VILNIUS UNIVERSITY

RASA STUNDŽIENĖ

NUTRITIONAL STATUS OF INFANTS AND CHILDREN IN THEIR SECOND YEAR IN THE CITY OF VILNIUS, AND ITS DETERMINANTS

Summary of doctoral dissertation
Biomedical Sciences, Public Health (09 B)

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VILNIAUS UNIVERSITETAS

RASA STUNDŽIENĖ

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ABBREVIATIONS

df – degrees of freedom

YD – yogurt drink

MW – maternity ward

CM – cow's milk

Mdn – median

m – Million

BM – breast milk

n – the absolute number of subjects

p – Statistical significance

CI – confidence interval

IF – infant formula

WHO – World Health Organization

WHA – World Health Assembly

rs – Spearman's rank correlation coefficient

SD – standard deviation

OR – odds ratio

OR_p – pooled odds ratio

OR_a – adjusted odds ratio

UNICEF – Lithuanian National Committee for the United Nations Children's Fund

χ^2 – chi-squared test

x – average

DEFINITIONS

Early initiation of breastfeeding – initiation of breastfeeding within one hour from child birth.

Exclusive breastfeeding– infant breastfeeding without giving any other liquids with the exception of vitamins or medicines for up to 6 months.

Mixed feeding – not only breastfeeding, but also giving breast-milk substitutes to newborns or infants under 6 months of age.

Complementary feeding – combination of breastfeeding with semi-solid and solid food, made of various products, and various liquids.

1. BACKGROUND

1.1. Research problem and its relevance

A balanced and healthy diet is one of the most important factors, which determine a successful adaptation of a newborn, as well as good growth, development and health condition of an infant. According to specialists, the diet should be balanced from the very first days of being born, and to meet all the needs of growing and developing little individual, and to determine a high-quality maturity of the immune system.

The research, which has been carried out within the recent few decades, supports the fact that breastfeeding has a great impact on that a child would grow up healthy. Breastfeeding protection, promotion and support are the priority of public health, since breastfeeding is natural feeding method of infants and young children. Exclusive breastfeeding during the first months of life, later complemented by suitable food, ensures an optimum growth, development and health of a child.

However, it is failed to promote and support the breastfeeding properly. Many of health care and social institutions provide services, which often make obstacles for breastfeeding initiation and continuity. All over the world, breast milk has increasingly been replaced by artificial milk formulae. Low indicators and early cessation of breastfeeding result in important health and social consequences to women, children, community and environment, and determine higher costs of national health care, as well as increase health inequality.

Following the data of World Health Organization (WHO), 1,5 million of children die and millions suffer each year in the world for improper nutrition. Children, whose nutrition is insufficient or unbalanced, are ill and experience the consequences of developmental disorders more frequently. Because of this situation, WHO, UNICEF, various public organizations implement an intensive activity in promoting and encouraging the breastfeeding of infants. What is more, breastfeeding support has already become the part of many international and national nutrition improvement programmes. WHO recommendations “Health for All in the 21st century” state that infant breastfeeding promotion and support is essential to healthy start of person’s life.

In Lithuania, a great attention is paid on breastfeeding promotion – one of the most important factors of healthy start of life and breast cancer prevention. It is sought to implement the main WHO provision that infants must be exclusively breastfed up to 6 months of age, and upon introduction of solid, semi-solid or soft foods from 6 months of age, breastfeeding is strongly recommended, and it can be continued at 2 year-old or longer.

In 65th World Health Assembly, which took place in May of 2012, WHO member states were unanimous in adopting a Global Plan for Maternal, Infant and Young Children Nutrition, whereby it is sought that at least 50 percent in the whole world would have exclusive breastfeeding by 2025. Currently, exclusive breastfeeding is common to only about 38 percent of infants to 6 months of age. According to WHO statistical data of 2009, only 34,8 percent of infants of up to 6 months of age from all over the world were subject to exclusive breastfeeding during the period of 2000-2008.

In Lithuania, a number of breastfed infants increases, however, in comparison with other European countries (Sweden, Norway), where the child morbidity and mortality rates are the lowest, the number of breastfed infants is still low. In Sweden, 80 percent of infants are breastfed under 6 months of age. In Norway – 72 percent, while in Lithuania – 31,0 percent. Therefore, there is a need to promote breastfeeding by various initiatives and to form a favourite public view towards and it, as well as to seek that as many mothers as possible would breastfed their infants as long as possible.

Scientists continue researching and seeking to disclose what duration of breastfeeding is useful to infant health, whether the infant, breastfed for three and more months, is protected against higher morbidity, in comparison with non breastfed infants. So far, the number of these studies is low, while sparse research shows that a protective function of breastfeeding becomes obvious, when comparing the infants, breastfed less than six months, and infants, breastfed up to six months.

In Lithuania, it is determined that the health of infants and young children is directly depended on maternal health, nutrition, behaviour, work nature, and public and social status, practice of physicians and other factors. There is no efficient breastfeeding promotion system in the country. What is more, the Network of Baby-Friendly Hospitals is developed too slowly, it fails to succeed to avoid information and advertising, which promote artificial feeding of infants directly and indirectly, for subjective and objective reasons in natal care institutions.

National Nutrition Centre (since 1st of April, 2010 – Health Education and Disease Prevention Centre) had researched complementary feeding of infants. It was determined that a considerable proportion of women feed their infants not by recommendations of children nutrition specialists: introduction of solid, semi-solid or soft foods is made much earlier than it is recommended, while the products of complementary feeding usually are not enough nutritious and safe.

In Lithuania, it has been researched what promotes and what, on the contrary, may prevent the mothers from breastfeeding their infants, the factors related with breastfeeding

duration have been analyzed during the recent decade. Recently, the breastfeeding relationships with features of physical health and behaviour of children have started to be analyzed, however, there are no research, where the relationships of breastfeeding and complementary feeding with various factors of mothers, children health and their physical growth would be explored, or they just in their early stage.

1.2. Aim and tasks of the study

The aim of this study is to assess the nutritional status of infants and children in their second year in the City of Vilnius, and the relationship of breastfeeding duration, introduction of solid, semi-solid or soft foods, dietary diversity, acceptable diet with age, physical health condition of children, age, education of mothers, financial situation of family and experience in bringing up the children.

The following tasks were set in order to achieve this aim:

1. To determine the prevalence of breastfeeding, according to indicators, which describe it: early initiation of breastfeeding, duration of exclusive breastfeeding up to 6 months and duration of children breastfeeding up to one – two years of age.
2. To determine the prevalence of complementary feeding, according to indicators, which describe it: introduction of solid, semi-solid or soft foods, dietary diversity, minimum meal frequency and acceptable diet.
3. To assess the relationship of breastfeeding, introduction of solid, semi-solid or soft foods, dietary diversity, acceptable diet of infants and children in their second year with children's age, their birth type, age of mother, education, experience in bringing up the children and financial situation of family.
4. To determine the mothers' awareness about feeding the infants and children in their second year and support in family, and their influence on breastfeeding duration, introduction of solid, semi-solid or soft foods, dietary diversity.
5. To assess the dynamics of physical health condition infants and children in their second year during the first two years and to determine its relationship with nutrition indicators.

1.3. Scientific novelty of the study

The nutritional status of infants and children in their second year has been researched in a complex manner for the first time in Lithuania. It was performed by using two questionnaires (the first one was prepared by adapting the questionnaire "Infant and young child feeding as"

[IYCF – Infant and young child feeding] from WHO publication *Indicators for assessing infant and young child feeding practices. Part II: Measurement, 2010*; the second one – prepared by author), