)
- OB-Fatty acids: 14:0 (B_02_WO_dinner)
- OB-Fatty acids: 15:0 (B_02_WO_dinner)
- OB-Fatty acids: 16:0 (B_02_WO_dinner)
- OB-Fatty acids: 17:0 (B_02_WO_dinner)
- OB-Fatty acids: 18:0 (B_02_WO_dinner)
- OB-Fatty acids: 20:0 (B_02_WO_dinner)
- OB-fatty acids: total saturated (B_02_WO_dinner)
- OB-Fatty acids: 14:1 (B_02_WO_dinner)
- OB-Fatty acids: 15:1 (B_02_WO_dinner)
- OB-Fatty acids: 16:1 (B_02_WO_dinner)
- OB-Fatty acids: 17:1 (B_02_WO_dinner)
- OB-Fatty acids: 18:1 (B_02_WO_dinner)
- OB-Fatty acids: 20:1 (B_02_WO_dinner)
- OB-fatty acids: total monounsaturated (B_02_WO_dinner)
- OB-Fatty acids: 18:2 (B_02_WO_dinner)
- OB-Fatty acids: 18:3 (B_02_WO_dinner)
- OB-Fatty acids: 22:6 (B_02_WO_dinner)
- OB-fatty acids: total polyunsaturated (B_02_WO_dinner)
- OB-Cholesterol (B_02_WO_dinner)
- OB-Isoleucine (B_02_WO_dinner)
- OB-Leucine (B_02_WO_dinner)
- OB-Lysine (B_02_WO_dinner)
- OB-Methionine (B_02_WO_dinner)
- OB-Cystine (B_02_WO_dinner)
- OB-Phenylalanine (B_02_WO_dinner)
- OB-Tyrosine (B_02_WO_dinner)
- OB-Threonine (B_02_WO_dinner)
- OB-Tryptophan (B_02_WO_dinner)
- OB-Valine (B_02_WO_dinner)
- OB-Arginine (B_02_WO_dinner)
- OB-Histidine (B_02_WO_dinner)
- OB-Alanine (B_02_WO_dinner)
- OB-Aspartic acid (B_02_WO_dinner)
- OB-Glutamic acid (B_02_WO_dinner)
- OB-Glycine (B_02_WO_dinner)
- OB-Proline (B_02_WO_dinner)
- OB-Serine (B_02_WO_dinner)
- OB-Sucrose (B_02_WO_dinner)
- OB-Lactose (B_02_WO_dinner)
- OB-Starch (B_02_WO_dinner)
- OB-Dietary fibre (B_02_WO_dinner)
- OB-Iodine (B_02_WO_dinner)
- OB-Long-chain polyunsaturated fatty acids (B_02_WO_dinner)
- OB-Digestible carbohydrates (B_02_WO_dinner)
- OB-Nicotinamide (B_02_WO_dinner)
- POD-Energy kj (B_02_WO_high_tea)
- POD-Energy kcal (B_02_WO_high_tea)
- POD-Total protein (B_02_WO_high_tea)
- POD-Animal protein (B_02_WO_high_tea)
- POD-Vegetable protein (B_02_WO_high_tea)
- POD-Fat (B_02_WO_high_tea)
- POD-Ash (B_02_WO_high_tea)
- POD-Fatty acids: 4:0 (B_02_WO_high_tea)
- POD-Fatty acids: 6:0 (B_02_WO_high_tea)
- POD-Fatty acids: 8:0 (B_02_WO_high_tea)
- POD-Fatty acids: 10:0 (B_02_WO_high_tea)
- POD-Fatty acids: 12:0 (B_02_WO_high_tea)
- POD-Fatty acids: 14:0 (B_02_WO_high_tea)
- POD-Fatty acids: 15:0 (B_02_WO_high_tea)
- POD-Fatty acids: 16:0 (B_02_WO_high_tea)
- POD-Fatty acids: 17:0 (B_02_WO_high_tea)

- POD-Fatty acids: 18:0 (B_02_WO_high_tea)
- POD-Fatty acids: 20:0 (B_02_WO_high_tea)
- POD-Fatty acids: total saturated (B_02_WO_high_tea)
- POD-Fatty acids: 14:1 (B_02_WO_high_tea)
- POD-Fatty acids: 15:1 (B_02_WO_high_tea)
- POD-Fatty acids: 16:1 (B_02_WO_high_tea)
- POD-Fatty acids: 17:1 (B_02_WO_high_tea)
- POD-Fatty acids: 18:1 (B_02_WO_high_tea)
- POD-Fatty acids: total monounsaturated (B_02_WO_high_tea)
- POD-Fatty acids: 18:3 (B_02_WO_high_tea)
- POD-fatty acids: total polyunsaturated (B_02_WO_high_tea)
- POD-Isoleucine (B_02_WO_high_tea)
- POD-Leucine (B_02_WO_high_tea)
- POD-Lysine (B_02_WO_high_tea)
- POD-Methionine (B_02_WO_high_tea)
- POD-Cystine (B_02_WO_high_tea)
- POD-Phenylalanine (B_02_WO_high_tea)
- POD-Tyrosine (B_02_WO_high_tea)
- POD-Threonine (B_02_WO_high_tea)
- POD-Tryptophan (B_02_WO_high_tea)
- POD-Valine (B_02_WO_high_tea)
- POD-Arginine (B_02_WO_high_tea)
- POD-Histidine (B_02_WO_high_tea)
- POD-Alanine (B_02_WO_high_tea)
- POD-Aspartic acid (B_02_WO_high_tea)
- POD-Glutamic acid (B_02_WO_high_tea)
- POD-Glycine (B_02_WO_high_tea)
- POD-Proline (B_02_WO_high_tea)
- POD-Serine (B_02_WO_high_tea)
- POD-Sucrose (B_02_WO_high_tea)
- K-Energy kj (B_02_WO_suppper)
- K-Energy kcal (B_02_WO_suppper)
- K-Total protein (B_02_WO_suppper)
- K-Animal protein (B_02_WO_suppper)
- K-Vegetable protein (B_02_WO_suppper)
- K-Fat (B_02_WO_suppper)
- K-Ash (B_02_WO_suppper)
- K-Sodium (B_02_WO_suppper)
- K-Potassium (B_02_WO_suppper)
- K-Phosphorus (B_02_WO_suppper)
- K-Magnesium (B_02_WO_suppper)
- K-Manganese (B_02_WO_suppper)
- K-Beta-carotene (B_02_WO_suppper)
- K-Riboflavin (B_02_WO_suppper)
- K-Fatty acids: 4:0 (B_02_WO_suppper)
- K-Fatty acids: 6:0 (B_02_WO_suppper)
- K-Fatty acids: 8:0 (B_02_WO_suppper)
- K-Fatty acids: 10:0 (B_02_WO_suppper)
- K-Fatty acids: 12:0 (B_02_WO_suppper)
- K-Fatty acids: 14:0 (B_02_WO_suppper)
- K-Fatty acids: 15:0 (B_02_WO_suppper)
- K-Fatty acids: 16:0 (B_02_WO_suppper)
- K-Fatty acids: 17:0 (B_02_WO_suppper)
- K-Fatty acids: 18:0 (B_02_WO_suppper)
- K-Fatty acids: 20:0 (B_02_WO_suppper)
- K-Fatty acids: total saturated (B_02_WO_suppper)
- K-Fatty acids: 14:1 (B_02_WO_suppper)
- K-Fatty acids: 15:1 (B_02_WO_suppper)
- K-Fatty acids: 16:1 (B_02_WO_suppper)
- K-Fatty acids: 17:1 (B_02_WO_suppper)
- K-Fatty acids: 18:1 (B_02_WO_suppper)
- K-Fatty acids: 20:1 (B_02_WO_suppper)
- K-Fatty acids: 22:1 (B_02_WO_suppper)
- K-Fatty acids: total monounsaturated (B_02_WO_suppper)
- K-Fatty acids: 20:4 (B_02_WO_suppper)
- K-Fatty acids: 22:6 (B_02_WO_suppper)
- K-Fatty acids: total polyunsaturated (B_02_WO_suppper)
- K-Cholesterol (B_02_WO_suppper)
- K-Isoleucine (B_02_WO_suppper)
- K-Leucine (B_02_WO_suppper)
- K-Lysine (B_02_WO_suppper)
- K-Methionine (B_02_WO_suppper)
- K-Cystine (B_02_WO_suppper)
- K-Phenylalanine (B_02_WO_suppper)
- K-Tyrosine (B_02_WO_suppper)
- K-Threonine (B_02_WO_suppper)
- K-Tryptophan (B_02_WO_suppper)
- K-Valine (B_02_WO_suppper)

- K-Arginine (B_02_WO_supper)
- K-Histidine (B_02_WO_supper)
- K-Alanine (B_02_WO_supper)
- K-Aspartic acid (B_02_WO_supper)
- K-Glutamic acid (B_02_WO_supper)
- K-Glycine (B_02_WO_supper)
- K-Proline (B_02_WO_supper)
- K-Serine (B_02_WO_supper)
- K-Sucrose (B_02_WO_supper)
- K-Starch (B_02_WO_supper)
- K-Dietary fibre (B_02_WO_supper)
- K-Vitamin B12 (B_02_WO_supper)
- K-Long-chain polyunsaturated fatty acids (B_02_WO_supper)
- K-Percentage of energy from protein (B_02_WO_supper)
- K-Percentage of energy from fat (B_02_WO_supper)
- K-Percentage of energy from sucrose (B_02_WO_supper)
- POJ-Energy kJ (B_02_WO_snack)
- POJ-Energy kcal (B_02_WO_snack)
- POJ-Fat (B_02_WO_snack)
- POJ-Ash (B_02_WO_snack)
- POJ-Fatty acids: 6:0 (B_02_WO_snack)
- POJ-Fatty acids: 16:0 (B_02_WO_snack)
- POJ-Fatty acids: 17:0 (B_02_WO_snack)
- POJ-Fatty acids: 18:0 (B_02_WO_snack)
- POJ-Fatty acids: total saturated (B_02_WO_snack)
- POJ-Fatty acids: 14:1 (B_02_WO_snack)
- POJ-Fatty acids: 15:1 (B_02_WO_snack)
- POJ-Fatty acids: 16:1 (B_02_WO_snack)
- POJ-Fatty acids: 17:1 (B_02_WO_snack)
- POJ-Fatty acids: 18:1 (B_02_WO_snack)
- POJ-fatty acids: total monounsaturated (B_02_WO_snack)
- POJ-Fatty acids: 18:3 (B_02_WO_snack)
- POJ-Fatty acids: total polyunsaturated (B_02_WO_snack)
- POJ-Isoleucine (B_02_WO_snack)
- POJ-Leucine (B_02_WO_snack)
- POJ-Lysine (B_02_WO_snack)
- POJ-Cystine (B_02_WO_snack)
- POJ-Phenylalanine (B_02_WO_snack)
- POJ-Tyrosine (B_02_WO_snack)
- POJ-Threonine (B_02_WO_snack)
- POJ-Tryptophan (B_02_WO_snack)
- POJ-Valine (B_02_WO_snack)
- POJ-Arginine (B_02_WO_snack)
- POJ-Histidine (B_02_WO_snack)
- POJ-Alanine (B_02_WO_snack)
- POJ-Aspartic acid (B_02_WO_snack)
- POJ-Glutamic acid (B_02_WO_snack)
- POJ-Glycine (B_02_WO_snack)
- POJ-Proline (B_02_WO_snack)
- POJ-Serine (B_02_WO_snack)
- POJ-Sucrose (B_02_WO_snack)
- SUPL-Ash (B_02_A_WiSMzŻW)
- SUPL-Sodium (B_02_A_WiSMzŻW)
- SUPL-Potassium (B_02_A_WiSMzŻW)
- SUPL-Calcium (B_02_A_WiSMzŻW)
- SUPL-Phosphorus (B_02_A_WiSMzŻW)
- SUPL-Magnesium (B_02_A_WiSMzŻW)
- SUPL-Iron (B_02_A_WiSMzŻW)
- SUPL-Zinc (B_02_A_WiSMzŻW)
- SUPL-Copper (B_02_A_WiSMzŻW)
- SUPL-Manganese (B_02_A_WiSMzŻW)
- SUPL-Vitamin A (retinol equivalent) (B_02_A_WiSMzŻW)
- SUPL-Retinol (B_02_A_WiSMzŻW)
- SUPL-Beta-carotene (B_02_A_WiSMzŻW)
- SUPL-Vitamin E (alpha-tocopherol equivalent) (B_02_A_WiSMzŻW)
- SUPL-Thiamin (B_02_A_WiSMzŻW)
- SUPL-Riboflavin (B_02_A_WiSMzŻW)
- SUPL-Niacin (B_02_A_WiSMzŻW)
- SUPL-Vitamin B6 (B_02_A_WiSMzŻW)
- SUPL-Folates/folic acid (B_02_A_WiSMzŻW)
- SUPL-Vitamin B12 (B_02_A_WiSMzŻW)
- SUPL-Vitamin D (B_02_A_WiSMzŻW)
- ŻYW-Ash (B_02_B_WiSMzŻnW)
- ŻYW-Sodium (B_02_B_WiSMzŻnW)
- ŻYW-Potassium (B_02_B_WiSMzŻnW)
- ŻYW-Phosphorus (B_02_B_WiSMzŻnW)
- ŻYW-Magnesium (B_02_B_WiSMzŻnW)
- ŻYW-Copper (B_02_B_WiSMzŻnW)

- ŽYW-Manganese (B_02_B_WiSMzZnW)
 - ŽYW-Riboflavin (B_02_B_WiSMzZnW)
 - ŽYW-Vitamin B12 (B_02_B_WiSMzZnW)
 - Cereal products based on flour P2 (B_04_Product_consumption)
 - Bread P3 (B_04_Product_consumption)
 - Total potatoes P2 (B_04_Product_consumption)
 - Total fruits and vegetables P2 (B_04_Product_consumption)
 - Fruits, market product P3 (B_04_Product_consumption)
 - Juices, fruit and vegetable drinks and nectars P2 (B_04_Product_consumption)
 - Rennet cheese P2 (B_04_Product_consumption)
 - Cottage cheese (sliced and in containers) P3 (B_04_Product_consumption)
 - Meat and poultry based on boneless meat P2 (B_04_Product_consumption)
 - Cold meat, sausage and prepared products based on boneless meat P2 (B_04_Product_consumption)
 - Eggs, market product P2 (B_04_Product_consumption)
 - Total fats P1 (B_04_Product_consumption)
 - Butter and cream based on butter P2 (B_04_Product_consumption)
 - Margarine P2 (B_04_Product_consumption)
 - Sugar, sweets, honey based on sugar P1 (B_04_Product_consumption)
 - Sugar / sucrose P2 (B_04_Product_consumption)
 - Tea, infusions without sugar P4 (B_04_Product_consumption)
- A significant relation between the nutritional value of daily food ration and child's sex was found in the following cases:**
- Cholesterol (B_02_WO_DFR)
 - Lactose (B_02_WO_DFR)
 - S1-Waste (B_02_WO_breakfast1)
 - S1-Fatty acids: 18:4 (B_02_WO_breakfast1)
 - S2-Total carbohydrates (B_02_WO_breakfast2)
 - S2-Fatty acids: 20:1 (B_02_WO_breakfast2)
 - S2-Fatty acids: 20:4 (B_02_WO_breakfast2)
 - S2-Fatty acids: 20:5 (B_02_WO_breakfast2)
 - S2-Fatty acids: 22:5 (B_02_WO_breakfast2)
 - S2-Sucrose (B_02_WO_breakfast2)
 - S2-Dietary fibre (B_02_WO_breakfast2)
 - S2-Folates/folic acid (B_02_WO_breakfast2)
 - S2-Digestible carbohydrates (B_02_WO_breakfast2)
 - S2 - Percentage of energy from sucrose (B_02_WO_breakfast2)
 - OB-Water (B_02_WO_dinner)
 - OB-Calcium (B_02_WO_dinner)
 - OB-Iron (B_02_WO_dinner)
 - OB-Zinc (B_02_WO_dinner)
 - OB-Riboflavin (B_02_WO_dinner)
 - K-Niacin (B_02_WO_supper)
 - K-Fatty acids: 20:5 (B_02_WO_supper)
 - K-Taurine (B_02_WO_supper)
 - POJ-Energy kj (B_02_WO_snack)
 - POJ-Energy kcal (B_02_WO_snack)
 - POJ-Water (B_02_WO_snack)
 - POJ-Total protein (B_02_WO_snack)
 - POJ-Animal protein (B_02_WO_snack)
 - POJ-Fat (B_02_WO_snack)
 - POJ-Total carbohydrates (B_02_WO_snack)
 - POJ-Sodium (B_02_WO_snack)
 - POJ-Calcium (B_02_WO_snack)
 - POJ-Phosphorus (B_02_WO_snack)
 - POJ-Iron (B_02_WO_snack)
 - POJ-Zinc (B_02_WO_snack)
 - POJ-Vitamin A (retinol equivalent) (B_02_WO_snack)
 - POJ-Retinol (B_02_WO_snack)
 - POJ-Beta-carotene (B_02_WO_snack)
 - POJ-Riboflavin (B_02_WO_snack)
 - POJ-Fatty acids: 8:0 (B_02_WO_snack)
 - POJ-Fatty acids: 12:0 (B_02_WO_snack)
 - POJ-Fatty acids: 14:0 (B_02_WO_snack)
 - POJ-Fatty acids: 17:0 (B_02_WO_snack)
 - POJ-Fatty acids: total saturated (B_02_WO_snack)
 - POJ-Fatty acids: 14:1 (B_02_WO_snack)
 - POJ-Fatty acids: 15:1 (B_02_WO_snack)
 - POJ-Fatty acids: 16:1 (B_02_WO_snack)
 - POJ-fatty acids: total monounsaturated (B_02_WO_snack)
 - POJ-Fatty acids: 18:3 (B_02_WO_snack)
 - POJ-Fatty acids: total polyunsaturated (B_02_WO_snack)
 - POJ-Cholesterol (B_02_WO_snack)
 - POJ-Sucrose (B_02_WO_snack)
 - POJ-Lactose (B_02_WO_snack)
 - POJ-vitamin B12 (B_02_WO_snack)

- POJ-vitamin D (B_02_WO_snack)
- POJ-Digestible carbohydrates (B_02_WO_snack)
- Total fruits and vegetables P2 (B_04_Product_consumption)
- Fruits, market product P3 (B_04_Product_consumption)
- Milk and dairy products based on milk P1 (B_04_Product_consumption)
- Eggs, market product P2 (B_04_Product_consumption)

A significant relation between the nutritional value of daily food ration and place of residence was found in the following cases:

- Waste (B_02_WO_DFR)
- Vitamin C (B_02_WO_DFR)
- Fatty acids: 18:3 (B_02_WO_DFR)
- Dietary fibre (B_02_WO_DFR)
- Percentage of energy from fat (B_02_WO_DFR)
- Percentage of energy from carbohydrates (B_02_WO_DFR)
- S1-Copper (B_02_WO_breakfast1)
- S1-Fatty acids: total saturated (B_02_WO_breakfast1)
- S1-Fatty acids: 18:3 (B_02_WO_breakfast1)
- S1-fatty acids: total polyunsaturated (B_02_WO_breakfast1)
- S2-Waste (B_02_WO_breakfast2)
- S2-Calcium (B_02_WO_breakfast2)
- S2-Manganese (B_02_WO_breakfast2)
- S2-Beta-carotene (B_02_WO_breakfast2)
- S2-Riboflavin (B_02_WO_breakfast2)
- S2-Lactose (B_02_WO_breakfast2)
- S2-L-carnitine (B_02_WO_breakfast2)
- OB-Waste (B_02_WO_dinner)
- OB-Energy kJ (B_02_WO_dinner)
- OB-Energy kcal (B_02_WO_dinner)
- OB-Water (B_02_WO_dinner)
- OB-Total protein (B_02_WO_dinner)
- OB-Vegetable protein (B_02_WO_dinner)
- OB-Fat (B_02_WO_dinner)
- OB-Total carbohydrates (B_02_WO_dinner)
- OB-Ash (B_02_WO_dinner)
- OB-Sodium (B_02_WO_dinner)
- OB-Potassium (B_02_WO_dinner)
- OB-Phosphorus (B_02_WO_dinner)
- OB-Magnesium (B_02_WO_dinner)
- OB-Iron (B_02_WO_dinner)
- OB-Zinc (B_02_WO_dinner)
- OB-Copper (B_02_WO_dinner)
- OB-Manganese (B_02_WO_dinner)
- OB-Retinol (B_02_WO_dinner)
- OB-Vitamin E (alpha-tocopherol equivalent) (B_02_WO_dinner)
- OB-Riboflavin (B_02_WO_dinner)
- OB-Vitamin B6 (B_02_WO_dinner)
- OB-Vitamin C (B_02_WO_dinner)
- OB-Fatty acids: 4:0 (B_02_WO_dinner)
- OB-Fatty acids: 6:0 (B_02_WO_dinner)
- OB-Fatty acids: 8:0 (B_02_WO_dinner)
- OB-Fatty acids: 10:0 (B_02_WO_dinner)
- OB-Fatty acids: 12:0 (B_02_WO_dinner)
- OB-Fatty acids: 14:0 (B_02_WO_dinner)
- OB-Fatty acids: 15:0 (B_02_WO_dinner)
- OB-Fatty acids: 16:0 (B_02_WO_dinner)
- OB-Fatty acids: 17:0 (B_02_WO_dinner)
- OB-Fatty acids: 18:0 (B_02_WO_dinner)
- OB-Fatty acids: 20:0 (B_02_WO_dinner)
- OB-fatty acids: total saturated (B_02_WO_dinner)
- OB-Fatty acids: 14:1 (B_02_WO_dinner)
- OB-Fatty acids: 16:1 (B_02_WO_dinner)
- OB-Fatty acids: 17:1 (B_02_WO_dinner)
- OB-Fatty acids: 18:1 (B_02_WO_dinner)
- OB-fatty acids: total monounsaturated (B_02_WO_dinner)
- OB-Fatty acids: 18:3 (B_02_WO_dinner)
- OB-fatty acids: total polyunsaturated (B_02_WO_dinner)
- OB-Cholesterol (B_02_WO_dinner)
- OB-Isoleucine (B_02_WO_dinner)
- OB-Leucine (B_02_WO_dinner)
- OB-Lysine (B_02_WO_dinner)
- OB-Methionine (B_02_WO_dinner)
- OB-Cystine (B_02_WO_dinner)
- OB-Phenylalanine (B_02_WO_dinner)
- OB-Tyrosine (B_02_WO_dinner)
- OB-Threonine (B_02_WO_dinner)
- OB-Tryptophan (B_02_WO_dinner)
- OB-Valine (B_02_WO_dinner)

- OB-Arginine (B_02_WO_dinner)
- OB-Histidine (B_02_WO_dinner)
- OB-Alanine (B_02_WO_dinner)
- OB-Aspartic acid (B_02_WO_dinner)
- OB-Glutamic acid (B_02_WO_dinner)
- OB-Glycine (B_02_WO_dinner)
- OB-Proline (B_02_WO_dinner)
- OB-Serine (B_02_WO_dinner)
- OB-Sucrose (B_02_WO_dinner)
- OB-Starch (B_02_WO_dinner)
- OB-Dietary fibre (B_02_WO_dinner)
- OB-Folates/folic acid (B_02_WO_dinner)
- OB-vitamin B12 (B_02_WO_dinner)
- OB-Digestible carbohydrates (B_02_WO_dinner)
- SUB-Total carbohydrates (B_02_WO_high_tea)
- POD-Vitamin C (B_02_WO_high_tea)
- POD-Fatty acids: 18:1 (B_02_WO_high_tea)
- POD-Fatty acids: total monounsaturated (B_02_WO_high_tea)
- POD-Fatty acids: 18:2 (B_02_WO_high_tea)
- POD-Fatty acids: 18:4 (B_02_WO_high_tea)
- POD-fatty acids: total polyunsaturated (B_02_WO_high_tea)
- POD-Sucrose (B_02_WO_high_tea)
- POD-Folates/folic acid (B_02_WO_high_tea)
- POD-vitamin D (B_02_WO_high_tea)
- POD-Digestible carbohydrates (B_02_WO_high_tea)
- K-Percentage of energy from carbohydrates (B_02_WO_supper)
- POJ-Animal protein (B_02_WO_snack)
- POJ-vitamin B12 (B_02_WO_snack)
- SUPL-Vitamin D (B_02_A_wiSMzŻW)
- ŻYW-Vitamin C (B_02_B_wiSMzŻnW)
- Groat and rice P3 (B_04_Product_consumption)
- Total fruits and vegetables P2 (B_04_Product_consumption)
- Vegetables, market product P3 (B_04_Product_consumption)
- Juices, fruit and vegetable drinks and nectars P2 (B_04_Product_consumption)
- Total fats P1 (B_04_Product_consumption)
- Water P3 (B_04_Product_consumption)

A significant relation between the nutritional value of daily food ration and education of mother was found in the following cases:

- Energy kJ (B_02_WO_DFR)
- Energy kcal (B_02_WO_DFR)
- Total protein (B_02_WO_DFR)
- Animal protein (B_02_WO_DFR)
- Vegetable protein (B_02_WO_DFR)
- Fat (B_02_WO_DFR)
- Ash (B_02_WO_DFR)
- Sodium (B_02_WO_DFR)
- Potassium (B_02_WO_DFR)
- Magnesium (B_02_WO_DFR)
- Manganese (B_02_WO_DFR)
- Riboflavin (B_02_WO_DFR)
- Vitamin B6 (B_02_WO_DFR)
- Fatty acids: 8:0 (B_02_WO_DFR)
- Fatty acids: 12:0 (B_02_WO_DFR)
- Fatty acids: 15:0 (B_02_WO_DFR)
- Fatty acids: 16:0 (B_02_WO_DFR)
- Fatty acids: 17:0 (B_02_WO_DFR)
- Fatty acids: 18:0 (B_02_WO_DFR)
- Fatty acids: 20:0 (B_02_WO_DFR)
- Fatty acids: 14:1 (B_02_WO_DFR)
- Fatty acids: 15:1 (B_02_WO_DFR)
- Fatty acids: 16:1 (B_02_WO_DFR)
- Fatty acids: 17:1 (B_02_WO_DFR)
- Fatty acids: 18:1 (B_02_WO_DFR)
- Fatty acids: 20:1 (B_02_WO_DFR)
- Fatty acids: Total monounsaturated (B_02_WO_DFR)
- Fatty acids: 22:5 (B_02_WO_DFR)
- Isoleucine (B_02_WO_DFR)
- Leucine (B_02_WO_DFR)
- Lysine (B_02_WO_DFR)
- Methionine (B_02_WO_DFR)
- Cystine (B_02_WO_DFR)
- Phenylalanine (B_02_WO_DFR)
- Tyrosine (B_02_WO_DFR)
- Threonine (B_02_WO_DFR)
- Tryptophan (B_02_WO_DFR)
- Valine (B_02_WO_DFR)

- Arginine (B_02_WO_DFR)
- Histidine (B_02_WO_DFR)
- Alanine (B_02_WO_DFR)
- Aspartic acid (B_02_WO_DFR)
- Glutamic acid (B_02_WO_DFR)
- Glycine (B_02_WO_DFR)
- Proline (B_02_WO_DFR)
- Serine (B_02_WO_DFR)
- Starch (B_02_WO_DFR)
- S1-Fatty acids: 20:1 (B_02_WO_breakfast1)
- S1-Fatty acids: 22:1 (B_02_WO_breakfast1)
- S1-Fatty acids: 18:4 (B_02_WO_breakfast1)
- S1-Fatty acids: 20:4 (B_02_WO_breakfast1)
- S1-Fatty acids: 22:6 (B_02_WO_breakfast1)
- S1-Iodine (B_02_WO_breakfast1)
- S1-Long-chain polyunsaturated fatty acids (B_02_WO_breakfast1)
- S2-Energy kj (B_02_WO_breakfast2)
- S2-Energy kcal (B_02_WO_breakfast2)
- S2-Ash (B_02_WO_breakfast2)
- S2-Magnesium (B_02_WO_breakfast2)
- S2-Retinol (B_02_WO_breakfast2)
- S2-Fatty acids: 4:0 (B_02_WO_breakfast2)
- S2-Lactose (B_02_WO_breakfast2)
- S2-Iodine (B_02_WO_breakfast2)
- OB-Ash (B_02_WO_dinner)
- OB-Potassium (B_02_WO_dinner)
- OB-Thiamin (B_02_WO_dinner)
- OB-Vitamin B6 (B_02_WO_dinner)
- OB-Fatty acids: 20:3 (B_02_WO_dinner)
- OB-Fatty acids: 22:5 (B_02_WO_dinner)
- OB-Starch (B_02_WO_dinner)
- OB-Iodine (B_02_WO_dinner)
- OB-Taurine (B_02_WO_dinner)
- POD-Animal protein (B_02_WO_high_tea)
- POD-Calcium (B_02_WO_high_tea)
- POD-Phosphorus (B_02_WO_high_tea)
- POD-Riboflavin (B_02_WO_high_tea)
- POD-Fatty acids: 4:0 (B_02_WO_high_tea)
- POD-Fatty acids: 6:0 (B_02_WO_high_tea)
- POD-Fatty acids: 8:0 (B_02_WO_high_tea)
- POD-Fatty acids: 10:0 (B_02_WO_high_tea)
- POD-Fatty acids: 12:0 (B_02_WO_high_tea)
- POD-Fatty acids: 14:0 (B_02_WO_high_tea)
- POD-Fatty acids: 15:0 (B_02_WO_high_tea)
- POD-Fatty acids: 17:0 (B_02_WO_high_tea)
- POD-Fatty acids: 14:1 (B_02_WO_high_tea)
- POD-Fatty acids: 15:1 (B_02_WO_high_tea)
- POD-Fatty acids: 16:1 (B_02_WO_high_tea)
- POD-Fatty acids: 17:1 (B_02_WO_high_tea)
- POD-Fatty acids: 18:4 (B_02_WO_high_tea)
- POD-Lysine (B_02_WO_high_tea)
- POD-Lactose (B_02_WO_high_tea)
- POD-vitamin B12 (B_02_WO_high_tea)
- K-Animal protein (B_02_WO_suppper)
- K-Vegetable protein (B_02_WO_suppper)
- K-Fat (B_02_WO_suppper)
- K-Ash (B_02_WO_suppper)
- K-Sodium (B_02_WO_suppper)
- K-Manganese (B_02_WO_suppper)
- K-Vitamin C (B_02_WO_suppper)
- K-Fatty acids: 4:0 (B_02_WO_suppper)
- K-Fatty acids: 6:0 (B_02_WO_suppper)
- K-Fatty acids: 8:0 (B_02_WO_suppper)
- K-Fatty acids: 10:0 (B_02_WO_suppper)
- K-Fatty acids: 12:0 (B_02_WO_suppper)
- K-Fatty acids: 14:0 (B_02_WO_suppper)
- K-Fatty acids: 15:0 (B_02_WO_suppper)
- K-Fatty acids: 16:0 (B_02_WO_suppper)
- K-Fatty acids: 17:0 (B_02_WO_suppper)
- K-Fatty acids: 18:0 (B_02_WO_suppper)
- K-Fatty acids: 20:0 (B_02_WO_suppper)
- K-Fatty acids: total saturated (B_02_WO_suppper)
- K-Fatty acids: 14:1 (B_02_WO_suppper)
- K-Fatty acids: 16:1 (B_02_WO_suppper)
- K-Fatty acids: 17:1 (B_02_WO_suppper)
- K-Fatty acids: 18:1 (B_02_WO_suppper)
- K-Fatty acids: total monounsaturated (B_02_WO_suppper)
- K-Fatty acids: 22:6 (B_02_WO_suppper)

- K-Cholesterol (B_02_WO_supper)
- K-Isoleucine (B_02_WO_supper)
- K-Leucine (B_02_WO_supper)
- K-Lysine (B_02_WO_supper)
- K-Methionine (B_02_WO_supper)
- K-Cystine (B_02_WO_supper)
- K-Phenylalanine (B_02_WO_supper)
- K-Tyrosine (B_02_WO_supper)
- K-Threonine (B_02_WO_supper)
- K-Tryptophan (B_02_WO_supper)
- K-Valine (B_02_WO_supper)
- K-Arginine (B_02_WO_supper)
- K-Histidine (B_02_WO_supper)
- K-Alanine (B_02_WO_supper)
- K-Aspartic acid (B_02_WO_supper)
- K-Glutamic acid (B_02_WO_supper)
- K-Glycine (B_02_WO_supper)
- K-Proline (B_02_WO_supper)
- K-Serine (B_02_WO_supper)
- K-Starch (B_02_WO_supper)
- K-Long-chain polyunsaturated fatty acids (B_02_WO_supper)
- K-Percentage of energy from fat (B_02_WO_supper)
- K-Percentage of energy from carbohydrates (B_02_WO_supper)
- POJ-Potassium (B_02_WO_snack)
- POJ-Niacin (B_02_WO_snack)
- SUPL-Ash (B_02_A_WiSMzZW)
- SUPL-Sodium (B_02_A_WiSMzZW)
- SUPL-Potassium (B_02_A_WiSMzZW)
- SUPL-Calcium (B_02_A_WiSMzZW)
- SUPL-Phosphorus (B_02_A_WiSMzZW)
- SUPL-Magnesium (B_02_A_WiSMzZW)
- SUPL-Iron (B_02_A_WiSMzZW)
- SUPL-Zinc (B_02_A_WiSMzZW)
- SUPL-Copper (B_02_A_WiSMzZW)
- SUPL-Manganese (B_02_A_WiSMzZW)
- SUPL-Thiamin (B_02_A_WiSMzZW)
- SUPL-Riboflavin (B_02_A_WiSMzZW)
- SUPL-Niacin (B_02_A_WiSMzZW)
- SUPL-Vitamin B6 (B_02_A_WiSMzZW)
- SUPL-Folates/folic acid (B_02_A_WiSMzZW)
- ŻYW-Ash (B_02_B_WiSMzZnW)
- ŻYW-Sodium (B_02_B_WiSMzZnW)
- ŻYW-Potassium (B_02_B_WiSMzZnW)
- ŻYW-Manganese (B_02_B_WiSMzZnW)
- ŻYW-Riboflavin (B_02_B_WiSMzZnW)
- Bread P3 (B_04_Product_consumption)
- Total potatoes P2 (B_04_Product_consumption)
- Cold meat, sausage and prepared products based on boneless meat P2 (B_04_Product_consumption)
- Tea, infusions without sugar P4 (B_04_Product_consumption)
- Water P3 (B_04_Product_consumption)

A significant relation between the nutritional value of daily food ration and education of father was found in the following cases:

- Energy kJ (B_02_WO_DFR)
- Energy kcal (B_02_WO_DFR)
- Total protein (B_02_WO_DFR)
- Animal protein (B_02_WO_DFR)
- Vegetable protein (B_02_WO_DFR)
- Fat (B_02_WO_DFR)
- Ash (B_02_WO_DFR)
- Calcium (B_02_WO_DFR)
- Phosphorus (B_02_WO_DFR)
- Magnesium (B_02_WO_DFR)
- Riboflavin (B_02_WO_DFR)
- Fatty acids: 4:0 (B_02_WO_DFR)
- Fatty acids: 6:0 (B_02_WO_DFR)
- Fatty acids: 8:0 (B_02_WO_DFR)
- Fatty acids: 10:0 (B_02_WO_DFR)
- Fatty acids: 12:0 (B_02_WO_DFR)
- Fatty acids: 14:0 (B_02_WO_DFR)
- Fatty acids: 16:0 (B_02_WO_DFR)
- Fatty acids: 17:0 (B_02_WO_DFR)
- Fatty acids: 18:0 (B_02_WO_DFR)
- Fatty acids: 20:0 (B_02_WO_DFR)
- Fatty acids: total saturated (B_02_WO_DFR)
- Fatty acids: 14:1 (B_02_WO_DFR)
- Fatty acids: 15:1 (B_02_WO_DFR)

- Fatty acids: 16:1 (B_02_WO_DFR)
- Fatty acids: 17:1 (B_02_WO_DFR)
- Fatty acids: 18:1 (B_02_WO_DFR)
- Fatty acids: Total monounsaturated (B_02_WO_DFR)
- Fatty acids: 18:4 (B_02_WO_DFR)
- Cholesterol (B_02_WO_DFR)
- Isoleucine (B_02_WO_DFR)
- Leucine (B_02_WO_DFR)
- Lysine (B_02_WO_DFR)
- Methionine (B_02_WO_DFR)
- Cystine (B_02_WO_DFR)
- Phenylalanine (B_02_WO_DFR)
- Tyrosine (B_02_WO_DFR)
- Threonine (B_02_WO_DFR)
- Tryptophan (B_02_WO_DFR)
- Valine (B_02_WO_DFR)
- Histidine (B_02_WO_DFR)
- Alanine (B_02_WO_DFR)
- Aspartic acid (B_02_WO_DFR)
- Glutamic acid (B_02_WO_DFR)
- Glycine (B_02_WO_DFR)
- Proline (B_02_WO_DFR)
- Serine (B_02_WO_DFR)
- Starch (B_02_WO_DFR)
- Digestible carbohydrates (B_02_WO_DFR)
- S1-Total protein (B_02_WO_breakfast1)
- S1-Fat (B_02_WO_breakfast1)
- S1-Vitamin A (retinol equivalent) (B_02_WO_breakfast1)
- S1-Retinol (B_02_WO_breakfast1)
- S1-Vitamin E (alpha-tocopherol equivalent) (B_02_WO_breakfast1)
- S1-Vitamin C (B_02_WO_breakfast1)
- S1-Fatty acids: 20:0 (B_02_WO_breakfast1)
- S1-Fatty acids: 16:1 (B_02_WO_breakfast1)
- S1-vitamin D (B_02_WO_breakfast1)
- S1-Iodine (B_02_WO_breakfast1)
- S1-Percentage of energy from fat (B_02_WO_breakfast1)
- S1-Percentage of energy from carbohydrates (B_02_WO_breakfast1)
- S2-Vegetable protein (B_02_WO_breakfast2)
- S2-Total carbohydrates (B_02_WO_breakfast2)
- S2-Magnesium (B_02_WO_breakfast2)
- S2-Copper (B_02_WO_breakfast2)
- S2-Vitamin A (retinol equivalent) (B_02_WO_breakfast2)
- S2-Fatty acids: 4:0 (B_02_WO_breakfast2)
- S2-Cystine (B_02_WO_breakfast2)
- S2-Starch (B_02_WO_breakfast2)
- S2-Dietary fibre (B_02_WO_breakfast2)
- S2-Digestible carbohydrates (B_02_WO_breakfast2)
- POD-Energy kj (B_02_WO_high_tea)
- POD-Energy kcal (B_02_WO_high_tea)
- POD-Water (B_02_WO_high_tea)
- POD-Total protein (B_02_WO_high_tea)
- POD-Animal protein (B_02_WO_high_tea)
- SUB-Total carbohydrates (B_02_WO_high_tea)
- POD-Calcium (B_02_WO_high_tea)
- POD-Phosphorus (B_02_WO_high_tea)
- POD-Magnesium (B_02_WO_high_tea)
- POD-Iron (B_02_WO_high_tea)
- POD-Zinc (B_02_WO_high_tea)
- POD-Copper (B_02_WO_high_tea)
- POD-Vitamin A (retinol equivalent) (B_02_WO_high_tea)
- POD-Retinol (B_02_WO_high_tea)
- POD-Riboflavin (B_02_WO_high_tea)
- POD-Niacin (B_02_WO_high_tea)
- POD-Vitamin C (B_02_WO_high_tea)
- POD-Fatty acids: 4:0 (B_02_WO_high_tea)
- POD-Fatty acids: 6:0 (B_02_WO_high_tea)
- POD-Fatty acids: 8:0 (B_02_WO_high_tea)
- POD-Fatty acids: 10:0 (B_02_WO_high_tea)
- POD-Fatty acids: 12:0 (B_02_WO_high_tea)
- POD-Fatty acids: 14:0 (B_02_WO_high_tea)
- POD-Fatty acids: 15:0 (B_02_WO_high_tea)
- POD-Fatty acids: 18:0 (B_02_WO_high_tea)
- POD-Fatty acids: 20:0 (B_02_WO_high_tea)
- POD-Fatty acids: 18:4 (B_02_WO_high_tea)
- POD-Lysine (B_02_WO_high_tea)
- POD-Tryptophan (B_02_WO_high_tea)
- POD-Lactose (B_02_WO_high_tea)
- POD-Folates/folic acid (B_02_WO_high_tea)

	<ul style="list-style-type: none"> • POD-vitamin B12 (B_02_WO_high_tea) • POD-vitamin D (B_02_WO_high_tea) • POD-Digestible carbohydrates (B_02_WO_high_tea) • K-Water (B_02_WO_supper) • K-Total protein (B_02_WO_supper) • K-Animal protein (B_02_WO_supper) • K-Vegetable protein (B_02_WO_supper) • K-Ash (B_02_WO_supper) • K-Sodium (B_02_WO_supper) • K-Calcium (B_02_WO_supper) • K-Magnesium (B_02_WO_supper) • K-Vitamin C (B_02_WO_supper) • K-Fatty acids: 4:0 (B_02_WO_supper) • K-Fatty acids: 6:0 (B_02_WO_supper) • K-Fatty acids: 8:0 (B_02_WO_supper) • K-Fatty acids: 10:0 (B_02_WO_supper) • K-Fatty acids: 12:0 (B_02_WO_supper) • K-Fatty acids: 14:0 (B_02_WO_supper) • K-Fatty acids: 15:0 (B_02_WO_supper) • K-Fatty acids: 16:0 (B_02_WO_supper) • K-Fatty acids: 17:0 (B_02_WO_supper) • K-Fatty acids: 18:0 (B_02_WO_supper) • K-Fatty acids: 20:0 (B_02_WO_supper) • K-Fatty acids: total saturated (B_02_WO_supper) • K-Fatty acids: 14:1 (B_02_WO_supper) • K-Fatty acids: 16:1 (B_02_WO_supper) • K-Fatty acids: 17:1 (B_02_WO_supper) • K-Fatty acids: 18:1 (B_02_WO_supper) • K-Fatty acids: total monounsaturated (B_02_WO_supper) • K-Fatty acids: 22:6 (B_02_WO_supper) • K-Cholesterol (B_02_WO_supper) • K-Isoleucine (B_02_WO_supper) • K-Leucine (B_02_WO_supper) • K-Lysine (B_02_WO_supper) • K-Methionine (B_02_WO_supper) • K-Cystine (B_02_WO_supper) • K-Phenylalanine (B_02_WO_supper) • K-Tyrosine (B_02_WO_supper) • K-Threonine (B_02_WO_supper) • K-Tryptophan (B_02_WO_supper) • K-Valine (B_02_WO_supper) • K-Arginine (B_02_WO_supper) • K-Histidine (B_02_WO_supper) • K-Alanine (B_02_WO_supper) • K-Aspartic acid (B_02_WO_supper) • K-Glutamic acid (B_02_WO_supper) • K-Glycine (B_02_WO_supper) • K-Proline (B_02_WO_supper) • K-Serine (B_02_WO_supper) • K-Lactose (B_02_WO_supper) • K-Starch (B_02_WO_supper) • K-Long-chain polyunsaturated fatty acids (B_02_WO_supper) • K-Percentage of energy from protein (B_02_WO_supper) • K-Percentage of energy from carbohydrates (B_02_WO_supper) • POJ-Ash (B_02_WO_snack) • POJ-Potassium (B_02_WO_snack) • POJ-Magnesium (B_02_WO_snack) • POJ-Fatty acids: 16:0 (B_02_WO_snack) • POJ-Sucrose (B_02_WO_snack) • ŻYW-Ash (B_02_B_WiSMzŻnW) • ŻYW-Calcium (B_02_B_WiSMzŻnW) • ŻYW-Phosphorus (B_02_B_WiSMzŻnW) • ŻYW-Magnesium (B_02_B_WiSMzŻnW) • ŻYW-Riboflavin (B_02_B_WiSMzŻnW) • Total potatoes P2 (B_04_Product_consumption) • Juices, fruit and vegetable drinks and nectars P2 (B_04_Product_consumption) • Rennet cheese P2 (B_04_Product_consumption) • Cottage cheese (sliced and in containers) P3 (B_04_Product_consumption) • Cold meat, sausage and prepared products based on boneless meat P2 (B_04_Product_consumption) • Margarine P2 (B_04_Product_consumption) • Other animal fats P2 (B_04_Product_consumption) • Water P3 (B_04_Product_consumption)
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<p>3. Determining the relation between the nutritional status (BMI AKT, BMI z-score - file <i>BIOSTAT_03</i>; variable: <bmi to age z-score AKT>) and diets of the studied children (number of meals, dietary behaviour, nutritional value of daily food ration, consumption in the product groups - as above)</p>	<p>Files: pkt1-3.xls</p> <p>The methods used: Spearman's rank correlation was used</p> <p>Conclusions: <u>Variables that significantly correlated positively with the nutritional status of children:</u></p> <ul style="list-style-type: none"> • C.7. Does your child eat snacks between meals? (B_01_Survey_data) (significance level p <0.06) • C.7. Sandwiches (how many times a day) (B_01_Survey_data) • C.7. Crisps, salty sticks (quantity) (B_01_Survey_data) <ul style="list-style-type: none"> • S1-Thiamin (B_02_WO_breakfast1) • S1-Riboflavin (B_02_WO_breakfast1) • OB-Percentage of energy from protein (B_02_WO_dinner) • POD-Vegetable protein (B_02_WO_high_tea) • POD-Magnesium (B_02_WO_high_tea) • POD-Manganese (B_02_WO_high_tea) • POD-Niacin (B_02_WO_high_tea) • POD-Fatty acids: 16:0 (B_02_WO_high_tea) • POD-Fatty acids: 20:0 (B_02_WO_high_tea) • POD-Fatty acids: total saturated (B_02_WO_high_tea) • POD-Fatty acids: 18:1 (B_02_WO_high_tea) • POD-Fatty acids: 18:2 (B_02_WO_high_tea) • POD-Isoleucine (B_02_WO_high_tea) • POD-Leucine (B_02_WO_high_tea) • POD-Methionine (B_02_WO_high_tea) • POD-Cystine (B_02_WO_high_tea) • POD-Phenylalanine (B_02_WO_high_tea) • POD-Tyrosine (B_02_WO_high_tea) • POD-Threonine (B_02_WO_high_tea) • POD-Tryptophan (B_02_WO_high_tea) • POD-Valine (B_02_WO_high_tea) • POD-Arginine (B_02_WO_high_tea) • POD-Histidine (B_02_WO_high_tea) • POD-Alanine (B_02_WO_high_tea) • POD-Aspartic acid (B_02_WO_high_tea) • POD-Glutamic acid (B_02_WO_high_tea) • POD-Glycine (B_02_WO_high_tea) • POD-Serine (B_02_WO_high_tea) • POD-Folates/folic acid (B_02_WO_high_tea) • K-Fatty acids: 6:0 (B_02_WO_suppper) • K-Fatty acids: 8:0 (B_02_WO_suppper) • K-Fatty acids: 10:0 (B_02_WO_suppper) • K-Fatty acids: 12:0 (B_02_WO_suppper) • K-Fatty acids: 15:0 (B_02_WO_suppper) • K-Fatty acids: 16:1 (B_02_WO_suppper) • Bread P3 (B_04_Product_consumption) <p><u>Variables that significantly correlated negatively with the nutritional status of children:</u></p> <ul style="list-style-type: none"> • S2-Fatty acids: 22:6 (B_02_WO_breakfast2) • S2-Long-chain polyunsaturated fatty acids (B_02_WO_breakfast2) • K-vitamin D (B_02_WO_suppper) • K-Iodine (B_02_WO_suppper)
<p>4. Verification of the hypothesis - there is a relationship between the diet of children and their nutritional status by multivariate variance analysis, with the following independent variables: - a set of parameters determining the structure of consumption of food products (File <i>BIOSTAT_04 -consumption of product groups - all variables</i>) - a set of parameters determining the nutritional value of the average daily food ration of the studied children (File <i>BIOSTAT_02_POPR, WO DFR sheet - nutritional value of the average daily food ration - all variables</i>) and the dependent variable BMI z-score (<i>BIOSTAT_03 file - variable: <bmi to age z-score AKT></i>) using the procedure of step selection of variables</p>	<p>Files: Folder Logistic regression results</p>

5. Identification of independent determinants in children:

- obesity (BMI z-score>2)
- overweight (1< BMI z-score ≤ 2)
- normal nutritional status (-1 <BMI z-score ≤ 1)
- deficiency of body weight (-2≤ BMI z-score < -1)
- significant deficiency of body mass index (BMI z-score <-2)

File:

File with calculations named niezależne czynniki.xls is located in the server

The methods used:

Spearman's rank correlation was used

Variable BMI z-score was used to create two variables 0/1 according to the following specifications:
Deficiency of body weight (0-normal state of body weight, 1-state of deficiency or significant deficiency)
No group with excess body weight in the analysis

Excess body weight (0-normal state of body weight, 1-state of obesity or overweight)
No group with deficiency of body weight in the analysis

Conclusions:

Factors positively affecting the occurrence of deficiency:

- A.4. Place of residence (B_01_Survey_data)
- C.10. Frozen vegetables (B_01_Survey_data)
- C.11. hard cheese (frequency) (B_01_Survey_data)
- OB-Percentage of energy from carbohydrates (B_02_WO_dinner)

Factors negatively affecting the occurrence of deficiency:

- A.10. Financial situation of the family (B_01_Survey_data)
- C.6. High tea (B_01_Survey_data)
- C.6. Meal/drink at night (B_01_Survey_data)
- C.11. dairy dessert (frequency) (B_01_Survey_data)
- C.12. chicory coffee (without milk) (frequency) (B_01_Survey_data)
- Vitamin E (alpha-tocopherol equivalent) (B_02_WO_DFR)
- Fatty acids: 20:1 (B_02_WO_DFR)
- Fatty acids: 18:2 (B_02_WO_DFR)
- Fatty acids: 18:3 (B_02_WO_DFR)
- Fatty acids: Total polyunsaturated (B_02_WO_DFR)
- OB-Fat (B_02_WO_dinner)
- OB-Vitamin E (alpha-tocopherol equivalent) (B_02_WO_dinner)
- OB-Fatty acids: 20:0 (B_02_WO_dinner)
- OB-Fatty acids: 18:1 (B_02_WO_dinner)
- OB-Fatty acids: 20:1 (B_02_WO_dinner)
- OB-fatty acids: total monounsaturated (B_02_WO_dinner)
- OB-Fatty acids: 18:2 (B_02_WO_dinner)
- OB-Fatty acids: 18:3 (B_02_WO_dinner)
- OB-fatty acids: total polyunsaturated (B_02_WO_dinner)
- OB-Percentage of energy from fat (B_02_WO_dinner)
- POD-Vegetable protein (B_02_WO_high_tea)
- POD-Niacin (B_02_WO_high_tea)
- POD-Fatty acids: 20:4 (B_02_WO_high_tea)
- POD-Fatty acids: 22:6 (B_02_WO_high_tea)
- POD-Dietary fibre (B_02_WO_high_tea)
- POD-Long-chain polyunsaturated fatty acids (B_02_WO_high_tea)
- ŻYW-Vitamin E (alpha-tocopherol equivalent) (B_02_B_WiSMzżnW)
- Rennet cheese P2 (B_04_Product_consumption)
- Oils P2 (B_04_Product_consumption)

Factors positively affecting the occurrence of excess:

- A.4. Place of residence (B_01_Survey_data)
- A.9. none of parents (B_01_Survey_data)
- A.12. I am not interested in these issues (B_01_Survey_data)
- C.8. I cook separately for the child (B_01_Survey_data)
- C.8. fruit purees, puddings (B_01_Survey_data)
- C.8. juices, beverages (B_01_Survey_data)
- C.10. Olive oil (B_01_Survey_data)
- C.11. modified milk (frequency) (B_01_Survey_data)
- C.11. other (frequency) (B_01_Survey_data)
- Fatty acids: 18:4 (B_02_WO_DFR)
- POD-Riboflavin (B_02_WO_high_tea)
- POD-Fatty acids: 16:0 (B_02_WO_high_tea)
- POD-Fatty acids: total saturated (B_02_WO_high_tea)
- POD-Fatty acids: 18:1 (B_02_WO_high_tea)
- POD-Cystine (B_02_WO_high_tea)
- K-Fatty acids: 8:0 (B_02_WO_suppper)
- K-Fatty acids: 18:0 (B_02_WO_suppper)
- K-Fatty acids: 15:1 (B_02_WO_suppper)
- K-Fatty acids: 16:1 (B_02_WO_suppper)

	<ul style="list-style-type: none"> • K-Fatty acids: 18:1 (B_02_WO_supper) • SUPL-Vitamin D (B_02_A_WiSMzŻW) <p><u>Factors negatively affecting the occurrence of excess:</u></p> <ul style="list-style-type: none"> • A.11. babysitter (B_01_Survey_data) • A.12. TV, radio (B_01_Survey_data) • A.12. books, magazines (B_01_Survey_data) • A.13.-INT- eats meals with no added fat (B_01_Survey_data) • C.4. In which month of age the products containing gluten were introduced to the child's diet (B_01_Survey_data) • C.14. Vegetables (B_01_Survey_data) • C.17. Age of 7-12 months (Vitamin D) (B_01_Survey_data) • C.17. Age of 13-18 months (Preparation 1) (B_01_Survey_data) • Vitamin E (alpha-tocopherol equivalent) (B_02_WO_DFR) • Fatty acids: 18:2 (B_02_WO_DFR) • Fatty acids: 18:3 (B_02_WO_DFR) • OB-Fat (B_02_WO_dinner) • OB-Vitamin E (alpha-tocopherol equivalent) (B_02_WO_dinner) • OB-Fatty acids: 20:0 (B_02_WO_dinner) • OB-Fatty acids: 18:1 (B_02_WO_dinner) • OB-fatty acids: total monounsaturated (B_02_WO_dinner) • OB-Fatty acids: 18:2 (B_02_WO_dinner) • OB-Fatty acids: 18:3 (B_02_WO_dinner) • OB-fatty acids: total polyunsaturated (B_02_WO_dinner) • K-Zinc (B_02_WO_supper) • K-Niacin (B_02_WO_supper) • K-vitamin D (B_02_WO_supper) • K-Iodine (B_02_WO_supper) • K-Taurine (B_02_WO_supper) • K-L-carnitine (B_02_WO_supper) • POJ-Fatty acids: 12:0 (B_02_WO_snack) • POJ-Fatty acids: 15:0 (B_02_WO_snack) • POJ-Fatty acids: 14:1 (B_02_WO_snack) • ŻYW-Iron (B_02_B_WiSMzŻnW) • ŻYW-Vitamin E (alpha-tocopherol equivalent) (B_02_B_WiSMzŻnW) • Oils P2 (B_04_Product_consumption)
6. Estimation of the odds ratio for excess and deficiency of body weight in the studied children.	Files: Folder <u>Logistic regression results</u>
7. Cluster analysis for identification of diet type / nutritional pattern - which product groups (<i>File BIOSTAT_04 – consumption of product groups - all variables</i>) predominate in the children's diets - which product groups are predominant in the diet of children aged 2 years (<i>file BIOSTAT_03, variable <Age CORRECTION (months)></i>) - which product groups are predominant in the diet of children aged 3 years (<i>file BIOSTAT_03, variable <Age CORRECTION (months)></i>) - which children (age, sex, place of residence, education of mothers - (<i>file BIOSTAT_03, variable <Age CORRECTION (month)></i>), <i>File BIOSAT_01, variables: <A.3. Child's sex></i>), <i><A.4. Place of residence></i> , <i><A.7. Education of mother></i>) have in their diet mainly foodstuffs for particular nutritional use (<i>file BIOSTAT_01, variables: <C.8. I use ready-made preserves for infants and children, including></i>), <i><C.8. ready-made soup/meals></i> <i><C.8. porridge, gruel></i> , <i><C.8. Fruit purees, puddings></i> , <i><C.8. juices, drinks></i> , <i><C.8. teas></i>)	

II. In the microscale:

<p>1. Preparation of descriptive statistics and frequency for the characteristics of the entire group and in division into subgroups based on:</p> <p>a. children's age (2 years old/13-24 months old, 3 years old/25-36 months old) (<i>file BIOSTAT_03, variable <Age CORRECTION (month)></i>)</p> <p>b. nutritional status (<i>BIOSTAT_03 file - variable: <bmi to age z-score AKT></i>)</p> <ul style="list-style-type: none"> ▪ obesity (BMI z-score>2) ▪ overweight (1< BMI z-score ≤ 2) ▪ normal nutritional status (-1 <BMI z-score ≤ 1) ▪ deficiency of body weight (-2≤ BMI z-score < -1) ▪ significant deficiency of body mass index (BMI z-score <-2) <p>c. diet in the first year of life</p> <ul style="list-style-type: none"> ▪ breastfed and not breastfed (<i>File BIOSTAT_01, variable <C.1. Was the child breastfed during the first year of life (from birth to 12 months of age)?></i>) ▪ and the introduction of complementary foods (<i>File BIOSTAT_01, variables: <C.3. When the first complementary products were introduced - FRUITS>, <C.3. When the first complementary products were introduced - VEGETABLES>, <C.3. When the first complementary products were introduced - PORRIDGE, GRUEL WITHOUT MILK>, <C.3. When the first complementary products were introduced - MILK, MILK PORRIDGE>, <C.3. When the first complementary products were introduced - OTHER>, <C.4. In which month of age the products containing gluten were introduced to the child's diet>, <C.5. Were fish introduced to the child's diet in the second half year of his/her life?></i>) <p>d. education of parents (<i>File BIOSAT_01, variables:<A.7. Education of mother>, <A.7. Education of father></i>)</p> <p>e. place of residence (<i>File BIOSAT_01, variable <A.4. Place of residence></i>)</p>	<p>File: <u>Changed - Dodatkowe czII p1.xlsx</u></p> <p>Conclusions: These lists do not require a summary in this study due to their nature.</p>
<p>f. current diet (part D of the survey)</p>	<p>File: <u>Zmieniony - Dodatkowe czII p1.xlsx</u></p> <p>Conclusions: These lists do not require a summary in this study due to their nature.</p>

Analyses that allow obtaining answers to the following study problems (see Table)

No.	Study problems	Parameters / variables	
1.	<p>How are children aged 13-36 months fed?</p> <ul style="list-style-type: none"> • do they eat 4-5 meals a day • do they receive products from 6 groups • is the intake of energy, protein, carbohydrate and fat correct • what is the nutritional value of the average daily food ration • what is the nutritional value of particular meals • is the intake of Ca, Vitamin D, Fe, and fibre in line with the recommendations / standards 	<p><i>File BIOSTAT_01 - variables: frequency of consumption of particular meals: <C.6. 1st breakfast>, <C.6. 2nd breakfast>, <C.6. Soup>, <C.6. Main course>, <C.6. High tea>, <C.6. Supper>, <C.6. Meal / snack before bedtime>, <C.6. Meal/drink at night></i></p> <p><i>File BIOSTAT_04 - consumption of product groups - all variables</i></p> <p><i>File BIOSTAT_02_POPR, the nutritional value of the average daily food ration - all variables; the nutritional value of particular meals - all variables, the intake of vitamins and minerals from unenriched food and enriched food - all variables</i></p>	<p>File: <u>Dodatkowe czII p2 1.xlsx</u></p> <p>Conclusions: Less than 47% of children eat 4-5 meals a daily. About 36% of children eat more than 5 meals daily.</p> <p>New file added: Spożycie 6 grup.xlsx</p> <p>New file: spożycie dzienne poszczególnych składników.xlsx</p>
2.	<p>Are there differences in the diet of children who are 2 and 3 years old?</p>	<p>Diet (definition): number of meals, dietary behaviour, nutritional value of daily food ration, consumption of the product groups.</p>	<p>Files: Mikroskala pkt2.2;3;4;6;7;8;9;10.xlsx</p>

		<p>File BIOSTAT_01 - variables: frequency of consumption of particular meals: <C.6. 1st breakfast>, <C.6. 2nd breakfast>, <C.6. Soup>, <C.6. Main course>, <C.6. High tea>, <C.6. Supper>, <C.6. Meal / snack before bedtime>, <C.6. Meal/drink at night>; snacks: <C.7. Does your child eat snacks between meals?> then - what and how many times a day (C.7.); dietary behaviour: <C.14. Eats>, <C.14. Meat dishes>, <C.14. Vegetables>, <C.14. Learns new flavours>; File BIOSTAT_02_POPR - nutritional value of the average daily food ration and particular meals - all variables File BIOSTAT_04 - consumption of product groups - all variables File BIOSTAT_03, variable <Age CORRECTION (month)>);</p>	<p>The methods used: Non-parametric Mann-Whitney and Kruskal-Wallis tests, Chi-square independence test and Fisher's exact test.</p> <p>Conclusions for the number of meals: Significant differences were identified in the following case: <ul style="list-style-type: none"> • C.6. Meal/drink at night (B_01_Survey_data) </p> <p>Conclusions for dietary behaviour, including snacks: Significant differences were identified in the following case: <ul style="list-style-type: none"> • C.7. Candies, lollipops (B_01_Survey_data) • C.7. Crisps, salty sticks (B_01_Survey_data) • C.14. Vegetables (B_01_Survey_data) • C.14. Learns new flavours (B_01_Survey_data) </p> <p>Conclusions for the nutritional value of daily food ration and consumption of product groups: Significant differences were identified in the following case: <ul style="list-style-type: none"> • Waste (B_02_WO_DFR) • Energy kJ (B_02_WO_DFR) • Energy kcal (B_02_WO_DFR) • Water (B_02_WO_DFR) • Total protein (B_02_WO_DFR) • Animal protein (B_02_WO_DFR) • Vegetable protein (B_02_WO_DFR) • Fat (B_02_WO_DFR) • Total carbohydrates (B_02_WO_DFR) • Ash (B_02_WO_DFR) • Sodium (B_02_WO_DFR) • Potassium (B_02_WO_DFR) • Phosphorus (B_02_WO_DFR) • Magnesium (B_02_WO_DFR) • Copper (B_02_WO_DFR) • Manganese (B_02_WO_DFR) • Thiamin (B_02_WO_DFR) • Riboflavin (B_02_WO_DFR) • Vitamin B6 (B_02_WO_DFR) • Fatty acids: 4:0 (B_02_WO_DFR) • Fatty acids: 6:0 (B_02_WO_DFR) • Fatty acids: 8:0 (B_02_WO_DFR) • Fatty acids: 10:0 (B_02_WO_DFR) • Fatty acids: 12:0 (B_02_WO_DFR) • Fatty acids: 14:0 (B_02_WO_DFR) • Fatty acids: 15:0 (B_02_WO_DFR) • Fatty acids: 16:0 (B_02_WO_DFR) • Fatty acids: 17:0 (B_02_WO_DFR) • Fatty acids: 18:0 (B_02_WO_DFR) • Fatty acids: 20:0 (B_02_WO_DFR) • Fatty acids: total saturated (B_02_WO_DFR) • Fatty acids: 14:1 (B_02_WO_DFR) • Fatty acids: 15:1 (B_02_WO_DFR) • Fatty acids: 16:1 (B_02_WO_DFR) • Fatty acids: 17:1 (B_02_WO_DFR) • Fatty acids: 18:1 (B_02_WO_DFR) • Fatty acids: 20:1 (B_02_WO_DFR) • Fatty acids: 22:1 (B_02_WO_DFR) • Fatty acids: Total monounsaturated (B_02_WO_DFR) • Fatty acids: 18:2 (B_02_WO_DFR) • Fatty acids: 18:3 (B_02_WO_DFR) • Fatty acids: 22:6 (B_02_WO_DFR) • Fatty acids: Total polyunsaturated (B_02_WO_DFR) • Cholesterol (B_02_WO_DFR) • Isoleucine (B_02_WO_DFR) • Leucine (B_02_WO_DFR) • Lysine (B_02_WO_DFR) • Methionine (B_02_WO_DFR) • Cystine (B_02_WO_DFR) • Phenylalanine (B_02_WO_DFR) • Tyrosine (B_02_WO_DFR) • Threonine (B_02_WO_DFR) </p>
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		<ul style="list-style-type: none"> • Tryptophan (B_02_WO_DFR) • Valine (B_02_WO_DFR) • Arginine (B_02_WO_DFR) • Histidine (B_02_WO_DFR) • Alanine (B_02_WO_DFR) • Aspartic acid (B_02_WO_DFR) • Glutamic acid (B_02_WO_DFR) • Glycine (B_02_WO_DFR) • Proline (B_02_WO_DFR) • Serine (B_02_WO_DFR) • Sucrose (B_02_WO_DFR) • Starch (B_02_WO_DFR) • Dietary fibre (B_02_WO_DFR) • Folates/folic acid (B_02_WO_DFR) • Vitamin B12 (B_02_WO_DFR) • Vitamin D (B_02_WO_DFR) • Long-chain polyunsaturated fatty acids (B_02_WO_DFR) • Digestible carbohydrates (B_02_WO_DFR) • Taurine (B_02_WO_DFR) • L-carnitine (B_02_WO_DFR) • Percentage of energy from sucrose (B_02_WO_DFR) • S1-Energy kJ (B_02_WO_breakfast1) • S1-Energy kcal (B_02_WO_breakfast1) • S1-Water (B_02_WO_breakfast1) • S1-Total protein (B_02_WO_breakfast1) • S1-Animal protein (B_02_WO_breakfast1) • S1-Vegetable protein (B_02_WO_breakfast1) • S1-Fat (B_02_WO_breakfast1) • S1-Total carbohydrates (B_02_WO_breakfast1) • S1-Ash (B_02_WO_breakfast1) • S1-Sodium (B_02_WO_breakfast1) • S1-Potassium (B_02_WO_breakfast1) • S1-Phosphorus (B_02_WO_breakfast1) • S1-Magnesium (B_02_WO_breakfast1) • S1-Manganese (B_02_WO_breakfast1) • S1-Beta-carotene (B_02_WO_breakfast1) • S1-Thiamin (B_02_WO_breakfast1) • S1-Riboflavin (B_02_WO_breakfast1) • S1-Vitamin B6 (B_02_WO_breakfast1) • S1-Vitamin C (B_02_WO_breakfast1) • S1-Fatty acids: 4:0 (B_02_WO_breakfast1) • S1-Fatty acids: 6:0 (B_02_WO_breakfast1) • S1-Fatty acids: 8:0 (B_02_WO_breakfast1) • S1-Fatty acids: 10:0 (B_02_WO_breakfast1) • S1-Fatty acids: 12:0 (B_02_WO_breakfast1) • S1-Fatty acids: 14:0 (B_02_WO_breakfast1) • S1-Fatty acids: 15:0 (B_02_WO_breakfast1) • S1-Fatty acids: 16:0 (B_02_WO_breakfast1) • S1-Fatty acids: 17:0 (B_02_WO_breakfast1) • S1-Fatty acids: 18:0 (B_02_WO_breakfast1) • S1-Fatty acids: 20:0 (B_02_WO_breakfast1) • S1-Fatty acids: total saturated (B_02_WO_breakfast1) • S1-Fatty acids: 14:1 (B_02_WO_breakfast1) • S1-Fatty acids: 15:1 (B_02_WO_breakfast1) • S1-Fatty acids: 16:1 (B_02_WO_breakfast1) • S1-Fatty acids: 17:1 (B_02_WO_breakfast1) • S1-Fatty acids: 18:1 (B_02_WO_breakfast1) • S1-Fatty acids: total monounsaturated (B_02_WO_breakfast1) • S1-Cholesterol (B_02_WO_breakfast1) • S1-Isoleucine (B_02_WO_breakfast1) • S1-Leucine (B_02_WO_breakfast1) • S1-Lysine (B_02_WO_breakfast1) • S1-Methionine (B_02_WO_breakfast1) • S1-Cystine (B_02_WO_breakfast1) • S1-Phenylalanine (B_02_WO_breakfast1) • S1-Tyrosine (B_02_WO_breakfast1) • S1-Threonine (B_02_WO_breakfast1) • S1-Tryptophan (B_02_WO_breakfast1) • S1-Valine (B_02_WO_breakfast1) • S1-Arginine (B_02_WO_breakfast1) • S1-Histidine (B_02_WO_breakfast1) • S1-Alanine (B_02_WO_breakfast1) • S1-Aspartic acid (B_02_WO_breakfast1) • S1-Glutamic acid (B_02_WO_breakfast1) • S1-Glycine (B_02_WO_breakfast1) • S1-Proline (B_02_WO_breakfast1) • S1-Serine (B_02_WO_breakfast1) • S1-Sucrose (B_02_WO_breakfast1)
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		<ul style="list-style-type: none"> • S1-Starch (B_02_WO_breakfast1) • S1-Folates/folic acid (B_02_WO_breakfast1) • S1-Vitamin B12 (B_02_WO_breakfast1) • S1-vitamin D (B_02_WO_breakfast1) • S1-Iodine (B_02_WO_breakfast1) • S1-Digestible carbohydrates (B_02_WO_breakfast1) • S1-L-carnitine (B_02_WO_breakfast1) • S1-Percentage of energy from protein (B_02_WO_breakfast1) • S1-Percentage of energy from carbohydrates (B_02_WO_breakfast1) • S1-Percentage of energy from sucrose (B_02_WO_breakfast1) • S2-Water (B_02_WO_breakfast2) • S2-Total carbohydrates (B_02_WO_breakfast2) • S2-Ash (B_02_WO_breakfast2) • S2-Sodium (B_02_WO_breakfast2) • S2-Potassium (B_02_WO_breakfast2) • S2-Calcium (B_02_WO_breakfast2) • S2-Magnesium (B_02_WO_breakfast2) • S2-Copper (B_02_WO_breakfast2) • S2-Beta-carotene (B_02_WO_breakfast2) • S2-Riboflavin (B_02_WO_breakfast2) • S2-Vitamin B6 (B_02_WO_breakfast2) • S2-Vitamin C (B_02_WO_breakfast2) • S2-Fatty acids: 18:3 (B_02_WO_breakfast2) • S2-Fatty acids: 20:5 (B_02_WO_breakfast2) • S2-Fatty acids: 22:5 (B_02_WO_breakfast2) • S2-Cholesterol (B_02_WO_breakfast2) • S2-Proline (B_02_WO_breakfast2) • S2-Sucrose (B_02_WO_breakfast2) • S2-Lactose (B_02_WO_breakfast2) • S2-Dietary fibre (B_02_WO_breakfast2) • S2-Folates/folic acid (B_02_WO_breakfast2) • S2-Digestible carbohydrates (B_02_WO_breakfast2) • S2-Percent of energy from fat (B_02_WO_breakfast2) • S2-Percentage of energy from carbohydrates (B_02_WO_breakfast2) • S2 - Percentage of energy from sucrose (B_02_WO_breakfast2) • OB-Waste (B_02_WO_dinner) • OB-Energy kj (B_02_WO_dinner) • OB-Energy kcal (B_02_WO_dinner) • OB-Water (B_02_WO_dinner) • OB-Total protein (B_02_WO_dinner) • OB-Animal protein (B_02_WO_dinner) • OB-Vegetable protein (B_02_WO_dinner) • OB-Fat (B_02_WO_dinner) • OB-Total carbohydrates (B_02_WO_dinner) • OB-Ash (B_02_WO_dinner) • OB-Sodium (B_02_WO_dinner) • OB-Potassium (B_02_WO_dinner) • OB-Calcium (B_02_WO_dinner) • OB-Phosphorus (B_02_WO_dinner) • OB-Magnesium (B_02_WO_dinner) • OB-Iron (B_02_WO_dinner) • OB-Zinc (B_02_WO_dinner) • OB-Copper (B_02_WO_dinner) • OB-Manganese (B_02_WO_dinner) • OB-Retinol (B_02_WO_dinner) • OB-Vitamin E (alpha-tocopherol equivalent) (B_02_WO_dinner) • OB-Thiamin (B_02_WO_dinner) • OB-Riboflavin (B_02_WO_dinner) • OB-Niacin (B_02_WO_dinner) • OB-Vitamin B6 (B_02_WO_dinner) • OB-Vitamin C (B_02_WO_dinner) • OB-Fatty acids: 4:0 (B_02_WO_dinner) • OB-Fatty acids: 6:0 (B_02_WO_dinner) • OB-Fatty acids: 8:0 (B_02_WO_dinner) • OB-Fatty acids: 10:0 (B_02_WO_dinner) • OB-Fatty acids: 12:0 (B_02_WO_dinner) • OB-Fatty acids: 14:0 (B_02_WO_dinner) • OB-Fatty acids: 15:0 (B_02_WO_dinner) • OB-Fatty acids: 16:0 (B_02_WO_dinner) • OB-Fatty acids: 17:0 (B_02_WO_dinner) • OB-Fatty acids: 18:0 (B_02_WO_dinner) • OB-Fatty acids: 20:0 (B_02_WO_dinner) • OB-fatty acids: total saturated (B_02_WO_dinner) • OB-Fatty acids: 14:1 (B_02_WO_dinner) • OB-Fatty acids: 15:1 (B_02_WO_dinner)
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		<ul style="list-style-type: none"> • OB-Fatty acids: 16:1 (B_02_WO_dinner) • OB-Fatty acids: 17:1 (B_02_WO_dinner) • OB-Fatty acids: 18:1 (B_02_WO_dinner) • OB-fatty acids: total monounsaturated (B_02_WO_dinner) • OB-Fatty acids: 18:2 (B_02_WO_dinner) • OB-Fatty acids: 18:3 (B_02_WO_dinner) • OB-Fatty acids: 22:6 (B_02_WO_dinner) • OB-fatty acids: total polyunsaturated (B_02_WO_dinner) • OB-Cholesterol (B_02_WO_dinner) • OB-Isoleucine (B_02_WO_dinner) • OB-Leucine (B_02_WO_dinner) • OB-Lysine (B_02_WO_dinner) • OB-Methionine (B_02_WO_dinner) • OB-Cystine (B_02_WO_dinner) • OB-Phenylalanine (B_02_WO_dinner) • OB-Tyrosine (B_02_WO_dinner) • OB-Threonine (B_02_WO_dinner) • OB-Tryptophan (B_02_WO_dinner) • OB-Valine (B_02_WO_dinner) • OB-Arginine (B_02_WO_dinner) • OB-Histidine (B_02_WO_dinner) • OB-Alanine (B_02_WO_dinner) • OB-Aspartic acid (B_02_WO_dinner) • OB-Glutamic acid (B_02_WO_dinner) • OB-Glycine (B_02_WO_dinner) • OB-Proline (B_02_WO_dinner) • OB-Serine (B_02_WO_dinner) • OB-Sucrose (B_02_WO_dinner) • OB-Lactose (B_02_WO_dinner) • OB-Starch (B_02_WO_dinner) • OB-Dietary fibre (B_02_WO_dinner) • OB-Iodine (B_02_WO_dinner) • OB-Long-chain polyunsaturated fatty acids (B_02_WO_dinner) • OB-Digestible carbohydrates (B_02_WO_dinner) • POD-Energy kj (B_02_WO_high_tea) • POD-Energy kcal (B_02_WO_high_tea) • POD-Water (B_02_WO_high_tea) • POD-Vegetable protein (B_02_WO_high_tea) • POD-Ash (B_02_WO_high_tea) • POD-Potassium (B_02_WO_high_tea) • POD-Magnesium (B_02_WO_high_tea) • POD-Fatty acids: 14:0 (B_02_WO_high_tea) • POD-Fatty acids: 16:0 (B_02_WO_high_tea) • POD-Fatty acids: 18:0 (B_02_WO_high_tea) • POD-Fatty acids: total saturated (B_02_WO_high_tea) • POD-Fatty acids: 14:1 (B_02_WO_high_tea) • POD-Fatty acids: 15:1 (B_02_WO_high_tea) • POD-Fatty acids: 17:1 (B_02_WO_high_tea) • POD-Fatty acids: 18:1 (B_02_WO_high_tea) • POD-Fatty acids: total monounsaturated (B_02_WO_high_tea) • POD-fatty acids: total polyunsaturated (B_02_WO_high_tea) • POD-Isoleucine (B_02_WO_high_tea) • POD-Leucine (B_02_WO_high_tea) • POD-Methionine (B_02_WO_high_tea) • POD-Cystine (B_02_WO_high_tea) • POD-Phenylalanine (B_02_WO_high_tea) • POD-Tyrosine (B_02_WO_high_tea) • POD-Threonine (B_02_WO_high_tea) • POD-Tryptophan (B_02_WO_high_tea) • POD-Valine (B_02_WO_high_tea) • POD-Arginine (B_02_WO_high_tea) • POD-Histidine (B_02_WO_high_tea) • POD-Alanine (B_02_WO_high_tea) • POD-Aspartic acid (B_02_WO_high_tea) • POD-Glutamic acid (B_02_WO_high_tea) • POD-Glycine (B_02_WO_high_tea) • POD-Proline (B_02_WO_high_tea) • POD-Serine (B_02_WO_high_tea) • POD-Sucrose (B_02_WO_high_tea) • POD-Taurine (B_02_WO_high_tea) • K-Energy kj (B_02_WO_suppper) • K-Energy kcal (B_02_WO_suppper) • K-Total protein (B_02_WO_suppper) • K-Animal protein (B_02_WO_suppper) • K-Vegetable protein (B_02_WO_suppper) • K-Fat (B_02_WO_suppper) • K-Total carbohydrates (B_02_WO_suppper) • K-Ash (B_02_WO_suppper)
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		<ul style="list-style-type: none"> • K-Sodium (B_02_WO_supper) • K-Potassium (B_02_WO_supper) • K-Phosphorus (B_02_WO_supper) • K-Magnesium (B_02_WO_supper) • K-Manganese (B_02_WO_supper) • K-Beta-carotene (B_02_WO_supper) • K-Riboflavin (B_02_WO_supper) • K-Vitamin C (B_02_WO_supper) • K-Fatty acids: 4:0 (B_02_WO_supper) • K-Fatty acids: 6:0 (B_02_WO_supper) • K-Fatty acids: 8:0 (B_02_WO_supper) • K-Fatty acids: 10:0 (B_02_WO_supper) • K-Fatty acids: 12:0 (B_02_WO_supper) • K-Fatty acids: 14:0 (B_02_WO_supper) • K-Fatty acids: 15:0 (B_02_WO_supper) • K-Fatty acids: 16:0 (B_02_WO_supper) • K-Fatty acids: 17:0 (B_02_WO_supper) • K-Fatty acids: 18:0 (B_02_WO_supper) • K-Fatty acids: 20:0 (B_02_WO_supper) • K-Fatty acids: total saturated (B_02_WO_supper) • K-Fatty acids: 14:1 (B_02_WO_supper) • K-Fatty acids: 15:1 (B_02_WO_supper) • K-Fatty acids: 16:1 (B_02_WO_supper) • K-Fatty acids: 17:1 (B_02_WO_supper) • K-Fatty acids: 18:1 (B_02_WO_supper) • K-Fatty acids: 20:1 (B_02_WO_supper) • K-Fatty acids: 22:1 (B_02_WO_supper) • K-Fatty acids: total monounsaturated (B_02_WO_supper) • K-Fatty acids: 18:2 (B_02_WO_supper) • K-Fatty acids: 18:3 (B_02_WO_supper) • K-Fatty acids: 20:4 (B_02_WO_supper) • K-Fatty acids: 22:6 (B_02_WO_supper) • K-Fatty acids: total polyunsaturated (B_02_WO_supper) • K-Cholesterol (B_02_WO_supper) • K-Isoleucine (B_02_WO_supper) • K-Leucine (B_02_WO_supper) • K-Lysine (B_02_WO_supper) • K-Methionine (B_02_WO_supper) • K-Cystine (B_02_WO_supper) • K-Phenylalanine (B_02_WO_supper) • K-Tyrosine (B_02_WO_supper) • K-Threonine (B_02_WO_supper) • K-Tryptophan (B_02_WO_supper) • K-Valine (B_02_WO_supper) • K-Arginine (B_02_WO_supper) • K-Histidine (B_02_WO_supper) • K-Alanine (B_02_WO_supper) • K-Aspartic acid (B_02_WO_supper) • K-Glutamic acid (B_02_WO_supper) • K-Glycine (B_02_WO_supper) • K-Proline (B_02_WO_supper) • K-Serine (B_02_WO_supper) • K-Sucrose (B_02_WO_supper) • K-Starch (B_02_WO_supper) • K-Dietary fibre (B_02_WO_supper) • K-vitamin D (B_02_WO_supper) • K-Iodine (B_02_WO_supper) • K-Long-chain polyunsaturated fatty acids (B_02_WO_supper) • K-Digestible carbohydrates (B_02_WO_supper) • K-Taurine (B_02_WO_supper) • K-L-carnitine (B_02_WO_supper) • K-Percentage of energy from protein (B_02_WO_supper) • K-Percentage of energy from carbohydrates (B_02_WO_supper) • K-Percentage of energy from sucrose (B_02_WO_supper) • POJ-Fatty acids: 15:0 (B_02_WO_snack) • POJ-Fatty acids: 17:0 (B_02_WO_snack) • POJ-Fatty acids: total saturated (B_02_WO_snack) • POJ-fatty acids: total monounsaturated (B_02_WO_snack) • SUPL-Ash (B_02_A_WiSMzZW) • SUPL-Sodium (B_02_A_WiSMzZW) • SUPL-Potassium (B_02_A_WiSMzZW) • SUPL-Calcium (B_02_A_WiSMzZW) • SUPL-Phosphorus (B_02_A_WiSMzZW) • SUPL-Magnesium (B_02_A_WiSMzZW) • SUPL-Iron (B_02_A_WiSMzZW) • SUPL-Zinc (B_02_A_WiSMzZW) • SUPL-Copper (B_02_A_WiSMzZW)
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			<ul style="list-style-type: none"> • SUPL-Manganese (B_02_A_WiSMzŻW) • SUPL-Vitamin A (retinol equivalent) (B_02_A_WiSMzŻW) • SUPL-Retinol (B_02_A_WiSMzŻW) • SUPL-Beta-carotene (B_02_A_WiSMzŻW) • SUPL-Vitamin E (alpha-tocopherol equivalent) (B_02_A_WiSMzŻW) • SUPL-Thiamin (B_02_A_WiSMzŻW) • SUPL-Riboflavin (B_02_A_WiSMzŻW) • SUPL-Niacin (B_02_A_WiSMzŻW) • SUPL-Vitamin B6 (B_02_A_WiSMzŻW) • SUPL-Vitamin C (B_02_A_WiSMzŻW) • SUPL-Folates/folic acid (B_02_A_WiSMzŻW) • SUPL-Vitamin B12 (B_02_A_WiSMzŻW) • SUPL-Vitamin D (B_02_A_WiSMzŻW) • ŻYW-Ash (B_02_B_WiSMzŻnW) • ŻYW-Sodium (B_02_B_WiSMzŻnW) • ŻYW-Potassium (B_02_B_WiSMzŻnW) • ŻYW-Phosphorus (B_02_B_WiSMzŻnW) • ŻYW-Magnesium (B_02_B_WiSMzŻnW) • ŻYW-Iron (B_02_B_WiSMzŻnW) • ŻYW-Copper (B_02_B_WiSMzŻnW) • ŻYW-Manganese (B_02_B_WiSMzŻnW) • ŻYW-Riboflavin (B_02_B_WiSMzŻnW) • ŻYW-Vitamin B6 (B_02_B_WiSMzŻnW) • ŻYW-Vitamin B12 (B_02_B_WiSMzŻnW) • ŻYW-vitamin D (B_02_B_WiSMzŻnW) • Cereal products based on flour P2 (B_04_Product_consumption) • Groat and rice P3 (B_04_Product_consumption) • Bread P3 (B_04_Product_consumption) • Total potatoes P2 (B_04_Product_consumption) • Total fruits and vegetables P2 (B_04_Product_consumption) • Fruits, market product P3 (B_04_Product_consumption) • Juices, fruit and vegetable drinks and nectars P2 (B_04_Product_consumption) • Nutrition for infants and young children P3 (B_04_Product_consumption) • Fermented milk beverages P2 (B_04_Product_consumption) • Rennet cheese P2 (B_04_Product_consumption) • Cottage cheese (sliced and in containers) P3 (B_04_Product_consumption) • Eggs, market product P2 (B_04_Product_consumption) • Total fats P1 (B_04_Product_consumption) • Butter and cream based on butter P2 (B_04_Product_consumption) • Margarine P2 (B_04_Product_consumption) • Sugar, sweets, honey based on sugar P1 (B_04_Product_consumption) • Sugar / sucrose P2 (B_04_Product_consumption)
3.	Are there differences in the diet of children aged 13-18 months, 19-24 months and 25-36 months?	as above	<p>Files: Mikroskala pkt2.2;3;4;6;7;8;9;10.xlsx</p> <p>The methods used: Non-parametric Kruskal-Wallis tests and Chi-square independence test were used.</p> <p>Conclusions for the number of meals: Significant differences were identified in the following case:</p> <ul style="list-style-type: none"> • C.6. Main course (B_01_Survey_data) • C.6. Meal / snack before bedtime (B_01_Survey_data) • C.6. Meal/drink at night (B_01_Survey_data) <p>Conclusions for dietary behaviour, including snacks: Significant differences were identified in the following case:</p> <ul style="list-style-type: none"> • C.7. Candies, lollipops (B_01_Survey_data) • C.7. Crisps, salty sticks (B_01_Survey_data) • C.14. Vegetables (B_01_Survey_data) • C.14. Learns new flavours (B_01_Survey_data) <p>Conclusions for the nutritional value of daily food ration and consumption of product groups: Significant differences were identified in the following case:</p>

		<ul style="list-style-type: none"> • Waste (B_02_WO_DFR) • Energy kj (B_02_WO_DFR) • Energy kcal (B_02_WO_DFR) • Water (B_02_WO_DFR) • Total protein (B_02_WO_DFR) • Animal protein (B_02_WO_DFR) • Vegetable protein (B_02_WO_DFR) • Fat (B_02_WO_DFR) • Total carbohydrates (B_02_WO_DFR) • Ash (B_02_WO_DFR) • Sodium (B_02_WO_DFR) • Potassium (B_02_WO_DFR) • Phosphorus (B_02_WO_DFR) • Magnesium (B_02_WO_DFR) • Copper (B_02_WO_DFR) • Manganese (B_02_WO_DFR) • Riboflavin (B_02_WO_DFR) • Vitamin B6 (B_02_WO_DFR) • Fatty acids: 4:0 (B_02_WO_DFR) • Fatty acids: 6:0 (B_02_WO_DFR) • Fatty acids: 8:0 (B_02_WO_DFR) • Fatty acids: 10:0 (B_02_WO_DFR) • Fatty acids: 12:0 (B_02_WO_DFR) • Fatty acids: 14:0 (B_02_WO_DFR) • Fatty acids: 15:0 (B_02_WO_DFR) • Fatty acids: 16:0 (B_02_WO_DFR) • Fatty acids: 17:0 (B_02_WO_DFR) • Fatty acids: 18:0 (B_02_WO_DFR) • Fatty acids: 20:0 (B_02_WO_DFR) • Fatty acids: total saturated (B_02_WO_DFR) • Fatty acids: 14:1 (B_02_WO_DFR) • Fatty acids: 15:1 (B_02_WO_DFR) • Fatty acids: 16:1 (B_02_WO_DFR) • Fatty acids: 17:1 (B_02_WO_DFR) • Fatty acids: 18:1 (B_02_WO_DFR) • Fatty acids: 20:1 (B_02_WO_DFR) • Fatty acids: 22:1 (B_02_WO_DFR) • Fatty acids: Total monounsaturated (B_02_WO_DFR) • Fatty acids: 18:2 (B_02_WO_DFR) • Fatty acids: 18:3 (B_02_WO_DFR) • Fatty acids: 20:4 (B_02_WO_DFR) • Fatty acids: 22:6 (B_02_WO_DFR) • Fatty acids: Total polyunsaturated (B_02_WO_DFR) • Cholesterol (B_02_WO_DFR) • Isoleucine (B_02_WO_DFR) • Leucine (B_02_WO_DFR) • Lysine (B_02_WO_DFR) • Methionine (B_02_WO_DFR) • Cystine (B_02_WO_DFR) • Phenylalanine (B_02_WO_DFR) • Tyrosine (B_02_WO_DFR) • Threonine (B_02_WO_DFR) • Tryptophan (B_02_WO_DFR) • Valine (B_02_WO_DFR) • Arginine (B_02_WO_DFR) • Histidine (B_02_WO_DFR) • Alanine (B_02_WO_DFR) • Aspartic acid (B_02_WO_DFR) • Glutamic acid (B_02_WO_DFR) • Glycine (B_02_WO_DFR) • Proline (B_02_WO_DFR) • Serine (B_02_WO_DFR) • Sucrose (B_02_WO_DFR) • Starch (B_02_WO_DFR) • Dietary fibre (B_02_WO_DFR) • Foliates/folic acid (B_02_WO_DFR) • Vitamin B12 (B_02_WO_DFR) • Vitamin D (B_02_WO_DFR) • Long-chain polyunsaturated fatty acids (B_02_WO_DFR) • Digestible carbohydrates (B_02_WO_DFR) • Taurine (B_02_WO_DFR) • L-carnitine (B_02_WO_DFR) • Percentage of energy from protein (B_02_WO_DFR) • Percentage of energy from fat (B_02_WO_DFR) • Percentage of energy from carbohydrates (B_02_WO_DFR) • Percentage of energy from sucrose (B_02_WO_DFR) • S1-Energy kj (B_02_WO_breakfast1) • S1-Energy kcal (B_02_WO_breakfast1)
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		<ul style="list-style-type: none"> • S1-Water (B_02_WO_breakfast1) • S1-Total protein (B_02_WO_breakfast1) • S1-Animal protein (B_02_WO_breakfast1) • S1-Vegetable protein (B_02_WO_breakfast1) • S1-Fat (B_02_WO_breakfast1) • S1-Total carbohydrates (B_02_WO_breakfast1) • S1-Ash (B_02_WO_breakfast1) • S1-Sodium (B_02_WO_breakfast1) • S1-Potassium (B_02_WO_breakfast1) • S1-Phosphorus (B_02_WO_breakfast1) • S1-Magnesium (B_02_WO_breakfast1) • S1-Manganese (B_02_WO_breakfast1) • S1-Beta-carotene (B_02_WO_breakfast1) • S1-Riboflavin (B_02_WO_breakfast1) • S1-Vitamin B6 (B_02_WO_breakfast1) • S1-Fatty acids: 4:0 (B_02_WO_breakfast1) • S1-Fatty acids: 6:0 (B_02_WO_breakfast1) • S1-Fatty acids: 8:0 (B_02_WO_breakfast1) • S1-Fatty acids: 10:0 (B_02_WO_breakfast1) • S1-Fatty acids: 12:0 (B_02_WO_breakfast1) • S1-Fatty acids: 14:0 (B_02_WO_breakfast1) • S1-Fatty acids: 15:0 (B_02_WO_breakfast1) • S1-Fatty acids: 16:0 (B_02_WO_breakfast1) • S1-Fatty acids: 17:0 (B_02_WO_breakfast1) • S1-Fatty acids: 18:0 (B_02_WO_breakfast1) • S1-Fatty acids: 20:0 (B_02_WO_breakfast1) • S1-Fatty acids: total saturated (B_02_WO_breakfast1) • S1-Fatty acids: 14:1 (B_02_WO_breakfast1) • S1-Fatty acids: 15:1 (B_02_WO_breakfast1) • S1-Fatty acids: 16:1 (B_02_WO_breakfast1) • S1-Fatty acids: 17:1 (B_02_WO_breakfast1) • S1-Fatty acids: 18:1 (B_02_WO_breakfast1) • S1-Fatty acids: 20:1 (B_02_WO_breakfast1) • S1-Fatty acids: total monounsaturated (B_02_WO_breakfast1) • S1-Cholesterol (B_02_WO_breakfast1) • S1-Isoleucine (B_02_WO_breakfast1) • S1-Leucine (B_02_WO_breakfast1) • S1-Lysine (B_02_WO_breakfast1) • S1-Methionine (B_02_WO_breakfast1) • S1-Cystine (B_02_WO_breakfast1) • S1-Phenylalanine (B_02_WO_breakfast1) • S1-Tyrosine (B_02_WO_breakfast1) • S1-Threonine (B_02_WO_breakfast1) • S1-Tryptophan (B_02_WO_breakfast1) • S1-Valine (B_02_WO_breakfast1) • S1-Arginine (B_02_WO_breakfast1) • S1-Histidine (B_02_WO_breakfast1) • S1-Alanine (B_02_WO_breakfast1) • S1-Aspartic acid (B_02_WO_breakfast1) • S1-Glutamic acid (B_02_WO_breakfast1) • S1-Glycine (B_02_WO_breakfast1) • S1-Proline (B_02_WO_breakfast1) • S1-Serine (B_02_WO_breakfast1) • S1-Sucrose (B_02_WO_breakfast1) • S1-Starch (B_02_WO_breakfast1) • S1-Dietary fibre (B_02_WO_breakfast1) • S1-Folates/folic acid (B_02_WO_breakfast1) • S1-Vitamin B12 (B_02_WO_breakfast1) • S1-vitamin D (B_02_WO_breakfast1) • S1-Iodine (B_02_WO_breakfast1) • S1-Digestible carbohydrates (B_02_WO_breakfast1) • S1-Taurine (B_02_WO_breakfast1) • S1-L-carnitine (B_02_WO_breakfast1) • S1-Percentage of energy from protein (B_02_WO_breakfast1) • S1-Percentage of energy from carbohydrates (B_02_WO_breakfast1) • S1-Percentage of energy from sucrose (B_02_WO_breakfast1) • S2-Water (B_02_WO_breakfast2) • S2-Vegetable protein (B_02_WO_breakfast2) • S2-Total carbohydrates (B_02_WO_breakfast2) • S2-Ash (B_02_WO_breakfast2) • S2-Sodium (B_02_WO_breakfast2) • S2-Potassium (B_02_WO_breakfast2) • S2-Calcium (B_02_WO_breakfast2) • S2-Magnesium (B_02_WO_breakfast2) • S2-Copper (B_02_WO_breakfast2) • S2-Beta-carotene (B_02_WO_breakfast2) • S2-Riboflavin (B_02_WO_breakfast2)
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		<ul style="list-style-type: none"> • S2-Vitamin B6 (B_02_WO_breakfast2) • S2-Vitamin C (B_02_WO_breakfast2) • S2-Fatty acids: 18:3 (B_02_WO_breakfast2) • S2-Fatty acids: 20:4 (B_02_WO_breakfast2) • S2-Fatty acids: 20:5 (B_02_WO_breakfast2) • S2-Fatty acids: 22:5 (B_02_WO_breakfast2) • S2-Fatty acids: 22:6 (B_02_WO_breakfast2) • S2-Cholesterol (B_02_WO_breakfast2) • S2-Sucrose (B_02_WO_breakfast2) • S2-Dietary fibre (B_02_WO_breakfast2) • S2-Folates/folic acid (B_02_WO_breakfast2) • S2-Long-chain polyunsaturated fatty acids (B_02_WO_breakfast2) • S2-Digestible carbohydrates (B_02_WO_breakfast2) • S2-Percent of energy from fat (B_02_WO_breakfast2) • S2-Percentage of energy from carbohydrates (B_02_WO_breakfast2) • S2 - Percentage of energy from sucrose (B_02_WO_breakfast2) • OB-Waste (B_02_WO_dinner) • OB-Energy kJ (B_02_WO_dinner) • OB-Energy kcal (B_02_WO_dinner) • OB-Water (B_02_WO_dinner) • OB-Total protein (B_02_WO_dinner) • OB-Animal protein (B_02_WO_dinner) • OB-Vegetable protein (B_02_WO_dinner) • OB-Fat (B_02_WO_dinner) • OB-Total carbohydrates (B_02_WO_dinner) • OB-Ash (B_02_WO_dinner) • OB-Sodium (B_02_WO_dinner) • OB-Potassium (B_02_WO_dinner) • OB-Calcium (B_02_WO_dinner) • OB-Phosphorus (B_02_WO_dinner) • OB-Magnesium (B_02_WO_dinner) • OB-Iron (B_02_WO_dinner) • OB-Zinc (B_02_WO_dinner) • OB-Copper (B_02_WO_dinner) • OB-Manganese (B_02_WO_dinner) • OB-Vitamin A (retinol equivalent) (B_02_WO_dinner) • OB-Beta-caroten (B_02_WO_dinner) • OB-Vitamin E (alpha-tocopherol equivalent) (B_02_WO_dinner) • OB-Thiamin (B_02_WO_dinner) • OB-Riboflavin (B_02_WO_dinner) • OB-Niacin (B_02_WO_dinner) • OB-Vitamin B6 (B_02_WO_dinner) • OB-Vitamin C (B_02_WO_dinner) • OB-Fatty acids: 4:0 (B_02_WO_dinner) • OB-Fatty acids: 6:0 (B_02_WO_dinner) • OB-Fatty acids: 8:0 (B_02_WO_dinner) • OB-Fatty acids: 10:0 (B_02_WO_dinner) • OB-Fatty acids: 12:0 (B_02_WO_dinner) • OB-Fatty acids: 14:0 (B_02_WO_dinner) • OB-Fatty acids: 15:0 (B_02_WO_dinner) • OB-Fatty acids: 16:0 (B_02_WO_dinner) • OB-Fatty acids: 17:0 (B_02_WO_dinner) • OB-Fatty acids: 18:0 (B_02_WO_dinner) • OB-Fatty acids: 20:0 (B_02_WO_dinner) • OB-fatty acids: total saturated (B_02_WO_dinner) • OB-Fatty acids: 14:1 (B_02_WO_dinner) • OB-Fatty acids: 15:1 (B_02_WO_dinner) • OB-Fatty acids: 16:1 (B_02_WO_dinner) • OB-Fatty acids: 17:1 (B_02_WO_dinner) • OB-Fatty acids: 18:1 (B_02_WO_dinner) • OB-Fatty acids: 20:1 (B_02_WO_dinner) • OB-fatty acids: total monounsaturated (B_02_WO_dinner) • OB-Fatty acids: 18:2 (B_02_WO_dinner) • OB-Fatty acids: 18:3 (B_02_WO_dinner) • OB-Fatty acids: 22:6 (B_02_WO_dinner) • OB-fatty acids: total polyunsaturated (B_02_WO_dinner) • OB-Cholesterol (B_02_WO_dinner) • OB-Isoleucine (B_02_WO_dinner) • OB-Leucine (B_02_WO_dinner) • OB-Lysine (B_02_WO_dinner) • OB-Methionine (B_02_WO_dinner) • OB-Cystine (B_02_WO_dinner) • OB-Phenylalanine (B_02_WO_dinner) • OB-Tyrosine (B_02_WO_dinner) • OB-Threonine (B_02_WO_dinner)
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			<ul style="list-style-type: none"> • OB-Tryptophan (B_02_WO_dinner) • OB-Valine (B_02_WO_dinner) • OB-Arginine (B_02_WO_dinner) • OB-Histidine (B_02_WO_dinner) • OB-Alanine (B_02_WO_dinner) • OB-Aspartic acid (B_02_WO_dinner) • OB-Glutamic acid (B_02_WO_dinner) • OB-Glycine (B_02_WO_dinner) • OB-Proline (B_02_WO_dinner) • OB-Serine (B_02_WO_dinner) • OB-Sucrose (B_02_WO_dinner) • OB-Lactose (B_02_WO_dinner) • OB-Starch (B_02_WO_dinner) • OB-Dietary fibre (B_02_WO_dinner) • OB-Iodine (B_02_WO_dinner) • OB-Long-chain polyunsaturated fatty acids (B_02_WO_dinner) • OB-Digestible carbohydrates (B_02_WO_dinner) • POD-Waste (B_02_WO_high_tea) • POD-Animal protein (B_02_WO_high_tea) • POD-Vegetable protein (B_02_WO_high_tea) • POD-Ash (B_02_WO_high_tea) • POD-Fatty acids: 4:0 (B_02_WO_high_tea) • POD-Fatty acids: 6:0 (B_02_WO_high_tea) • POD-Fatty acids: 8:0 (B_02_WO_high_tea) • POD-Fatty acids: 10:0 (B_02_WO_high_tea) • POD-Fatty acids: 12:0 (B_02_WO_high_tea) • POD-Fatty acids: 14:0 (B_02_WO_high_tea) • POD-Fatty acids: 15:0 (B_02_WO_high_tea) • POD-Fatty acids: 16:0 (B_02_WO_high_tea) • POD-Fatty acids: 17:0 (B_02_WO_high_tea) • POD-Fatty acids: 18:0 (B_02_WO_high_tea) • POD-Fatty acids: total saturated (B_02_WO_high_tea) • POD-Fatty acids: 14:1 (B_02_WO_high_tea) • POD-Fatty acids: 15:1 (B_02_WO_high_tea) • POD-Fatty acids: 16:1 (B_02_WO_high_tea) • POD-Fatty acids: 17:1 (B_02_WO_high_tea) • POD-Fatty acids: 18:1 (B_02_WO_high_tea) • POD-Fatty acids: total monounsaturated (B_02_WO_high_tea) • POD-Isoleucine (B_02_WO_high_tea) • POD-Leucine (B_02_WO_high_tea) • POD-Lysine (B_02_WO_high_tea) • POD-Methionine (B_02_WO_high_tea) • POD-Cystine (B_02_WO_high_tea) • POD-Phenylalanine (B_02_WO_high_tea) • POD-Tyrosine (B_02_WO_high_tea) • POD-Threonine (B_02_WO_high_tea) • POD-Tryptophan (B_02_WO_high_tea) • POD-Valine (B_02_WO_high_tea) • POD-Arginine (B_02_WO_high_tea) • POD-Histidine (B_02_WO_high_tea) • POD-Alanine (B_02_WO_high_tea) • POD-Aspartic acid (B_02_WO_high_tea) • POD-Glutamic acid (B_02_WO_high_tea) • POD-Proline (B_02_WO_high_tea) • POD-Serine (B_02_WO_high_tea) • POD-Sucrose (B_02_WO_high_tea) • POD-Taurine (B_02_WO_high_tea) • POD-Percentage of energy from sucrose (B_02_WO_high_tea) • K-Energy kj (B_02_WO_suppper) • K-Energy kcal (B_02_WO_suppper) • K-Total protein (B_02_WO_suppper) • K-Animal protein (B_02_WO_suppper) • K-Vegetable protein (B_02_WO_suppper) • K-Fat (B_02_WO_suppper) • K-Total carbohydrates (B_02_WO_suppper) • K-Ash (B_02_WO_suppper) • K-Sodium (B_02_WO_suppper) • K-Potassium (B_02_WO_suppper) • K-Calcium (B_02_WO_suppper) • K-Phosphorus (B_02_WO_suppper) • K-Magnesium (B_02_WO_suppper) • K-Iron (B_02_WO_suppper) • K-Manganese (B_02_WO_suppper) • K-Retinol (B_02_WO_suppper) • K-Beta-carotene (B_02_WO_suppper) • K-Vitamin E (alpha-tocopherol equivalent) (B_02_WO_suppper) • K-Riboflavin (B_02_WO_suppper) • K-Vitamin C (B_02_WO_suppper)
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		<ul style="list-style-type: none"> • K-Fatty acids: 4:0 (B_02_WO_supper) • K-Fatty acids: 6:0 (B_02_WO_supper) • K-Fatty acids: 8:0 (B_02_WO_supper) • K-Fatty acids: 10:0 (B_02_WO_supper) • K-Fatty acids: 12:0 (B_02_WO_supper) • K-Fatty acids: 14:0 (B_02_WO_supper) • K-Fatty acids: 15:0 (B_02_WO_supper) • K-Fatty acids: 16:0 (B_02_WO_supper) • K-Fatty acids: 17:0 (B_02_WO_supper) • K-Fatty acids: 18:0 (B_02_WO_supper) • K-Fatty acids: 20:0 (B_02_WO_supper) • K-Fatty acids: total saturated (B_02_WO_supper) • K-Fatty acids: 14:1 (B_02_WO_supper) • K-Fatty acids: 15:1 (B_02_WO_supper) • K-Fatty acids: 16:1 (B_02_WO_supper) • K-Fatty acids: 17:1 (B_02_WO_supper) • K-Fatty acids: 18:1 (B_02_WO_supper) • K-Fatty acids: 20:1 (B_02_WO_supper) • K-Fatty acids: 22:1 (B_02_WO_supper) • K-Fatty acids: total monounsaturated (B_02_WO_supper) • K-Fatty acids: 20:4 (B_02_WO_supper) • K-Fatty acids: 22:6 (B_02_WO_supper) • K-Fatty acids: total polyunsaturated (B_02_WO_supper) • K-Cholesterol (B_02_WO_supper) • K-Isoleucine (B_02_WO_supper) • K-Leucine (B_02_WO_supper) • K-Lysine (B_02_WO_supper) • K-Methionine (B_02_WO_supper) • K-Cystine (B_02_WO_supper) • K-Phenylalanine (B_02_WO_supper) • K-Tyrosine (B_02_WO_supper) • K-Threonine (B_02_WO_supper) • K-Tryptophan (B_02_WO_supper) • K-Valine (B_02_WO_supper) • K-Arginine (B_02_WO_supper) • K-Histidine (B_02_WO_supper) • K-Alanine (B_02_WO_supper) • K-Aspartic acid (B_02_WO_supper) • K-Glutamic acid (B_02_WO_supper) • K-Glycine (B_02_WO_supper) • K-Proline (B_02_WO_supper) • K-Serine (B_02_WO_supper) • K-Sucrose (B_02_WO_supper) • K-Starch (B_02_WO_supper) • K-Dietary fibre (B_02_WO_supper) • K-Vitamin B12 (B_02_WO_supper) • K-vitamin D (B_02_WO_supper) • K-Iodine (B_02_WO_supper) • K-Long-chain polyunsaturated fatty acids (B_02_WO_supper) • K-Taurine (B_02_WO_supper) • K-L-carnitine (B_02_WO_supper) • K-Percentage of energy from protein (B_02_WO_supper) • K-Percentage of energy from fat (B_02_WO_supper) • K-Percentage of energy from carbohydrates (B_02_WO_supper) • K-Percentage of energy from sucrose (B_02_WO_supper) • POJ-Energy kJ (B_02_WO_snack) • POJ-Energy kcal (B_02_WO_snack) • POJ-Total protein (B_02_WO_snack) • POJ-Fat (B_02_WO_snack) • POJ-Total carbohydrates (B_02_WO_snack) • POJ-Ash (B_02_WO_snack) • POJ-Sodium (B_02_WO_snack) • POJ-Potassium (B_02_WO_snack) • POJ-Calcium (B_02_WO_snack) • POJ-Phosphorus (B_02_WO_snack) • POJ-Magnesium (B_02_WO_snack) • POJ-Zinc (B_02_WO_snack) • POJ-Riboflavin (B_02_WO_snack) • POJ-Vitamin B6 (B_02_WO_snack) • POJ-Fatty acids: 6:0 (B_02_WO_snack) • POJ-Fatty acids: 14:0 (B_02_WO_snack) • POJ-Fatty acids: 16:0 (B_02_WO_snack) • POJ-Fatty acids: 17:0 (B_02_WO_snack) • POJ-Fatty acids: 18:0 (B_02_WO_snack) • POJ-Fatty acids: total saturated (B_02_WO_snack) • POJ-Fatty acids: 14:1 (B_02_WO_snack) • POJ-Fatty acids: 15:1 (B_02_WO_snack)
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			<ul style="list-style-type: none"> • POJ-Fatty acids: 16:1 (B_02_WO_snack) • POJ-Fatty acids: 17:1 (B_02_WO_snack) • POJ-Fatty acids: 18:1 (B_02_WO_snack) • POJ-fatty acids: total monounsaturated (B_02_WO_snack) • POJ-Fatty acids: 18:3 (B_02_WO_snack) • POJ-Fatty acids: 20:4 (B_02_WO_snack) • POJ-Fatty acids: total polyunsaturated (B_02_WO_snack) • POJ-Isoleucine (B_02_WO_snack) • POJ-Leucine (B_02_WO_snack) • POJ-Lysine (B_02_WO_snack) • POJ-Methionine (B_02_WO_snack) • POJ-Cystine (B_02_WO_snack) • POJ-Phenylalanine (B_02_WO_snack) • POJ-Tyrosine (B_02_WO_snack) • POJ-Threonine (B_02_WO_snack) • POJ-Tryptophan (B_02_WO_snack) • POJ-Valine (B_02_WO_snack) • POJ-Arginine (B_02_WO_snack) • POJ-Histidine (B_02_WO_snack) • POJ-Alanine (B_02_WO_snack) • POJ-Aspartic acid (B_02_WO_snack) • POJ-Glutamic acid (B_02_WO_snack) • POJ-Glycine (B_02_WO_snack) • POJ-Proline (B_02_WO_snack) • POJ-Serine (B_02_WO_snack) • POJ-Sucrose (B_02_WO_snack) • POJ-Folates/folic acid (B_02_WO_snack) • POJ-Digestible carbohydrates (B_02_WO_snack) • POJ-Percentage of energy from fat (B_02_WO_snack) • SUPL-Ash (B_02_A_WiSMzZW) • SUPL-Sodium (B_02_A_WiSMzZW) • SUPL-Potassium (B_02_A_WiSMzZW) • SUPL-Calcium (B_02_A_WiSMzZW) • SUPL-Phosphorus (B_02_A_WiSMzZW) • SUPL-Magnesium (B_02_A_WiSMzZW) • SUPL-Iron (B_02_A_WiSMzZW) • SUPL-Zinc (B_02_A_WiSMzZW) • SUPL-Copper (B_02_A_WiSMzZW) • SUPL-Manganese (B_02_A_WiSMzZW) • SUPL-Vitamin A (retinol equivalent) (B_02_A_WiSMzZW) • SUPL-Beta-carotene (B_02_A_WiSMzZW) • SUPL-Vitamin E (alpha-tocopherol equivalent) (B_02_A_WiSMzZW) • SUPL-Thiamin (B_02_A_WiSMzZW) • SUPL-Riboflavin (B_02_A_WiSMzZW) • SUPL-Niacin (B_02_A_WiSMzZW) • SUPL-Vitamin B6 (B_02_A_WiSMzZW) • SUPL-Folates/folic acid (B_02_A_WiSMzZW) • SUPL-Vitamin B12 (B_02_A_WiSMzZW) • SUPL-Vitamin D (B_02_A_WiSMzZW) • ŻYW-Ash (B_02_B_WiSMzZnW) • ŻYW-Sodium (B_02_B_WiSMzZnW) • ŻYW-Potassium (B_02_B_WiSMzZnW) • ŻYW-Phosphorus (B_02_B_WiSMzZnW) • ŻYW-Magnesium (B_02_B_WiSMzZnW) • ŻYW-Copper (B_02_B_WiSMzZnW) • ŻYW-Manganese (B_02_B_WiSMzZnW) • ŻYW-Riboflavin (B_02_B_WiSMzZnW) • ŻYW-Vitamin B12 (B_02_B_WiSMzZnW) • ŻYW-vitamin D (B_02_B_WiSMzZnW) • Cereal products based on flour P2 (B_04_Product_consumption) • Groat and rice P3 (B_04_Product_consumption) • Bread P3 (B_04_Product_consumption) • Total potatoes P2 (B_04_Product_consumption) • Total fruits and vegetables P2 (B_04_Product_consumption) • Fruits, market product P3 (B_04_Product_consumption) • Juices, fruit and vegetable drinks and nectars P2 (B_04_Product_consumption) • Milk and sweet milk beverages P2 (B_04_Product_consumption) • Nutrition for infants and young children P3 (B_04_Product_consumption) • Fermented milk beverages P2 (B_04_Product_consumption) • Rennet cheese P2 (B_04_Product_consumption) • Cottage cheese (sliced and in containers) P3 (B_04_Product_consumption) • Meat and poultry based on boneless meat P2
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			<p>(B_04_Product_consumption)</p> <ul style="list-style-type: none"> • Cold meat, sausage and prepared products based on boneless meat P2 (B_04_Product_consumption) • Eggs, market product P2 (B_04_Product_consumption) • Total fats P1 (B_04_Product_consumption) • Butter and cream based on butter P2 (B_04_Product_consumption) • Margarine P2 (B_04_Product_consumption) • Sugar, sweets, honey based on sugar P1 (B_04_Product_consumption) • Sugar / sucrose P2 (B_04_Product_consumption) • Tea, infusions without sugar P4 (B_04_Product_consumption)
4.	Are there differences in the diet of children depending on place of residence?	Diet - as above File <i>BIOSTAT_01 - variable <A.4. Place of residence></i>	<p>Files:</p> <p>pkt1-2 - częstość spożycia poszczególnych posiłków x Demografia.xls pkt1-2 - snack.xls pkt1-2 - wartość odżywcza oraz spożycie grup produktów x Demografia.xls pkt1-2 - zachowania żywieniowe.xls</p> <p>The methods used: Non-parametric Mann-Whitney and Kruskal-Wallis tests, as well as Spearman's rank correlation were used</p> <p>Conclusions for the number of meals: Number of meals in relation to place of residence is significantly dependent in the following case:</p> <ul style="list-style-type: none"> • Lack of identified relations <p>Conclusions for dietary behaviour, including snacks: Dietary behaviours in relation to place of residence are significantly different in the following variables :</p> <ul style="list-style-type: none"> • C.14. Eats • C.7. Does your child eat snacks between meals? <p>Conclusions for the nutritional value of daily food ration and consumption of product groups: A significant relation between the nutritional value of daily food ration and place of residence was found in the following cases:</p> <ul style="list-style-type: none"> • Waste (B_02_WO_DFR) • Vitamin C (B_02_WO_DFR) • Fatty acids: 18:3 (B_02_WO_DFR) • Dietary fibre (B_02_WO_DFR) • Percentage of energy from fat (B_02_WO_DFR) • Percentage of energy from carbohydrates (B_02_WO_DFR) • S1-Copper (B_02_WO_breakfast1) • S1-Fatty acids: total saturated (B_02_WO_breakfast1) • S1-Fatty acids: 18:3 (B_02_WO_breakfast1) • S1-fatty acids: total polyunsaturated (B_02_WO_breakfast1) • S2-Waste (B_02_WO_breakfast2) • S2-Calcium (B_02_WO_breakfast2) • S2-Manganese (B_02_WO_breakfast2) • S2-Beta-carotene (B_02_WO_breakfast2) • S2-Riboflavin (B_02_WO_breakfast2) • S2-Lactose (B_02_WO_breakfast2) • S2-L-carnitine (B_02_WO_breakfast2) • OB-Waste (B_02_WO_dinner) • OB-Energy kj (B_02_WO_dinner) • OB-Energy kcal (B_02_WO_dinner) • OB-Water (B_02_WO_dinner) • OB-Total protein (B_02_WO_dinner) • OB-Vegetable protein (B_02_WO_dinner) • OB-Fat (B_02_WO_dinner) • OB-Total carbohydrates (B_02_WO_dinner) • OB-Ash (B_02_WO_dinner) • OB-Sodium (B_02_WO_dinner) • OB-Potassium (B_02_WO_dinner) • OB-Phosphorus (B_02_WO_dinner) • OB-Magnesium (B_02_WO_dinner) • OB-Iron (B_02_WO_dinner) • OB-Zinc (B_02_WO_dinner) • OB-Copper (B_02_WO_dinner) • OB-Manganese (B_02_WO_dinner) • OB-Retinol (B_02_WO_dinner)

			<ul style="list-style-type: none"> • OB-Vitamin E (alpha-tocopherol equivalent) (B_02_WO_dinner) • OB-Riboflavin (B_02_WO_dinner) • OB-Vitamin B6 (B_02_WO_dinner) • OB-Vitamin C (B_02_WO_dinner) • OB-Fatty acids: 4:0 (B_02_WO_dinner) • OB-Fatty acids: 6:0 (B_02_WO_dinner) • OB-Fatty acids: 8:0 (B_02_WO_dinner) • OB-Fatty acids: 10:0 (B_02_WO_dinner) • OB-Fatty acids: 12:0 (B_02_WO_dinner) • OB-Fatty acids: 14:0 (B_02_WO_dinner) • OB-Fatty acids: 15:0 (B_02_WO_dinner) • OB-Fatty acids: 16:0 (B_02_WO_dinner) • OB-Fatty acids: 17:0 (B_02_WO_dinner) • OB-Fatty acids: 18:0 (B_02_WO_dinner) • OB-Fatty acids: 20:0 (B_02_WO_dinner) • OB-fatty acids: total saturated (B_02_WO_dinner) • OB-Fatty acids: 14:1 (B_02_WO_dinner) • OB-Fatty acids: 16:1 (B_02_WO_dinner) • OB-Fatty acids: 17:1 (B_02_WO_dinner) • OB-Fatty acids: 18:1 (B_02_WO_dinner) • OB-fatty acids: total monounsaturated (B_02_WO_dinner) • OB-Fatty acids: 18:3 (B_02_WO_dinner) • OB-fatty acids: total polyunsaturated (B_02_WO_dinner) • OB-Cholesterol (B_02_WO_dinner) • OB-Isoleucine (B_02_WO_dinner) • OB-Leucine (B_02_WO_dinner) • OB-Lysine (B_02_WO_dinner) • OB-Methionine (B_02_WO_dinner) • OB-Cystine (B_02_WO_dinner) • OB-Phenylalanine (B_02_WO_dinner) • OB-Tyrosine (B_02_WO_dinner) • OB-Threonine (B_02_WO_dinner) • OB-Tryptophan (B_02_WO_dinner) • OB-Valine (B_02_WO_dinner) • OB-Arginine (B_02_WO_dinner) • OB-Histidine (B_02_WO_dinner) • OB-Alanine (B_02_WO_dinner) • OB-Aspartic acid (B_02_WO_dinner) • OB-Glutamic acid (B_02_WO_dinner) • OB-Glycine (B_02_WO_dinner) • OB-Proline (B_02_WO_dinner) • OB-Serine (B_02_WO_dinner) • OB-Sucrose (B_02_WO_dinner) • OB-Starch (B_02_WO_dinner) • OB-Dietary fibre (B_02_WO_dinner) • OB-Folates/folic acid (B_02_WO_dinner) • OB-vitamin B12 (B_02_WO_dinner) • OB-Digestible carbohydrates (B_02_WO_dinner) • SUB-Total carbohydrates (B_02_WO_high_tea) • POD-Vitamin C (B_02_WO_high_tea) • POD-Fatty acids: 18:1 (B_02_WO_high_tea) • POD-Fatty acids: total monounsaturated (B_02_WO_high_tea) • POD-Fatty acids: 18:2 (B_02_WO_high_tea) • POD-Fatty acids: 18:4 (B_02_WO_high_tea) • POD-fatty acids: total polyunsaturated (B_02_WO_high_tea) • POD-Sucrose (B_02_WO_high_tea) • POD-Folates/folic acid (B_02_WO_high_tea) • POD-vitamin D (B_02_WO_high_tea) • POD-Digestible carbohydrates (B_02_WO_high_tea) • K-Percentage of energy from carbohydrates (B_02_WO_supper) • POJ-Animal protein (B_02_WO_snack) • POJ-vitamin B12 (B_02_WO_snack) • SUPL-Vitamin D (B_02_A_WiSMzZw) • ŻYW-Vitamin C (B_02_B_WiSMzZnW) • Groat and rice P3 (B_04_Product_consumption) • Total fruits and vegetables P2 (B_04_Product_consumption) • Vegetables, market product P3 (B_04_Product_consumption) • Juices, fruit and vegetable drinks and nectars P2 (B_04_Product_consumption) • Total fats P1 (B_04_Product_consumption) • Water P3 (B_04_Product_consumption)
5.	Are there differences in the diet of children depending on education of parents?	Diet - as above <i>File BIOSTAT_01 - variables <A.7. Education of mother>, <A.7. Education of father></i>	Files: pkt1-2 - częstość spożycia poszczególnych posiłków x Demografia.xls pkt1-2 - snack.xls

			<p>pkt1-2 - wartość odżywcza oraz spożycie grup produktów x Demografia.xls pkt1-2 - zachowania żywieniowe.xls</p> <p>The methods used: Non-parametric Mann-Whitney and Kruskal-Wallis tests, as well as Spearman's rank correlation were used</p> <p>Conclusions for the number of meals: Number of meals in relation to education of mother is significantly dependent in the following case:</p> <ul style="list-style-type: none"> • C.6. Meal / snack before bedtime <p>Number of meals in relation to education of father is significantly dependent in the following case:</p> <ul style="list-style-type: none"> • C.6. Meal/drink at night <p>Conclusions for dietary behaviour, including snacks: Dietary behaviours in relation to education of mother are significantly different in the following variables :</p> <ul style="list-style-type: none"> • C.14. Eats • C.14. Learns new flavours <p>Dietary behaviours in relation to education of father are significantly different in the following variables :</p> <ul style="list-style-type: none"> • C.14. Eats • C.14. Learns new flavours <p>Conclusions for the nutritional value of daily food ration and consumption of product groups: A significant relation between the nutritional value of daily food ration and education of mother was found in the following cases:</p> <ul style="list-style-type: none"> • Energy kJ (B_02_WO_DFR) • Energy kcal (B_02_WO_DFR) • Total protein (B_02_WO_DFR) • Animal protein (B_02_WO_DFR) • Vegetable protein (B_02_WO_DFR) • Fat (B_02_WO_DFR) • Ash (B_02_WO_DFR) • Sodium (B_02_WO_DFR) • Potassium (B_02_WO_DFR) • Magnesium (B_02_WO_DFR) • Manganese (B_02_WO_DFR) • Riboflavin (B_02_WO_DFR) • Vitamin B6 (B_02_WO_DFR) • Fatty acids: 8:0 (B_02_WO_DFR) • Fatty acids: 12:0 (B_02_WO_DFR) • Fatty acids: 15:0 (B_02_WO_DFR) • Fatty acids: 16:0 (B_02_WO_DFR) • Fatty acids: 17:0 (B_02_WO_DFR) • Fatty acids: 18:0 (B_02_WO_DFR) • Fatty acids: 20:0 (B_02_WO_DFR) • Fatty acids: 14:1 (B_02_WO_DFR) • Fatty acids: 15:1 (B_02_WO_DFR) • Fatty acids: 16:1 (B_02_WO_DFR) • Fatty acids: 17:1 (B_02_WO_DFR) • Fatty acids: 18:1 (B_02_WO_DFR) • Fatty acids: 20:1 (B_02_WO_DFR) • Fatty acids: Total monounsaturated (B_02_WO_DFR) • Fatty acids: 22:5 (B_02_WO_DFR) • Isoleucine (B_02_WO_DFR) • Leucine (B_02_WO_DFR) • Lysine (B_02_WO_DFR) • Methionine (B_02_WO_DFR) • Cystine (B_02_WO_DFR) • Phenylalanine (B_02_WO_DFR) • Tyrosine (B_02_WO_DFR) • Threonine (B_02_WO_DFR) • Tryptophan (B_02_WO_DFR) • Valine (B_02_WO_DFR) • Arginine (B_02_WO_DFR) • Histidine (B_02_WO_DFR) • Alanine (B_02_WO_DFR)
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		<ul style="list-style-type: none"> • Aspartic acid (B_02_WO_DFR) • Glutamic acid (B_02_WO_DFR) • Glycine (B_02_WO_DFR) • Proline (B_02_WO_DFR) • Serine (B_02_WO_DFR) • Starch (B_02_WO_DFR) • S1-Fatty acids: 20:1 (B_02_WO_breakfast1) • S1-Fatty acids: 22:1 (B_02_WO_breakfast1) • S1-Fatty acids: 18:4 (B_02_WO_breakfast1) • S1-Fatty acids: 20:4 (B_02_WO_breakfast1) • S1-Fatty acids: 22:6 (B_02_WO_breakfast1) • S1-Iodine (B_02_WO_breakfast1) • S1-Long-chain polyunsaturated fatty acids (B_02_WO_breakfast1) • S2-Energy kj (B_02_WO_breakfast2) • S2-Energy kcal (B_02_WO_breakfast2) • S2-Ash (B_02_WO_breakfast2) • S2-Magnesium (B_02_WO_breakfast2) • S2-Retinol (B_02_WO_breakfast2) • S2-Fatty acids: 4:0 (B_02_WO_breakfast2) • S2-Lactose (B_02_WO_breakfast2) • S2-Iodine (B_02_WO_breakfast2) • OB-Ash (B_02_WO_dinner) • OB-Potassium (B_02_WO_dinner) • OB-Thiamin (B_02_WO_dinner) • OB-Vitamin B6 (B_02_WO_dinner) • OB-Fatty acids: 20:3 (B_02_WO_dinner) • OB-Fatty acids: 22:5 (B_02_WO_dinner) • OB-Starch (B_02_WO_dinner) • OB-Iodine (B_02_WO_dinner) • OB-Taurine (B_02_WO_dinner) • POD-Animal protein (B_02_WO_high_tea) • POD-Calcium (B_02_WO_high_tea) • POD-Phosphorus (B_02_WO_high_tea) • POD-Riboflavin (B_02_WO_high_tea) • POD-Fatty acids: 4:0 (B_02_WO_high_tea) • POD-Fatty acids: 6:0 (B_02_WO_high_tea) • POD-Fatty acids: 8:0 (B_02_WO_high_tea) • POD-Fatty acids: 10:0 (B_02_WO_high_tea) • POD-Fatty acids: 12:0 (B_02_WO_high_tea) • POD-Fatty acids: 14:0 (B_02_WO_high_tea) • POD-Fatty acids: 15:0 (B_02_WO_high_tea) • POD-Fatty acids: 17:0 (B_02_WO_high_tea) • POD-Fatty acids: 14:1 (B_02_WO_high_tea) • POD-Fatty acids: 15:1 (B_02_WO_high_tea) • POD-Fatty acids: 16:1 (B_02_WO_high_tea) • POD-Fatty acids: 17:1 (B_02_WO_high_tea) • POD-Fatty acids: 18:4 (B_02_WO_high_tea) • POD-Lysine (B_02_WO_high_tea) • POD-Lactose (B_02_WO_high_tea) • POD-vitamin B12 (B_02_WO_high_tea) • K-Animal protein (B_02_WO_suppper) • K-Vegetable protein (B_02_WO_suppper) • K-Fat (B_02_WO_suppper) • K-Ash (B_02_WO_suppper) • K-Sodium (B_02_WO_suppper) • K-Manganese (B_02_WO_suppper) • K-Vitamin C (B_02_WO_suppper) • K-Fatty acids: 4:0 (B_02_WO_suppper) • K-Fatty acids: 6:0 (B_02_WO_suppper) • K-Fatty acids: 8:0 (B_02_WO_suppper) • K-Fatty acids: 10:0 (B_02_WO_suppper) • K-Fatty acids: 12:0 (B_02_WO_suppper) • K-Fatty acids: 14:0 (B_02_WO_suppper) • K-Fatty acids: 15:0 (B_02_WO_suppper) • K-Fatty acids: 16:0 (B_02_WO_suppper) • K-Fatty acids: 17:0 (B_02_WO_suppper) • K-Fatty acids: 18:0 (B_02_WO_suppper) • K-Fatty acids: 20:0 (B_02_WO_suppper) • K-Fatty acids: total saturated (B_02_WO_suppper) • K-Fatty acids: 14:1 (B_02_WO_suppper) • K-Fatty acids: 16:1 (B_02_WO_suppper) • K-Fatty acids: 17:1 (B_02_WO_suppper) • K-Fatty acids: 18:1 (B_02_WO_suppper) • K-Fatty acids: total monounsaturated (B_02_WO_suppper) • K-Fatty acids: 22:6 (B_02_WO_suppper) • K-Cholesterol (B_02_WO_suppper) • K-Isoleucine (B_02_WO_suppper)
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		<ul style="list-style-type: none"> • K-Leucine (B_02_WO_supper) • K-Lysine (B_02_WO_supper) • K-Methionine (B_02_WO_supper) • K-Cystine (B_02_WO_supper) • K-Phenylalanine (B_02_WO_supper) • K-Tyrosine (B_02_WO_supper) • K-Threonine (B_02_WO_supper) • K-Tryptophan (B_02_WO_supper) • K-Valine (B_02_WO_supper) • K-Arginine (B_02_WO_supper) • K-Histidine (B_02_WO_supper) • K-Alanine (B_02_WO_supper) • K-Aspartic acid (B_02_WO_supper) • K-Glutamic acid (B_02_WO_supper) • K-Glycine (B_02_WO_supper) • K-Proline (B_02_WO_supper) • K-Serine (B_02_WO_supper) • K-Starch (B_02_WO_supper) • K-Long-chain polyunsaturated fatty acids (B_02_WO_supper) • K-Percentage of energy from fat (B_02_WO_supper) • K-Percentage of energy from carbohydrates (B_02_WO_supper) • POJ-Potassium (B_02_WO_snack) • POJ-Niacin (B_02_WO_snack) • SUPL-Ash (B_02_A_WiSMzŻW) • SUPL-Sodium (B_02_A_WiSMzŻW) • SUPL-Potassium (B_02_A_WiSMzŻW) • SUPL-Calcium (B_02_A_WiSMzŻW) • SUPL-Phosphorus (B_02_A_WiSMzŻW) • SUPL-Magnesium (B_02_A_WiSMzŻW) • SUPL-Iron (B_02_A_WiSMzŻW) • SUPL-Zinc (B_02_A_WiSMzŻW) • SUPL-Copper (B_02_A_WiSMzŻW) • SUPL-Manganese (B_02_A_WiSMzŻW) • SUPL-Thiamin (B_02_A_WiSMzŻW) • SUPL-Riboflavin (B_02_A_WiSMzŻW) • SUPL-Niacin (B_02_A_WiSMzŻW) • SUPL-Vitamin B6 (B_02_A_WiSMzŻW) • SUPL-Folates/folic acid (B_02_A_WiSMzŻW) • ŻYW-Ash (B_02_B_WiSMzŻnW) • ŻYW-Potassium (B_02_B_WiSMzŻnW) • ŻYW-Manganese (B_02_B_WiSMzŻnW) • ŻYW-Riboflavin (B_02_B_WiSMzŻnW) • Bread P3 (B_04_Product_consumption) • Total potatoes P2 (B_04_Product_consumption) • Cold meat, sausage and prepared products based on boneless meat P2 (B_04_Product_consumption) • Tea, infusions without sugar P4 (B_04_Product_consumption) • Water P3 (B_04_Product_consumption) <p>A significant relation between the nutritional value of daily food ration and education of father was found in the following cases:</p> <ul style="list-style-type: none"> • Energy kj (B_02_WO_DFR) • Energy kcal (B_02_WO_DFR) • Total protein (B_02_WO_DFR) • Animal protein (B_02_WO_DFR) • Vegetable protein (B_02_WO_DFR) • Fat (B_02_WO_DFR) • Ash (B_02_WO_DFR) • Calcium (B_02_WO_DFR) • Phosphorus (B_02_WO_DFR) • Magnesium (B_02_WO_DFR) • Riboflavin (B_02_WO_DFR) • Fatty acids: 4:0 (B_02_WO_DFR) • Fatty acids: 6:0 (B_02_WO_DFR) • Fatty acids: 8:0 (B_02_WO_DFR) • Fatty acids: 10:0 (B_02_WO_DFR) • Fatty acids: 12:0 (B_02_WO_DFR) • Fatty acids: 14:0 (B_02_WO_DFR) • Fatty acids: 16:0 (B_02_WO_DFR) • Fatty acids: 17:0 (B_02_WO_DFR) • Fatty acids: 18:0 (B_02_WO_DFR) • Fatty acids: 20:0 (B_02_WO_DFR) • Fatty acids: total saturated (B_02_WO_DFR) • Fatty acids: 14:1 (B_02_WO_DFR) • Fatty acids: 15:1 (B_02_WO_DFR)
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		<ul style="list-style-type: none"> • Fatty acids: 16:1 (B_02_WO_DFR) • Fatty acids: 17:1 (B_02_WO_DFR) • Fatty acids: 18:1 (B_02_WO_DFR) • Fatty acids: Total monounsaturated (B_02_WO_DFR) • Fatty acids: 18:4 (B_02_WO_DFR) • Cholesterol (B_02_WO_DFR) • Isoleucine (B_02_WO_DFR) • Leucine (B_02_WO_DFR) • Lysine (B_02_WO_DFR) • Methionine (B_02_WO_DFR) • Cystine (B_02_WO_DFR) • Phenylalanine (B_02_WO_DFR) • Tyrosine (B_02_WO_DFR) • Threonine (B_02_WO_DFR) • Tryptophan (B_02_WO_DFR) • Valine (B_02_WO_DFR) • Histidine (B_02_WO_DFR) • Alanine (B_02_WO_DFR) • Aspartic acid (B_02_WO_DFR) • Glutamic acid (B_02_WO_DFR) • Glycine (B_02_WO_DFR) • Proline (B_02_WO_DFR) • Serine (B_02_WO_DFR) • Starch (B_02_WO_DFR) • Digestible carbohydrates (B_02_WO_DFR) • S1-Total protein (B_02_WO_breakfast1) • S1-Fat (B_02_WO_breakfast1) • S1-Vitamin A (retinol equivalent) (B_02_WO_breakfast1) • S1-Retinol (B_02_WO_breakfast1) • S1-Vitamin E (alpha-tocopherol equivalent) (B_02_WO_breakfast1) • S1-Vitamin C (B_02_WO_breakfast1) • S1-Fatty acids: 20:0 (B_02_WO_breakfast1) • S1-Fatty acids: 16:1 (B_02_WO_breakfast1) • S1-vitamin D (B_02_WO_breakfast1) • S1-Iodine (B_02_WO_breakfast1) • S1-Percentage of energy from fat (B_02_WO_breakfast1) • S1-Percentage of energy from carbohydrates (B_02_WO_breakfast1) • S2-Vegetable protein (B_02_WO_breakfast2) • S2-Total carbohydrates (B_02_WO_breakfast2) • S2-Magnesium (B_02_WO_breakfast2) • S2-Copper (B_02_WO_breakfast2) • S2-Vitamin A (retinol equivalent) (B_02_WO_breakfast2) • S2-Fatty acids: 4:0 (B_02_WO_breakfast2) • S2-Cystine (B_02_WO_breakfast2) • S2-Starch (B_02_WO_breakfast2) • S2-Dietary fibre (B_02_WO_breakfast2) • S2-Digestible carbohydrates (B_02_WO_breakfast2) • POD-Energy kj (B_02_WO_high_tea) • POD-Energy kcal (B_02_WO_high_tea) • POD-Water (B_02_WO_high_tea) • POD-Total protein (B_02_WO_high_tea) • POD-Animal protein (B_02_WO_high_tea) • SUB-Total carbohydrates (B_02_WO_high_tea) • POD-Calcium (B_02_WO_high_tea) • POD-Phosphorus (B_02_WO_high_tea) • POD-Magnesium (B_02_WO_high_tea) • POD-Iron (B_02_WO_high_tea) • POD-Zinc (B_02_WO_high_tea) • POD-Copper (B_02_WO_high_tea) • POD-Vitamin A (retinol equivalent) (B_02_WO_high_tea) • POD-Retinol (B_02_WO_high_tea) • POD-Riboflavin (B_02_WO_high_tea) • POD-Niacin (B_02_WO_high_tea) • POD-Vitamin C (B_02_WO_high_tea) • POD-Fatty acids: 4:0 (B_02_WO_high_tea) • POD-Fatty acids: 6:0 (B_02_WO_high_tea) • POD-Fatty acids: 8:0 (B_02_WO_high_tea) • POD-Fatty acids: 10:0 (B_02_WO_high_tea) • POD-Fatty acids: 12:0 (B_02_WO_high_tea) • POD-Fatty acids: 14:0 (B_02_WO_high_tea) • POD-Fatty acids: 15:0 (B_02_WO_high_tea) • POD-Fatty acids: 18:0 (B_02_WO_high_tea) • POD-Fatty acids: 20:0 (B_02_WO_high_tea) • POD-Fatty acids: 18:4 (B_02_WO_high_tea) • POD-Lysine (B_02_WO_high_tea) • POD-Tryptophan (B_02_WO_high_tea)
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		<ul style="list-style-type: none"> • POD-Lactose (B_02_WO_high_tea) • POD-Folates/folic acid (B_02_WO_high_tea) • POD-vitamin B12 (B_02_WO_high_tea) • POD-vitamin D (B_02_WO_high_tea) • POD-Digestible carbohydrates (B_02_WO_high_tea) • K-Water (B_02_WO_suppper) • K-Total protein (B_02_WO_suppper) • K-Animal protein (B_02_WO_suppper) • K-Vegetable protein (B_02_WO_suppper) • K-Ash (B_02_WO_suppper) • K-Sodium (B_02_WO_suppper) • K-Calcium (B_02_WO_suppper) • K-Magnesium (B_02_WO_suppper) • K-Vitamin C (B_02_WO_suppper) • K-Fatty acids: 4:0 (B_02_WO_suppper) • K-Fatty acids: 6:0 (B_02_WO_suppper) • K-Fatty acids: 8:0 (B_02_WO_suppper) • K-Fatty acids: 10:0 (B_02_WO_suppper) • K-Fatty acids: 12:0 (B_02_WO_suppper) • K-Fatty acids: 14:0 (B_02_WO_suppper) • K-Fatty acids: 15:0 (B_02_WO_suppper) • K-Fatty acids: 16:0 (B_02_WO_suppper) • K-Fatty acids: 17:0 (B_02_WO_suppper) • K-Fatty acids: 18:0 (B_02_WO_suppper) • K-Fatty acids: 20:0 (B_02_WO_suppper) • K-Fatty acids: total saturated (B_02_WO_suppper) • K-Fatty acids: 14:1 (B_02_WO_suppper) • K-Fatty acids: 16:1 (B_02_WO_suppper) • K-Fatty acids: 17:1 (B_02_WO_suppper) • K-Fatty acids: 18:1 (B_02_WO_suppper) • K-Fatty acids: total monounsaturated (B_02_WO_suppper) • K-Fatty acids: 22:6 (B_02_WO_suppper) • K-Cholesterol (B_02_WO_suppper) • K-Isoleucine (B_02_WO_suppper) • K-Leucine (B_02_WO_suppper) • K-Lysine (B_02_WO_suppper) • K-Methionine (B_02_WO_suppper) • K-Cystine (B_02_WO_suppper) • K-Phenylalanine (B_02_WO_suppper) • K-Tyrosine (B_02_WO_suppper) • K-Threonine (B_02_WO_suppper) • K-Tryptophan (B_02_WO_suppper) • K-Valine (B_02_WO_suppper) • K-Arginine (B_02_WO_suppper) • K-Histidine (B_02_WO_suppper) • K-Alanine (B_02_WO_suppper) • K-Aspartic acid (B_02_WO_suppper) • K-Glutamic acid (B_02_WO_suppper) • K-Glycine (B_02_WO_suppper) • K-Proline (B_02_WO_suppper) • K-Serine (B_02_WO_suppper) • K-Lactose (B_02_WO_suppper) • K-Starch (B_02_WO_suppper) • K-Long-chain polyunsaturated fatty acids (B_02_WO_suppper) • K-Percentage of energy from protein (B_02_WO_suppper) • K-Percentage of energy from carbohydrates (B_02_WO_suppper) • POJ-Ash (B_02_WO_snack) • POJ-Potassium (B_02_WO_snack) • POJ-Magnesium (B_02_WO_snack) • POJ-Fatty acids: 16:0 (B_02_WO_snack) • POJ-Sucrose (B_02_WO_snack) • ŻYW-Ash (B_02_B_WiSMzŻnW) • ŻYW-Calcium (B_02_B_WiSMzŻnW) • ŻYW-Phosphorus (B_02_B_WiSMzŻnW) • ŻYW-Magnesium (B_02_B_WiSMzŻnW) • ŻYW-Riboflavin (B_02_B_WiSMzŻnW) • Total potatoes P2 (B_04_Product_consumption) • Juices, fruit and vegetable drinks and nectars P2 (B_04_Product_consumption) • Rennet cheese P2 (B_04_Product_consumption) • Cottage cheese (sliced and in containers) P3 (B_04_Product_consumption) • Cold meat, sausage and prepared products based on boneless meat P2 (B_04_Product_consumption) • Margarine P2 (B_04_Product_consumption) • Other animal fats P2 (B_04_Product_consumption) • Water P3 (B_04_Product_consumption)
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6.	Are there differences in the diet of children depending on financial situation of the family?	Diet - as above File <i>BIOSTAT_01 - variable <A.10. Financial situation of the family></i>	<p>Files: Mikroskala pkt2.2;3;4;6;7;8;9;10.xlsx</p> <p>The methods used: Non-parametric Kruskal-Wallis tests and Chi-square independence test were used.</p> <p>Conclusions for the number of meals: Significant differences were identified in the following case:</p> <ul style="list-style-type: none"> • C.6. 2nd breakfast (B_01_Survey_data) • C.6. Soup (B_01_Survey_data) <p>Conclusions for dietary behaviour, including snacks: Significant differences were identified in the following case:</p> <ul style="list-style-type: none"> • C.7. Chips, fries (B_01_Survey_data) • C.7. Sandwiches (B_01_Survey_data) <p>Conclusions for the nutritional value of daily food ration and consumption of product groups: Significant differences were identified in the following case:</p> <ul style="list-style-type: none"> • Fat (B_02_WO_DFR) • Fatty acids: 15:1 (B_02_WO_DFR) • S1-Energy kJ (B_02_WO_breakfast1) • S1-Energy kcal (B_02_WO_breakfast1) • S1-Total protein (B_02_WO_breakfast1) • S1-Sodium (B_02_WO_breakfast1) • S1-Thiamin (B_02_WO_breakfast1) • S1-Riboflavin (B_02_WO_breakfast1) • S1-Vitamin B6 (B_02_WO_breakfast1) • S1-Fatty acids: 15:1 (B_02_WO_breakfast1) • S1-Vitamin B12 (B_02_WO_breakfast1) • S2 - Percentage of energy from sucrose (B_02_WO_breakfast2) • OB-Fatty acids: 22:6 (B_02_WO_dinner) • OB-Long-chain polyunsaturated fatty acids (B_02_WO_dinner) • POD-Vitamin B6 (B_02_WO_high_tea) • POD-Dietary fibre (B_02_WO_high_tea) • K-Energy kJ (B_02_WO_supper) • K-Energy kcal (B_02_WO_supper) • K-Fat (B_02_WO_supper) • K-Fatty acids: 6:0 (B_02_WO_supper) • K-Fatty acids: 8:0 (B_02_WO_supper) • K-Fatty acids: 10:0 (B_02_WO_supper) • K-Fatty acids: 12:0 (B_02_WO_supper) • K-Fatty acids: 14:0 (B_02_WO_supper) • K-Fatty acids: 15:0 (B_02_WO_supper) • K-Fatty acids: 16:0 (B_02_WO_supper) • K-Fatty acids: 14:1 (B_02_WO_supper) • K-Fatty acids: 22:1 (B_02_WO_supper) • K-Fatty acids: 18:4 (B_02_WO_supper) • K-Fatty acids: 22:6 (B_02_WO_supper) • K-Cholesterol (B_02_WO_supper) • K-Sucrose (B_02_WO_supper) • K-Long-chain polyunsaturated fatty acids (B_02_WO_supper) • POJ-waste (B_02_WO_snack) • POJ-Potassium (B_02_WO_snack) • POJ-Manganese (B_02_WO_snack) • SUPL-Iodine (B_02_A_WISMzZW) • Total potatoes P2 (B_04_Product_consumption) • Fish based on boneless meat P2 (B_04_Product_consumption)
7.	Does nutrition knowledge of mothers affects the proper child nutrition / child diet?	Diet - as above Nutrition knowledge of mothers according to question A.13. There are some statements about child nutrition below. Please indicate whether you agree with them or not. File <i>BIOSTAT_01 - variables:</i> <i>A.13.-INT- eat no more than 5 meals a day</i> <i>A.13.-INT- drink at least 1 litre of liquids a day (including water, juice, milk and soups)</i> <i>A.13.-INT- drink no less than ½ litre of milk a day</i> <i>A.13.-INT- drink at least 3 glasses of juice</i>	<p>Files: Mikroskala pkt2.2;3;4;6;7;8;9;10.xlsx</p> <p>The methods used: Non-parametric Kruskal-Wallis tests and Chi-square independence test were used.</p> <p>Conclusions for the number of meals: Significant differences were identified in the following case:</p> <ul style="list-style-type: none"> • C.6. 2nd breakfast (B_01_Survey_data)

		<p>every day A.13.-INT- have fruit and vegetables in each meal A.13.-INT- have a sweet snack every day A.13.-INT- eat a whole egg every day A.13.-INT- have an egg 3-4 times a week A.13.-INT- eat food with a limited amount of salt and sugar A.13.-INT- eat meals with no added fat Create an index of nutrition knowledge of mothers (e.g. the percentage of correct answers)</p>	<p>Conclusions for dietary behaviour, including snacks: Significant differences were identified in the following case:</p> <ul style="list-style-type: none"> • C.7. Chips, fries (B_01_Survey_data) • C.7. Sandwiches (B_01_Survey_data) • C.7. Chocolate, cookies (B_01_Survey_data) • C.7. Sweet dairy desserts (cheese, yoghurt, puddings) (B_01_Survey_data) <p>Conclusions for the nutritional value of daily food ration and consumption of product groups: Significant differences were identified in the following case:</p> <ul style="list-style-type: none"> • Fatty acids: 20:0 (B_02_WO_DFR) • Fatty acids: 18:1 (B_02_WO_DFR) • L-carnitine (B_02_WO_DFR) • S1-Vegetable protein (B_02_WO_breakfast1) • S1-Total carbohydrates (B_02_WO_breakfast1) • S1-Ash (B_02_WO_breakfast1) • S1-Sodium (B_02_WO_breakfast1) • S1-Manganese (B_02_WO_breakfast1) • S1-Beta-carotene (B_02_WO_breakfast1) • S1-Fatty acids: 20:0 (B_02_WO_breakfast1) • S1-Fatty acids: total saturated (B_02_WO_breakfast1) • S1-Fatty acids: 15:1 (B_02_WO_breakfast1) • S1-Fatty acids: 16:1 (B_02_WO_breakfast1) • S1-Fatty acids: 18:1 (B_02_WO_breakfast1) • S1-Fatty acids: 22:1 (B_02_WO_breakfast1) • S1-Cholesterol (B_02_WO_breakfast1) • S1-Leucine (B_02_WO_breakfast1) • S1-Methionine (B_02_WO_breakfast1) • S1-Cystine (B_02_WO_breakfast1) • S1-Phenylalanine (B_02_WO_breakfast1) • S1-Tyrosine (B_02_WO_breakfast1) • S1-Valine (B_02_WO_breakfast1) • S1-Alanine (B_02_WO_breakfast1) • S1-Aspartic acid (B_02_WO_breakfast1) • S1-Glutamic acid (B_02_WO_breakfast1) • S1-Glycine (B_02_WO_breakfast1) • S1-Proline (B_02_WO_breakfast1) • S1-Serine (B_02_WO_breakfast1) • S1-Starch (B_02_WO_breakfast1) • S1-Iodine (B_02_WO_breakfast1) • S1-Digestible carbohydrates (B_02_WO_breakfast1) • S1-Percentage of energy from fat (B_02_WO_breakfast1) • S2-Vitamin A (retinol equivalent) (B_02_WO_breakfast2) • S2-Vitamin E (alpha-tocopherol equivalent) (B_02_WO_breakfast2) • S2-Thiamin (B_02_WO_breakfast2) • S2-Niacin (B_02_WO_breakfast2) • S2-Vitamin B6 (B_02_WO_breakfast2) • S2-Fatty acids: 12:0 (B_02_WO_breakfast2) • S2-Fatty acids: 20:0 (B_02_WO_breakfast2) • S2-Fatty acids: 18:3 (B_02_WO_breakfast2) • S2-Folates/folic acid (B_02_WO_breakfast2) • K-L-carnitine (B_02_WO_supper) • Bread P3 (B_04_Product_consumption) • Total fruits and vegetables P2 (B_04_Product_consumption) • Vegetables, market product P3 (B_04_Product_consumption) • Fruits, market product P3 (B_04_Product_consumption) • Cold meat, sausage and prepared products based on boneless meat P2 (B_04_Product_consumption) • Margarine P2 (B_04_Product_consumption) • Drinks (excluding juices) P1 (B_04_Product_consumption) • Water P3 (B_04_Product_consumption)
8.	<p>Are there differences in the diet of children depending on their nutritional status (BMI z-score)?</p>	<p>Diet - as above (file BIostat_03 - variable: <bmi to age z-score AKT>) 5 groups: obesity (BMI z-score>2) overweight (1< BMI z-score ≤ 2) normal nutritional status (-1 < BMI z-score ≤ 1) deficiency of body weight (-2≤ BMI z-score < -1) significant deficiency of body mass index</p>	<p>Files: Mikroskala pkt2.2;3;4;6;7;8;9;10.xlsx</p> <p>The methods used: Non-parametric Kruskal-Wallis tests and Chi-square independence test were used.</p> <p>Conclusions for the number of meals: Significant differences were identified in the following</p>

		(BMI z-score <-2)	<p>case:</p> <ul style="list-style-type: none"> • C.6. Meal/drink at night (B_01_Survey_data) <p>Conclusions for dietary behaviour, including snacks: Significant differences were identified in the following case:</p> <ul style="list-style-type: none"> • Lack of significant relations <p>Conclusions for the nutritional value of daily food ration and consumption of product groups: Significant differences were identified in the following case:</p> <ul style="list-style-type: none"> • Vitamin E (alpha-tocopherol equivalent) (B_02_WO_DFR) • Fatty acids: 22:1 (B_02_WO_DFR) • Fatty acids: 18:2 (B_02_WO_DFR) • Fatty acids: 18:3 (B_02_WO_DFR) • Iodine (B_02_WO_DFR) • S1-Vitamin E (alpha-tocopherol equivalent) (B_02_WO_breakfast1) • S1-Vitamin C (B_02_WO_breakfast1) • S2-Total protein (B_02_WO_breakfast2) • S2-Retinol (B_02_WO_breakfast2) • S2-vitamin D (B_02_WO_breakfast2) • OB-Vitamin E (alpha-tocopherol equivalent) (B_02_WO_dinner) • OB-Fatty acids: 20:0 (B_02_WO_dinner) • OB-Fatty acids: 18:1 (B_02_WO_dinner) • OB-fatty acids: total monounsaturated (B_02_WO_dinner) • OB-Fatty acids: 18:2 (B_02_WO_dinner) • OB-Fatty acids: 18:3 (B_02_WO_dinner) • OB-fatty acids: total polyunsaturated (B_02_WO_dinner) • POD-Vegetable protein (B_02_WO_high_tea) • POD-Fatty acids: 16:0 (B_02_WO_high_tea) • POD-Fatty acids: 18:2 (B_02_WO_high_tea) • POD-Cystine (B_02_WO_high_tea) • POD-Glycine (B_02_WO_high_tea) • K-Zinc (B_02_WO_supper) • K-L-carnitine (B_02_WO_supper) • ŻYW-Iron (B_02_B_WiSMzŻnW) • ŻYW-Vitamin E (alpha-tocopherol equivalent) (B_02_B_WiSMzŻnW) • ŻYW-Iodine (B_02_B_WiSMzŻnW) • Oils P2 (B_04_Product_consumption)
9.	How are the children at risk of obesity (birth body weight ≤2500 g or ≥4000 g) fed? What is their nutritional status?	Diet - as above Birth body weight - file BIOSTAT_03 - variables: <Body weight UR>, Nutritional status - file BIOSTAT_03 - variable: <bmi to age z-score AKT>	<p>Files: Mikroskala pkt2.2;3;4;6;7;8;9;10.xlsx</p> <p>The methods used: Non-parametric Mann-Whitney and Kruskal-Wallis tests, Chi-square independence test and Fisher's exact test were used.</p> <p>Conclusions for the number of meals: Significant differences were identified in the following case:</p> <ul style="list-style-type: none"> • Lack of significant relations <p>Conclusions for dietary behaviour, including snacks: Significant differences were identified in the following case:</p> <ul style="list-style-type: none"> • Lack of significant relations <p>Conclusions for the nutritional value of daily food ration and consumption of product groups: Significant differences were identified in the following case:</p> <ul style="list-style-type: none"> • Fatty acids: 4:0 (B_02_WO_DFR) • Fatty acids: 17:1 (B_02_WO_DFR) • Fatty acids: 22:1 (B_02_WO_DFR) • S1-Fatty acids: 18:2 (B_02_WO_breakfast1) • S1-Fatty acids: 18:4 (B_02_WO_breakfast1) • S1-Percentage of energy from protein (B_02_WO_breakfast1) • S2-Fatty acids: 22:1 (B_02_WO_breakfast2) • POD-Taurine (B_02_WO_high_tea) • Vitamin A (alpha-tocopherol equivalent) (B_02_WO_DFR)

			<ul style="list-style-type: none"> • POJ-Fatty acids: 4:0 (B_02_WO_snack) • POJ-Fatty acids: 6:0 (B_02_WO_snack) • Groat and rice P3 (B_04_Product_consumption) • Cereals P3 (B_04_Product_consumption) • Drinks (excluding juices) P1 (B_04_Product_consumption)
10.	Are there differences in the current diet of children who are and are not breastfed in the first year of life?	<p>Diet - as above</p> <p>Breastfeeding - File <i>BIOSTAT_01</i>, variable <C.1. Was the child breastfed during the first year of life (from birth to 12 months of age)?>)</p>	<p>Files: Mikroskala pkt2.2;3;4;6;7;8;9;10.xlsx</p> <p>The methods used: Non-parametric Mann-Whitney tests, Chi-square independence test and Fisher's exact test were used.</p> <p>Conclusions for the number of meals: Significant differences were identified in the following case:</p> <ul style="list-style-type: none"> • Lack of significant relations <p>Conclusions for dietary behaviour, including snacks: Significant differences were identified in the following case:</p> <ul style="list-style-type: none"> • C.7. Sweet dairy desserts (cheese, yoghurt, puddings) (B_01_Survey_data) <p>Conclusions for the nutritional value of daily food ration and consumption of product groups: Significant differences were identified in the following case:</p> <ul style="list-style-type: none"> • Vitamin A (alpha-tocopherol equivalent) (B_02_WO_DFR) • Beta-carotene (B_02_WO_DFR) • Fatty acids: total saturated (B_02_WO_DFR) • Fatty acids: Total monounsaturated (B_02_WO_DFR) • Fatty acids: Total polyunsaturated (B_02_WO_DFR) • Percentage of energy from fat (B_02_WO_DFR) • S1-Waste (B_02_WO_breakfast1) • S1-Fatty acids: 22:1 (B_02_WO_breakfast1) • S1-Fatty acids: total monounsaturated (B_02_WO_breakfast1) • S1-Fatty acids: 18:3 (B_02_WO_breakfast1) • S1-fatty acids: total polyunsaturated (B_02_WO_breakfast1) • S2-Calcium (B_02_WO_breakfast2) • S2-Vitamin E (alpha-tocopherol equivalent) (B_02_WO_breakfast2) • S2-Fatty acids: 4:0 (B_02_WO_breakfast2) • S2-Fatty acids: 6:0 (B_02_WO_breakfast2) • S2-Fatty acids: 20:0 (B_02_WO_breakfast2) • S2-Lactose (B_02_WO_breakfast2) • S2-Dietary fibre (B_02_WO_breakfast2) • OB-Calcium (B_02_WO_dinner) • POD-Vitamin A (retinol equivalent) (B_02_WO_high_tea) • POD-Beta-carotene (B_02_WO_high_tea) • POD-Fatty acids: 22:6 (B_02_WO_high_tea) • POD-Dietary fibre (B_02_WO_high_tea) • POD-Long-chain polyunsaturated fatty acids (B_02_WO_high_tea) • K-Fatty acids: total saturated (B_02_WO_supper) • K-Fatty acids: total monounsaturated (B_02_WO_supper) • K-Fatty acids: 18:2 (B_02_WO_supper) • K-Fatty acids: 18:3 (B_02_WO_supper) • K-Fatty acids: total polyunsaturated (B_02_WO_supper) • POJ-Percentage of energy from fat (B_02_WO_snack) • ŻYW-Vitamin A (retinol equivalent) (B_02_B_WiSMzZnW) • ŻYW-Beta-carotene (B_02_B_WiSMzZnW) • Total potatoes P2 (B_04_Product_consumption) • Total fruits and vegetables P2 (B_04_Product_consumption) • Vegetables, market product P3 (B_04_Product_consumption) • Milk and dairy products based on milk P1 (B_04_Product_consumption) • Water P3 (B_04_Product_consumption)
11.	When the gluten products were introduced to the children's diets? Is the time of introducing gluten products dependent on age, education, index of nutritional knowledge of mothers, place of residence, financial situation of the family?	<p>File <i>BIOSTAT_01</i> - variables: <C.4. In which month of age the products containing gluten were introduced to the child's diet>, <A.5. Age of mother>, <A.7. Education of mother>, <A.4. Place of residence>, <A.10. Financial situation of the family></p>	<p>Files: Mikroskala pkt2.11;12;13;14;15;16;17;18;19;20;21;22;23;24;25.xlsx</p> <p>The methods used: Chi-square dependence test was used</p>

		Nutrition knowledge of mothers according to question A.13. as in point 7	<p>Conclusions: Gluten products were introduced into the children's diets in the following months: 1 - 22.00% 2 - 18.00% 3 - 29.75% 4 - 22.75% 5 - 6.75% 6 - 0.50% No data - 0.25%</p> <p>Time of introduction of these products depends on:</p> <ul style="list-style-type: none"> • A.7. Education of mother (B_01_Survey_data) • A.4. Place of residence (B_01_Survey_data) • Nutritional knowledge
12.	Is there a relationship between the introduction of fish to the children's diets in the second half year of life and age, education, index of nutrition knowledge of mothers, place of residence, financial status of the family?	<p><i>File BIOSTAT_01 - variables:</i> <C.5. Were fish introduced to the child's diet in the second half year of his/her life?>, <A.5. Age of mother>, < A.7. Education of mother>, < A.4. Place of residence>, <A.10. Financial situation of the family> Nutrition knowledge of mothers according to question A.13. as in point 7</p>	<p>Files: Mikroskala pkt2.11;12;13;14;15;16;17;18;19;20;21;22;23;24;25.xls x</p> <p>The methods used: Chi-square dependence test was used</p> <p>Conclusions: Time of introduction of these products depends on: • Lack of significant relations</p>
13.	Is there a relationship between the number and size of portions of snacks consumed by children and their age (2 vs. 3 years) and nutritional status?	<p><i>snacks: File BIOSTAT_01 - variables:</i> <C.7. Does your child eat snacks between meals?> then - what and how many times a day (C.7.) <i>File BIOSTAT_03, variable <Age CORRECTION (month)>),</i> Nutritional status - file BIOSTAT_03 - variable: <bmi to age z-score AKT></p>	<p>Files: Mikroskala pkt2.2;3;4;6;7;8;9;10.xls</p> <p>The methods used: Chi-square dependence test was used</p> <p>Conclusions: The following relationships with the age category of children were identified:</p> <ul style="list-style-type: none"> • C.7. Candies, lollipops (B_01_Survey_data) • C.7. Crisps, salty sticks (B_01_Survey_data) • C.7. Candies, lollipops (quantity) (B_01_Survey_data) • C.7. Crisps, salty sticks (quantity) (B_01_Survey_data) <p>The following relationships with the children's nutritional status were identified:</p> <ul style="list-style-type: none"> • C.7. Candies, lollipops (how many times a day) (B_01_Survey_data) • C.7. Crisps, salty sticks (quantity) (B_01_Survey_data)
14.	Which mothers (age, education, index of nutrition knowledge, place of residence, financial status of the family) cook separately for their children?	<p><i>File BIOSTAT_01 - variables:</i> <C.8. I cook separately for the child> <i>File BIOSTAT_01 - variables:</i> <A.5. Age of mother>, < A.7. Education of mother>, < A.4. Place of residence>, <A.10. Financial situation of the family> Nutrition knowledge of mothers according to question A.13. as in point 7</p>	<p>Files: Mikroskala pkt2.11;12;13;14;15;16;17;18;19;20;21;22;23;24;25.xls x</p>
15.	Which mothers (age, education, index of nutrition knowledge, place of residence, financial status of the family) use ready-made products for infants and young children in their children's diets?	<p><i>File BIOSTAT_01 - variables:</i> <C.8. I use ready-made preserves for infants and children, including:>, <C.8. ready-made soup/meals>, <C.8. porridge, gruel>, <C.8. fruit purees, puddings>, <C.8. juices, beverages>, <C.8. teas> <i>File BIOSTAT_01 - variables:</i> <A.5. Age of mother>,<A.7. Education of mother>,<A.4. Place of residence>,<A.10. Financial situation of the family> Nutrition knowledge of mothers according to question A.13. as in point 7</p>	<p>Files: Mikroskala pkt2.11;12;13;14;15;16;17;18;19;20;21;22;23;24;25.xls x</p>
16.	Which mothers (age, education, index of nutrition knowledge,	<p><i>File BIOSTAT_01 - variables:</i> <C.8. The child eats meals prepared for the whole family> <i>File BIOSTAT_01 - variables:</i> <A.5. Age of</p>	<p>Files: Mikroskala</p>

	place of residence, financial status of the family) use the family table diet for their children?	mother>, <A.7. Education of mother>, <A.4. Place of residence>, <A.10. Financial situation of the family> Nutrition knowledge of mothers according to question A.13. as in point 7	pkt2.11;12;13;14;15;16;17;18;19;20;21;22;23;24;25.xls x
17.	Which mothers (age, education, index of nutrition knowledge, place of residence, financial status of the family) use ready-made meals and semi-finished products prepared outside the house in their children's diets?	File BIOSTAT_01 - variables: <C.8. I buy ready-made meals prepared outside the house> File BIOSTAT_01 - variables: <A.5. Age of mother>, <A.7. Education of mother>, <A.4. Place of residence>, <A.10. Financial situation of the family> Nutrition knowledge of mothers according to question A.13. as in point 7	Files: Mikroskala pkt2.11;12;13;14;15;16;17;18;19;20;21;22;23;24;25.xls x
18.	Which mothers (age, education, index of nutrition knowledge, place of residence, financial status of the family) use fresh products in their children's diets?	File BIOSTAT_01 - variables: <C.10. Fresh fruits>, <C.10. Fruit juices>, <C.10. Vegetable and vegetable - fruit juices>, <C.10. Fresh vegetables, including potatoes>, <C.10. Poultry meat>, <C.10. Red meat>, <C.10. Fresh fish>, <C.10. Eggs>, <C.10. Butter>, <C.10. Olive oil>, <C.10. Vegetable oils>, File BIOSTAT_01 - variables: <A.5. Age of mother>, <A.7. Education of mother>, <A.4. Place of residence>, <A.10. Financial situation of the family> Nutrition knowledge of mothers according to question A.13. as in point 7	Files: Mikroskala pkt2.11;12;13;14;15;16;17;18;19;20;21;22;23;24;25.xls x
19.	Which children (age, nutritional status, age of mothers, index of nutrition knowledge of mothers, place of residence, financial status of the family) have various dairy products (and what kind) in their diet every day?	File BIOSTAT_03, variable <Age CORRECTION (month)>), Nutritional status - file BIOSTAT_03 - variable: <bmi to age z-score AKT> File BIOSTAT_01 - variables: <A.5. Age of mother>, <A.7. Education of mother>, <A.4. Place of residence>, <A.10. Financial situation of the family> Nutrition knowledge of mothers according to question A.13. as in point 7 File BIOSTAT_01 - variables: <C.11. modified milk (frequency)>, <C.11. high-fat milk (3.5% - 3.2%) (frequency)>, <C.11. semi-skimmed milk (1.5% - 2%) (frequency)>, <C.11. skimmed milk (0.5%) (frequency)>, <C.11. natural yoghurt, kefir (frequency)>, <C.11. fruit yoghurt (frequency)>, <C.11. natural cheese / cottage cheese (frequency)>, <C.11. fruit, flavoured cheese (frequency)>, <C.11. dairy dessert (frequency)>, <C.11. hard cheese (frequency)>, <C.11. other (frequency)>, <C.11. Other (specify)>	Files: Mikroskala pkt2.11;12;13;14;15;16;17;18;19;20;21;22;23;24;25.xls x
20.	Which children (age, nutritional status, age of mothers, index of nutrition knowledge of mothers, place of residence, financial status of the family) have various drinks (and what kind) in their diet every day?	File BIOSTAT_03, variable <Age CORRECTION (month)>), Nutritional status - file BIOSTAT_03 - variable: <bmi to age z-score AKT> File BIOSTAT_01 - variables: <A.5. Age of mother>, <A.7. Education of mother>, <A.4. Place of residence>, <A.10. Financial situation of the family> Nutrition knowledge of mothers according to question A.13. as in point 7 File BIOSTAT_01 - variables: <C.12. water (frequency)>, <C.12. juices, nectars (frequency)>, <C.12. sweet still and carbonated drinks (frequency)>, <C.12. tea (frequency)>, <C.12. chicory coffee (without milk) (frequency)>, <C.12. compote (frequency)>, <C.12. homemade soups (frequency)>, <C.12. other (frequency)>, <C.12. Other (specify)>	Files: Mikroskala pkt2.11;12;13;14;15;16;17;18;19;20;21;22;23;24;25.xls x
21.	Which mothers (age, education, index of nutrition knowledge, place of residence, financial status of the family) add salt to	File BIOSTAT_01 - variables: <A.5. Age of mother>, <A.7. Education of mother>, <A.4. Place of residence>, <A.10. Financial situation of the family> Nutrition knowledge of mothers according	Files: Mikroskala pkt2.11;12;13;14;15;16;17;18;19;20;21;22;23;24;25.xls x

	food for children?	to question A.13. as in point 7 <i>File BIOSTAT_01, variable <C.13. Do you add salt to meals of your child?></i>	
22.	Is there a relationship between dietary behaviours of children and their nutritional status?	<i>File BIOSTAT_01 - nutritional behavior - variables: <C.14. Eats>, <C.14. Meat dishes>, <C.14. Vegetables>, <C.14. Learns new flavours>;</i> <i>Nutritional status - file BIOSTAT_03 - variable: <bmi to age z-score AKT></i> 5 groups: obesity (BMI z-score>2) overweight (1< BMI z-score ≤ 2) normal nutritional status (-1 <BMI z-score ≤ 1) deficiency of body weight (-2≤ BMI z-score < -1) significant deficiency of body mass index (BMI z-score <-2)	Files: Mikroskala pkt2.11;12;13;14;15;16;17;18;19;20;21;22;23;24;25.xls x The methods used: Chi-square dependence test was used Conclusions: • Lack of significant relation
23.	Is there a relationship between attitudes of mothers and the children's diets?	<i>File BIOSTAT_01:</i> Attitudes of mothers - variable <C.16. How do you usually behave when your child refuses to eat new meals? Method of feeding the child - variables: <C.15. Please indicate how your child is usually fed>, <C.15. other (how?)>	Files: Mikroskala pkt2.11;12;13;14;15;16;17;18;19;20;21;22;23;24;25.xls x The methods used: Chi-square dependence test was used Conclusions: • A significant relation between the method of feeding and attitudes of mothers was identified
24.	Which mothers (age, education, index of nutrition knowledge, place of residence, financial status of the family) introduced dietary supplements to the children's diets?	<i>File BIOSTAT_01 - variables: <A.5. Age of mother>, <A.7. Education of mother>, <A.4. Place of residence>, <A.10. Financial situation of the family></i> Nutrition knowledge of mothers according to question A.13. as in point 7 Supplements - <i>File BIOSAT_01, variables:</i> <C.17. Age of 0-6 months (Vitamin D)> <C.17. Age of 7-12 months (Vitamin D)> <C.17. Age of 13-18 months (Vitamin D)> <C.17. Age above 18 months (Vitamin D)> <C.17. Age of 0-6 months (Vitamin K)> <C.17. Age of 7-12 months (Vitamin K)> <C.17. Age of 13-18 months (Vitamin K)> <C.17. Age above 18 months (Vitamin K)> <C.17. Age of 0-6 months (Cod liver oil)> <C.17. Age of 7-12 months (Cod liver oil)> <C.17. Age of 13-18 months (Cod liver oil)> <C.17. Age over 18 months (Cod liver oil)> <C.17. Age of 0-6 months (Probiotics)> <C.17. Age of 7-12 months (Probiotics)> <C.17. Age of 13-18 months (Probiotics)> <C.17. Age over 18 months (Probiotics)> <C.17. Name - Preparation 1> <C.17. Age of 0-6 months (Preparation 1)> <C.17. Age of 7-12 months (Preparation 1)> <C.17. Age of 13-18 months (Preparation 1)> <C.17. Age over 18 months (Preparation 1)> <C.17. Name - Preparation 2> <C.17. Age of 0-6 months (Preparation 2)> <C.17. Age of 7-12 months (Preparation 2)> <C.17. Age of 13-18 months (Preparation 2)> <C.17. Age over 18 months (Preparation 2)> < C.18. Does the child currently take any vitamin and/or iron, vitamin and mineral or other preparations?> <C.18. If YES, what kind?> <C.18. Who recommended it?>	Files: Mikroskala pkt2.11;12;13;14;15;16;17;18;19;20;21;22;23;24;25.xls x
25.	What is the nutritional status of children on special diets?	<i>Nutritional status - file BIOSTAT_03 - variable: <bmi to age z-score AKT></i> 5 groups: obesity (BMI z-score>2) overweight (1< BMI z-score ≤ 2)	Files: Mikroskala pkt2.11;12;13;14;15;16;17;18;19;20;21;22;23;24;25.xls x

		<p>normal nutritional status (-1 < BMI z-score ≤ 1)</p> <p>deficiency of body weight (-2 ≤ BMI z-score < -1)</p> <p>significant deficiency of body mass index (BMI z-score < -2)</p> <p>Special diets - File BIOSAT_01, variables:</p> <p><C.19. Is the child on any special diet?></p> <p><C.19. without milk></p> <p><C.19. without milk (doctor's recommendation?)></p> <p><C.19. without eggs></p> <p><C.19. without eggs (doctor's recommendation?)></p> <p><C.19. without gluten></p> <p><C.19. without gluten (doctor's recommendation?)></p> <p><C.19. vegetarian></p> <p><C.19. vegetarian (doctor's recommendation?)></p> <p><C.19. other></p> <p><C.19. other (doctor's recommendation?)></p> <p><C.19. Other (specify)></p>	
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Appendix 5 The survey results (Parts A, B and C)

Part A. Information about family - environment

A.3. Child's sex

	Frequency	Percent
Female	178	44.50
Male	222	55.50
Total	400	100.00

A.4. Place of residence

	Frequency	Percent
Urban agglomerations above 500 thousand residents	63	15.75
Large city above 100 thousand to 500 thousand residents	101	25.25
Medium city - from 50 thousand to 100 thousand residents	52	13.00
Small town of less than 50 thousand residents	89	22.25
Village	84	21.00
Total	389	97.25
No data	11	2.75
Total	400	100.00

A.5. Age of mother (in years)

	Mean	SD	Median	Min-max range	Range: 1-3 quartile
Age of mother (years)	29.41	4.82	29	19-44	26-33

A.6. Age of father (in years)

	Mean	SD	Median	Min-max range	Range: 1-3 quartile
Age of father (in years)	31.79	5.49	31	19-53	28-34

A.7. Education of parents

Education of mother	Frequency	Percent
Basic	16	4.00
Vocational	52	13.00
Secondary	135	33.75
Licentiate	31	7.75
Higher	165	41.25
Total	399	99.75
No data	1	0.25
Total	400	100.00

Education of father	Frequency	Percent
Basic	11	2.75
Vocational	103	25.75
Secondary	137	34.25
Licentiate	17	4.25
Higher	130	32.50
Total	398	99.50
No data	2	0.50
Total	400	100.00

A.8. Number of persons in the household

	Frequency	Percent
1	1	0.25
2	10	2.50
3	187	46.75
4	138	34.50
5	39	9.75
6	16	4.00
7	5	1.25
Total	396	99.00
No data	4	1.00
Total	400	100.00

	Mean	SD	Median	Min-max range	Range: 1-3 quartile
Number of persons in the household	3.68	0.93	3.5	1-7	3-4

including number of children (to 18 years of age)

	Frequency	Percent
1	212	53.00
2	149	37.25
3	28	7.00
4	3	0.75
5	1	0.25
Total	393	98.25
No data	7	1.75
Total	400	100.00

	Mean	SD	Median	Min-max range	Range: 1-3 quartile
Number of children to 18 years of age in the household	1.55	0.68	1	1-5	1-2

A.9. Who works in the family? Please select all the correct answers.

BOTH PARENTS

	Frequency	Percent
YES	214	53.50
NO	185	46.25
Total	399	99.75
No data	1	0.25
Total	400	100.00

FATHER ONLY

	Frequency	Percent
YES	170	42.50
NO	229	57.25
Total	399	99.75
No data	1	0.25
Total	400	100.00

MOTHER ONLY

	Frequency	Percent
YES	8	2.00
NO	391	97.75
Total	399	99.75
No data	1	0.25
Total	400	100.00

NONE OF PARENTS

	Frequency	Percent
YES	9	2.25
NO	390	97.50
Total	399	99.75
No data	1	0.25
Total	400	100.00

OTHER PERSONS

	Frequency	Percent
YES	11	2.75
NO	388	97.00
Total	399	99.75
No data	1	0.25
Total	400	100.00

A.10. Please specify your family's financial situation.

	Frequency	Percent
Very bad	1	0.25
Bad	10	2.50
Average (neither good nor bad)	164	41.00
Good	197	49.25
Very good	27	6.75
Total	399	99.75
No data	1	0.25
Total	400	100.00

A.11. Does your child go a nursery/kindergarten?

	Frequency	Percent
YES	21	5.25
NO	375	93.75
Total	396	99.00
No data	4	1.00
Total	400	100.00

If NO, who looks after the child during the day?

MOTHER

	Frequency	Percent
YES	276	69.00
NO	88	22.00
Total	364	91.00
No data	36	9.00
Total	400	100.00

FATHER

	Frequency	Percent
YES	66	16.50
NO	296	74.00
Total	362	90.50
No data	38	9.50
Total	400	100.00

GRANDMOTHER

	Frequency	Percent
YES	154	38.50
NO	209	52.25
Total	363	90.75
No data	37	9.25
Total	400	100.00

BABYSITTER

	Frequency	Percent
YES	46	11.50
NO	317	79.25
Total	363	90.75
No data	37	9.25
Total	400	100.00

OTHER PERSONS

	Frequency	Percent
YES	16	4.00
NO	346	86.50
Total	362	90.50
No data	38	9.50
Total	400	100.00

A.12. From what sources do you acquire knowledge of child nutrition? Please select all the correct answers.

DOCTOR/MIDWIFE/DIETICIAN

	Frequency	Percent
YES	252	63.00
NO	147	36.75
Total	399	99.75
No data	1	0.25
Total	400	100.00

TV, RADIO

	Frequency	Percent
YES	139	34.75
NO	260	65.00
Total	399	99.75
No data	1	0.25
Total	400	100.00

THE INTERNET

	Frequency	Percent
YES	214	53.50
NO	185	46.25
Total	399	99.75
No data	1	0.25
Total	400	100.00

BOOKS, MAGAZINES

	Frequency	Percent
YES	269	67.25
NO	130	32.50
Total	399	99.75
No data	1	0.25
Total	400	100.00

BROCHURES/LEAFLETS

	Frequency	Percent
YES	107	26.75
NO	292	73.00
Total	399	99.75
No data	1	0.25
Total	400	100.00

MOTHER OR GRANDMOTHER/OTHER FAMILY MEMBERS

	Frequency	Percent
YES	267	66.75
NO	132	33.00
Total	399	99.75
No data	1	0.25
Total	400	100.00

FRIENDS

	Frequency	Percent
YES	173	43.25
NO	226	56.50
Total	399	99.75
No data	1	0.25
Total	400	100.00

I AM NOT INTERESTED IN THESE ISSUES

	Frequency	Percent
YES	8	2.00
NO	391	97.75
Total	399	99.75
No data	1	0.25
Total	400	100.00

A.13. There are some statements about child nutrition below. Please indicate whether you agree with them or not. Please select only one answer in each row.

CHILD AGED 13-36 MONTHS SHOULD:

EAT NO MORE THAN 5 MEALS A DAY

	Frequency	Percent
YES / Correct	276	69.00
NO / Incorrect	121	30.25
Total	397	99.25
No data	3	0.75
Total	400	100.00

DRINK AT LEAST 1 LITRE OF LIQUIDS A DAY (INCLUDING WATER, JUICE, MILK AND SOUPS)

	Frequency	Percent
YES / Correct	374	93.50
NO / Incorrect	25	6.25
Total	399	99.75
No data	1	0.25
Total	400	100.00

DRINK NO LESS THAN ½ LITRE OF MILK A DAY

	Frequency	Percent
YES / Correct	235	58.75
NO / Incorrect	163	40.75
Total	398	99.50
No data	2	0.50
Total	400	100.00

DRINK AT LEAST 3 GLASSES OF JUICE EVERY DAY

	Frequency	Percent
YES / Incorrect	108	27.00
NO / Correct	289	72.25
Total	397	99.25
No data	3	0.75
Total	400	100.00

HAVE FRUIT AND VEGETABLES IN EACH MEAL

	Frequency	Percent
YES / Correct	281	70.25
NO / Incorrect	117	29.25
Total	398	99.50
No data	2	0.50
Total	400	100.00

HAVE A SWEET SNACK EVERY DAY

	Frequency	Percent
YES / Incorrect	101	25.25
NO / Correct	296	74.00
Total	397	99.25
No data	3	0.75
Total	400	100.00

EAT A WHOLE EGG EVERY DAY

	Frequency	Percent
YES / Incorrect	32	8.00
NO / Correct	364	91.00
Total	396	99.00
No data	4	1.00
Total	400	100.00

HAVE AN EGG 3-4 TIMES A WEEK

	Frequency	Percent
YES / Correct	273	68.25
NO / Incorrect	122	30.50
Total	395	98.75
No data	5	1.25
Total	400	100.00

EAT FOOD WITH A LIMITED AMOUNT OF SALT AND SUGAR

	Frequency	Percent
YES / Correct	371	92.75
NO / Incorrect	27	6.75
Total	398	99.50
No data	2	0.50
Total	400	100.00

EAT MEALS WITH NO ADDED FAT

	Frequency	Percent
YES / Incorrect	203	50.75
NO / Correct	191	47.75
Total	394	98.50
No data	6	1.50
Total	400	100.00

Part B. Nutritional status

B.1. Child's anthropometric data

	Mean	SD	Median	Min-max range	Range: 1-3 quartile
Birth body weight [kg]	3.45	0.54	3.4	1.1-4.9	3.10-3.66
Current body weight [kg]	12.74	2.31	12.5	6.0-21.0	11.0-14.0
Birth body length [cm]	54.49	3.64	55.0	39.0-68.0	52.0-57.0
Current body height [cm]	88.96	7.93	90.0	68.0-116.0	83.0-94.0

B.2. How would you describe the overall health of your child?

	Frequency	Percent
My child almost never gets sick	152	38.00
My child rarely gets sick	217	54.25
My child very often suffers from (specific diseases)	26	6.50
Other	5	1.25
Total	400	100.00

B.3. How would you describe the physical activity level of your child?

	Frequency	Percent
Comparable with peers	277	69.25
Less active compared with peers	8	2.00
More active than peers	115	28.75
Total	400	100.00

Part C. Diet, dietary behaviour, nutritional preferences

C.1. Was the child breastfed during the first year of life (from birth to 12 months of age)?

	Frequency	Percent
YES	341	85.25
NO	59	14.75
Total	400	100.00
No data	0	0.00
Total	400	100.00

If YES, how long the baby was only breastfed (months)?

	Frequency	Percentage of children (n=400)	Percentage of children (n=341)
1	24	6.00	7.04
2	31	7.75	9.09
3	51	12.75	14.96
4	56	14.00	16.42
5	55	13.75	16.13
6	51	12.75	14.96
7	6	1.50	1.76
8	5	1.25	1.47
9	1	0.25	0.29
No data	61	15.25	17.89
Total	341	85.25	100.00

	Mean	SD	Median	Min-max range	Range: 1-3 quartile
Duration of breastfeeding only (months) [n=280]	4.05	1.7	4	1-9	3-5

C.2. Is the child currently breastfed?

	Frequency	Percent
YES	29	7.25
NO	369	92.25
Total	398	99.50
No data	2	0.50
Total	400	100.00

If YES, please indicate how many times a day the baby is breastfed.

	Frequency	Percentage of children (n=400)	Percentage of children (n=29)
1	2	0.50	6.90
2	6	1.50	20.69
3	4	1.00	13.79
4	4	1.00	13.79
5	4	1.00	13.79
6	3	0.75	10.34
7	1	0.25	3.45
8	1	0.25	3.45
10	1	0.25	3.45
No data	3	0.75	10.34
Total	29	7.25	100.00

	Mean	SD	Median	Min-max range	Range: 1-3 quartile
Number of feedings per day [n=26]	4.04	2.22	4	1-10	2-5

Including how many times the baby is breastfed at night.

	Frequency	Percentage of children (n=400)	Percentage of children (n=29)
0	2	0.50	6.90
1	12	3.00	41.38
2	9	2.25	31.03
3	2	0.50	6.90
No data	4	1.00	13.79
Total	29	7.25	100.00

	Mean	SD	Median	Min-max range	Range: 1-3 quartile
Number of night feedings [n=25]	1.44	0.77	1	0-3	1-2

If (the child is) NOT (breastfed), please indicate how long the child was breastfed (months)

	Frequency	Percentage of children (n=400)	Percentage of children (n=369)
1	21	5.25	5.69
2	21	5.25	5.69
3	33	8.25	8.94
4	24	6.00	6.50
5	15	3.75	4.07
6	44	11.00	11.92
7	15	3.75	4.07
8	24	6.00	6.50
9	19	4.75	5.15
10	16	4.00	4.34
11	11	2.75	2.98
12	15	3.75	4.07
13	9	2.25	2.44
14	11	2.75	2.98
15	9	2.25	2.44
16	1	0.25	0.27
17	3	0.75	0.81
18	3	0.75	0.81
20	2	0.50	0.54
24	2	0.50	0.54
27	1	0.25	0.27
No data	70	17.50	18.97
Total	369	92.25	100.00

	Mean	SD	Median	Min-max range	Range: 1-3 quartile
Duration of breastfeeding (months) [n=299]	7.25	4.64	6	1-27	3-10

C.3. When (in which month of age) the first complementary products were introduced to the child's diet and what products were they (e.g. gruel, porridge, fruit and vegetable purees, etc.)?

FRUITS

	Frequency	Percentage of children (n=400)	Percentage of children (n=324)
3	22	5.50	6.79
4	109	27.25	33.64
5	86	21.50	26.54
6	78	19.50	24.07
7	20	5.00	6.17
8	6	1.50	1.85
9	2	0.50	0.62
10	1	0.25	0.31
Total	324	81.00	100.00
No data	76	19.00	--
Total	400	100.00	--

VEGETABLES

	Frequency	Percentage of children (n=400)	Percentage of children (n=328)
3	19	4.75	5.79
4	106	26.50	32.32
5	88	22.00	26.83
6	76	19.00	23.17
7	29	7.25	8.84
8	5	1.25	1.52
9	3	0.75	0.91
10	2	0.50	0.61
Total	328	82.00	100.00
No data	72	18.00	--
Total	400	100.00	--

PORRIDGE, GRUEL WITHOUT MILK

	Frequency	Percentage of children (n=400)	Percentage of children (n=198)
2	1	0.25	0.51
3	15	3.75	7.58
4	65	16.25	32.83
5	59	14.75	29.80
6	39	9.75	19.70
7	14	3.50	7.07
8	2	0.50	1.01
9	3	0.75	1.52
Total	198	49.50	100.00
No data	202	50.50	--
Total	400	100.00	--

MILK, MILK PORRIDGE

	Frequency	Percentage of children (n=400)	Percentage of children (n=114)
1	1	0.25	0.88
2	4	1.00	3.51
3	8	2.00	7.02
4	40	10.00	35.09
5	32	8.00	28.07
6	18	4.50	15.79
7	6	1.50	5.26
8	3	0.75	2.63
9	1	0.25	0.88
10	1	0.25	0.88
Total	114	28.50	100.00
No data	286	71.50	--
Total	400	100.00	--

OTHER

	Frequency	Percentage of children (n=400)	Percentage of children (n=27)
4	7	1.75	25.93
5	3	0.75	11.11
6	11	2.75	40.74
7	4	1.00	14.81
8	1	0.25	3.70
9	1	0.25	3.70
Total	27	6.75	100.00
No data	373	93.25	--
Total	400	100.00	--

C4. In which month of age the products containing gluten (e.g. wheat gluten/porrIDGE, semolina, bread crust) were introduced to the child's diet?

	Frequency	Percent
Before the fifth Month	88	22.00
In the fifth Month	72	18.00
In the sixth Month	119	29.75
In the 7th - 9th month	91	22.75
In the 9th - 12th month	27	6.75
Gluten products have not yet been introduced to the child's diet	2	0.50
Total	399	99.75
No data	1	0.25
Total	400	100.00

C5. Were fish introduced to the child's diet in the second half year of his/her life?

	Frequency	Percent
YES	305	76.25
NO	95	23.75
Total	400	100.00

If YES, in what form?

	Frequency	Percentage of children (n=400)	Percentage (n=305)
Fish - homemade meal	234	58.50	76.72
Fish - ready-made meal	90	22.50	29.51
Fish - other	19	4.75	6.23

If NO, why

	Frequency	Percentage of children (n=400)	Percentage (n=95)
Reasons attributable to mother	37	9.25	38.95
Reasons attributable to child	42	10.50	44.21
Other	6	1.50	6.32

C.6. Please select which meals are eaten by your child and how often. Please select only one answer in each row.

		Daily	At least 2-4 times a week	Once a week	Less than once a week	Never or almost never	No data
1st breakfast	N	394	4	1	0	1	0
	%	98.50	1.00	0.25	0.00	0.25	0.00
2nd breakfast	N	294	78	8	4	11	5
	%	73.50	19.50	2.00	1.00	2.75	1.25
Soup	N	241	140	14	1	4	0
	%	60.25	35.00	3.50	0.25	1.00	0.00
Main course	N	229	148	7	7	7	2
	%	57.25	37.00	1.75	1.75	1.75	0.50
High tea	N	280	95	7	6	10	2
	%	70.00	23.75	1.75	1.50	2.50	0.50
Supper	N	375	21	1	1	1	1
	%	93.75	5.25	0.25	0.25	0.25	0.25
Meal / snack before bedtime	N	83	57	37	66	147	10
	%	20.25	14.25	9.25	16.50	36.75	2.50
Meal/drink at night	N	106	57	22	36	179	10
	%	26.50	11.75	5.50	9.00	44.75	2.50

C.7. Does your child eat snacks between meals?

	Frequency	Percent
YES	354	88.50
NO	46	11.50
Total	400	100.00

If YES, they are usually the following:

	Number of children	Percentage of children	
		n=400	n=354
Fruits	319	79.75	90.11
Chips, fries	34	8.50	9.60
Sandwiches	119	29.75	33.62
Candies, lollipops	131	32.75	37.01
Chocolate, cookies	182	45.50	51.41
Sweet dairy desserts (cheese, yoghurt, puddings)	252	63.00	71.19
Crisps, salty sticks	221	55.25	62.43
Other	27	6.75	7.63

FRUITS - number of portions per day

	Number of children	Percentage of children (n=400)	Percentage of children (n=354)	Percentage of children (n=319)
1	139	34.75	39.27	43.57
2	144	36.00	40.68	45.14
3	26	6.50	7.34	8.15
4	9	2.25	2.54	2.82
6	1	0.25	0.28	0.31
Total	319	79.75	90.11	100.00

FRUITS - size of a single portion

	Frequency	Percentage of children (n=400)	Percentage of children (n=354)	Percentage of children (n=319)
Small portion	44	11.00	12.43	13.79
Medium portion	135	33.75	38.14	42.32
Large portion	124	31.00	35.03	38.87
No data	16	4.00	4.52	5.02
Total	319	79.75	90.11	100.00

CHIPS, FRIES - number of portions per day

	Frequency	Percentage of children (n=400)	Percentage of children (n=354)	Percentage of children (n=34)
1	28	7.00	7.91	82.35
2	1	0.25	0.28	2.94
3	3	0.75	0.85	8.82
4	1	0.25	0.28	2.94
No data	1	0.25	0.28	2.94
Total	34	8.50	9.60	100.00

CHIPS, FRIES - size of a single portion

	Frequency	Percentage of children (n=400)	Percentage of children (n=354)	Percentage of children (n=34)
Small portion	5	1.25	1.41	14.71
Medium portion	7	1.75	1.98	20.59
Large portion	20	5.00	5.65	58.82
No data	2	0.50	0.56	5.88
Total	34	8.50	9.60	100.00

SANDWICHES - number of portions per day

	Frequency	Percentage of children (n=400)	Percentage of children (n=354)	Percentage of children (n=119)
1	71	17.75	20.06	59.66
2	41	10.25	11.58	34.45
3	5	1.25	1.41	4.20
4	2	0.50	0.56	1.68
Total	119	29.75	33.62	100.00

SANDWICHES - size of a single portion

	Frequency	Percentage of children (n=400)	Percentage of children (n=354)	Percentage of children (n=119)
Small portion	9	2.25	2.54	7.56
Medium portion	62	15.50	17.51	52.10
Large portion	38	9.50	10.73	31.93
No data	10	2.50	2.82	8.40
Total	119	29.75	33.62	100.00

CANDIES, LOLLIPOPS - number of portions per day

	Frequency	Percentage of children (n=400)	Percentage of children (n=354)	Percentage of children (n=131)
1	96	24.00	27.12	73.28
2	25	6.25	7.06	19.08
3	3	0.75	0.85	2.29
4	2	0.50	0.56	1.53
6	1	0.25	0.28	0.76
No data	4	1.00	1.13	3.05
Total	131	32.75	37.01	100.00

CANDIES, LOLLIPOPS - size of a single portion

	Frequency	Percentage of children (n=400)	Percentage of children (n=354)	Percentage of children (n=131)
Small portion	60	15.00	16.95	45.80
Medium portion	32	8.00	9.04	24.43
Large portion	31	7.75	8.76	23.66
No data	8	2.00	2.26	6.11
Total	131	32.75	37.01	100.00

CHOCOLATE, COOKIES - number of portions per day

	Frequency	Percentage of children (n=400)	Percentage of children (n=354)	Percentage of children (n=182)
1	153	38.25	43.22	84.07
2	26	6.50	7.34	14.29
3	2	0.50	0.56	1.10
4	1	0.25	0.28	0.55
Total	182	45.50	51.41	100.00

CHOCOLATE, COOKIES - size of a single portion

	Frequency	Percentage of children (n=400)	Percentage of children (n=354)	Percentage of children (n=182)
Small portion	47	11.75	13.28	25.82
Medium portion	56	14.00	15.82	30.77
Large portion	68	17.00	19.21	37.36
No data	11	2.75	3.11	6.04
Total	182	45.50	51.41	100.00

SWEET DAIRY DESSERTS - number of portions per day

	Frequency	Percentage of children (n=400)	Percentage of children (n=354)	Percentage of children (n=252)
1	194	48.50	54.80	76.98
2	47	11.75	13.28	18.65
3	9	2.25	2.54	3.57
4	2	0.50	0.56	0.79
Total	252	63.00	71.19	100.00

SWEET DAIRY DESSERTS - size of a single portion

	Frequency	Percentage of children (n=400)	Percentage of children (n=354)	Percentage of children (n=252)
Small portion	41	10.25	11.58	16.27
Medium portion	157	39.25	44.35	62.30
Large portion	42	10.50	11.86	16.67
No data	12	3.00	3.39	4.76
Total	252	63.00	71.19	100.00

CRISPS, SALTY STICKS - number of portions per day

	Frequency	Percentage of children (n=400)	Percentage of children (n=354)	Percentage of children (n=221)
1	163	40.75	46.05	73.76
2	33	8.25	9.32	14.93
3	20	5.00	5.65	9.05
4	2	0.50	0.56	0.90
5	2	0.50	0.56	0.90
No data	1	0.25	0.28	0.45
Total	221	55.25	62.43	100.00

CRISPS, SALTY STICKS - size of a single portion

	Frequency	Percentage of children (n=400)	Percentage of children (n=354)	Percentage of children (n=221)
Small portion	142	35.50	40.11	64.25
Large portion	62	15.50	17.51	28.05
No data	17	4.25	4.80	7.69
Total	221	55.25	62.43	100.00

OTHER - number of portions per day

	Frequency	Percentage of children (n=400)	Percentage of children (n=354)	Percentage of children (n=27)
1	19	4.75	5.37	70.37
2	7	1.75	1.98	25.93
No data	1	0.25	0.28	3.70
Total	27	6.75	7.63	100.00

C.8. Please specify how often the meals are prepared for your child. Please select only one answer in each row.

Meals for the child		Daily	At least 2-4 times a week	Once a week	Less than once a week	Never or almost never	No data
I cook separately for the child	N	52	89	28	48	180	3
	%	13.00	22.25	7.00	12.00	45.00	0.75
I use ready-made preserves for infants and children, including:	N	240	73	21	18	45	3
	%	60.00	18.25	5.25	4.50	11.25	0.75
ready-made soup/meals	N	33	52	36	60	208	11
	%	8.25	13.00	9.00	15.00	52.00	2.75
porridge, gruel	N	131	80	37	27	121	4
	%	32.75	20.00	9.25	6.75	30.25	1.00
fruit purees, puddings	N	94	103	49	35	110	9
	%	23.50	25.75	12.25	8.75	27.50	2.25
juices, beverages	N	185	97	23	26	65	4
	%	46.25	24.25	5.75	6.50	16.25	1.00
teas	N	179	53	30	19	111	8

	%	44.75	13.25	7.50	4.75	27.75	2.00
The child eats meals prepared for the whole family	N	253	85	19	19	20	4
	%	63.25	21.25	4.75	4.75	5.00	1.00
I buy ready-made meals prepared outside the house (e.g. Chinese food, ravioli, pizza, etc.)	N	3	6	16	56	304	15
	%	0.75	1.50	4.00	14.00	76.00	3.75

C9. Does your child eat "fast food" in restaurants / fast food bars?

	Frequency	Percent
YES	69	17.25
NO	330	82.50
Total	399	99.75
No data	1	0.25
Total	400	100.00

If YES, how often?

	Frequency	Percent
1-2 times a month	43	10.75
1-2 times a week	8	2.00
Other	18	4.50
Total	69	17.25
No data	331	82.75
Total	400	100.00

What and how much does your child eat?

	Frequency	Percent
French fries	62	15.50
Poultry dishes	30	7.50
Pizza	14	3.50
Other	9	2.25

C.10. Please specify how often the products listed below are used in the meals eaten by your child. Please select one answer in each row.

		Daily	At least 2-4 times a week	Once a week	Less than once a week	Never or almost never	No data
Fresh fruits	N	268	117	3	6	6	
	%	67.00	29.25	0.75	1.50	1.50	
Frozen fruits	N	1	18	24	103	247	7
	%	0.25	4.50	6.00	25.75	61.75	1.75
Fruit juices	N	219	132	19	19	11	
	%	54.75	33.00	4.75	4.75	2.75	
Vegetable and vegetable - fruit juices	N	62	100	48	79	110	1
	%	15.50	25.00	12.00	19.75	27.50	0.25
Fresh vegetables, including potatoes	N	260	124	10	4	2	
	%	65.00	31.00	2.50	1.00	0.50	
Frozen vegetables	N	5	53	83	98	160	1
	%	1.25	13.25	20.75	24.50	40.00	0.25
Poultry meat	N	43	282	54	8	12	1
	%	10.75	70.50	13.50	2.00	3.00	0.25
Red meat	N	8	99	124	87	81	1
	%	2.00	24.75	31.00	21.75	20.25	0.25
Fresh fish	N	4	35	128	83	148	2

	%	1.00	8.75	32.00	20.75	37.00	0.50
Frozen fish	N	4	20	124	114	137	
	%	1.00	5.00	31.00	28.50	34.25	
Smoked fish	N	2	6	31	81	280	
	%	0.50	1.50	7.75	20.25	70.00	
Canned fish	N	1	2	19	47	329	2
	%	0.25	0.50	4.75	11.75	82.25	0.50
Eggs	N	15	218	116	37	14	
	%	3.75	54.50	29.00	9.25	3.50	
Butter	N	256	89	19	8	28	
	%	64.00	22.25	4.75	2.00	7.00	
Olive oil	N	30	105	53	76	134	2
	%	7.50	26.25	13.25	19.00	33.50	0.50
Vegetable oils	N	33	128	81	68	88	2
	%	8.25	32.00	20.25	17.00	22.00	0.50
Margarine	N	24	51	42	55	226	2
	%	6.00	12.75	10.50	13.75	56.50	0.50
Cereals	N	57	125	86	43	87	2
	%	14.25	31.25	21.50	10.75	21.75	0.50
Groat (barley, buckwheat)	N	8	68	126	116	80	2
	%	2.00	17.00	31.50	29.00	20.00	0.50
Dark bread	N	28	86	63	85	137	1
	%	7.00	21.50	15.75	21.25	34.25	0.25
Wheat bread	N	215	117	27	23	15	3
	%	53.75	29.25	6.75	5.75	3.75	0.75
Tomato concentrate, paste	N	5	43	139	131	78	4
	%	1.25	10.75	34.75	32.75	19.50	1.00
Stock cubes, broths	N	33	71	51	83	161	1
	%	8.25	17.75	12.75	20.75	40.25	0.25
Vegetable seasoning in the form of granules, powder	N	25	75	35	58	207	
	%	6.25	18.75	8.75	14.50	51.75	
Concentrates of soups and sauces in powder	N	2	20	23	48	306	1
	%	0.50	5.00	5.75	12.00	76.50	0.25

C.11. What and how much dairy products do you use in your child's diet? Please select one answer in each row and give approximate size of portion (in cups, spoons, slices or grams).

		Daily	At least 2-4 times a week	Once a week	Less than once a week	Never or almost never	No data
Modified milk	N	203	23	6	12	151	5
	%	50.75	5.75	1.50	3.00	37.75	1.25
High-fat milk (3.5 - 3.2)	N	47	55	28	16	244	10
	%	11.75	13.75	7.00	4.00	61.00	2.50
Semi-skimmed milk (1.5 - 2)	N	36	30	16	22	285	11
	%	9.00	7.50	4.00	5.50	71.25	2.75
Skimmed milk (1.5 - 0.5)	N	3	10	8	6	362	11
	%	0.75	2.50	2.00	1.50	90.50	2.75
Natural yoghurt, kefir	N	16	94	69	56	161	4
	%	4.00	23.50	17.25	14.00	40.25	1.00
Fruit yoghurt	N	97	180	51	19	47	6
	%	24.25	45.00	12.75	4.75	11.75	1.50
Natural cheese / cottage cheese	N	19	112	92	55	114	8
	%	4.75	28.00	23.00	13.75	28.50	2.00
Fruit, flavoured cheese	N	64	168	73	24	64	7

	%	16.00	42.00	18.25	6.00	16.00	1.75
Dairy dessert	N	26	102	62	59	141	10
	%	6.50	25.50	15.50	14.75	35.25	2.50
Hard cheese	N	29	163	63	46	94	5
	%	7.25	40.75	15.75	11.50	23.50	1.25
Other (specify)	N	6	2	7			385
	%	1.50	0.50	1.75			96.25

If you do not use any dairy products in your child's diet, please specify why.

	Frequency	Percent
Allergy	15	78.95
Child does not like it	3	15.79
Other	1	5.26
Total	19	100.00

C.12. Please specify what other liquids (except for milk and milk beverages) does your child drink and in what amounts. Please select one answer in each row and give approximate size of portion (in cups,).

		Daily	At least 2-4 times a week	Once a week	Less than once a week	Never or almost never	No data
Water	N	267	64	13	15	38	3
	%	66.75	16.00	3.25	3.75	9.50	0.75
Juices, nectars	N	203	135	27	17	15	3
	%	50.75	33.75	6.75	4.25	3.75	0.75
Sweet still and carbonated drinks	N	26	38	27	25	278	6
	%	6.50	9.50	6.75	6.25	69.50	1.50
Tea	N	207	100	20	15	56	2
	%	51.75	25.00	5.00	3.75	14.00	0.50
Chicory coffee (without milk)	N	5	13	15	23	338	6
	%	1.25	3.25	3.75	5.75	84.50	1.50
Compote	N	37	98	74	79	108	4
	%	9.25	24.50	18.50	19.75	27.00	1.00
Homemade soups	N	206	154	25	5	9	1
	%	51.50	38.50	6.25	1.25	2.25	0.25
Other (specify)	N	9	2				389
	%	2.25	0.50				97.25

C.13. Do you add salt to meals of your child? Please select one answer.

	Frequency	Percent
I do not use salt for my child's meals	70	17.50
I add salt to all of my child's meals	63	15.75
I add salt only to homemade meals	254	63.50
I add salt to ready-made products for children	2	0.50
Total	389	97.25
No data	11	2.75
Total	400	100.00

C.14. In terms of nutrition you observe that your child:

Eats	Frequency	Percent
Regularly	334	83.50
Irregularly	63	15.75
Total	397	99.25
No data	3	0.75
Total	400	100.00

Meat dishes

	Frequency	Percent
Likes	352	88.00
Dislikes	47	11.75
Total	399	99.75
No data	1	0.25
Total	400	100.00

Vegetables

	Frequency	Percent
Likes	342	85.50
Dislikes	57	14.25
Total	399	99.75
No data	1	0.25
Total	400	100.00

Learns new flavours

	Frequency	Percent
Willingly	268	67.00
Unwillingly	132	33.00
Total	400	100.00

C.15. Please indicate how your child is usually fed. Please select one answer.

	Frequency	Percent
Eats at least one meal a day at table with his/her family	280	70.00
Is fed separately, at other times of day than the family	58	14.50
Is fed while watching TV	22	5.50
Is fed during play / has to be convinced to eat	16	4.00
Other/none of the above	23	5.75
Total	399	99.75
No data	1	0.25
Total	400	100.00

C.16. How do you usually behave when your child refuses to eat new meals? Please select one answer.

	Frequency	Percent
I feed with determination, I insist that he/she eats	13	3.25
I feed by entertaining and distracting from the food	67	16.75
I act patiently and gradually until the child gets used to the new taste	130	32.50
I introduce the new dish again after some time	150	37.50
I do not introduce this dish to the menu	13	3.25
Other	25	6.25
Total	398	99.50
No data	2	0.50
Total	400	100.00

C.17. Did the child take any vitamin and/or iron, vitamin and mineral or other preparations (e.g. cod liver oil, probiotics)?

		Age of 0-6 months	Age of 7-12 months	Age of 13-18 months	Age over 18 months
Vitamin D	N	348	231	102	42
	%	87.00	57.75	25.50	10.50
Vitamin K	N	239	47	14	6
	%	59.75	11.75	3.50	1.50
Cod-liver oil	N	10	17	34	31
	%	2.50	4.25	8.50	7.75
Probiotics	N	45	51	47	35
	%	11.25	12.75	11.75	8.75

C.18. Does the child currently take any vitamin and/or iron, vitamin and mineral or other preparations (e.g. cod liver oil, probiotics)?

	Frequency	Percent
YES	119	29.75
NO	279	69.75
Total	398	99.50
No data	2	0.50
Total	400	100.00

C.19. Is the child on any special (e.g. elimination, non-standard) diet?

	Frequency	Percent
YES	26	6.50
NO	372	93.00
Total	398	99.50
No data	2	0.50
Total	400	100.00

If YES, what diet is it? Please select all the correct answers.

without milk - n=18 (doctor's recommendation n = 15)

without eggs - n=3 (doctor's recommendation n = 3)

without gluten - n=0

vegetarian - n=2 (doctor's supervision n = 1)

other - n=3 (doctor's recommendation n = 3)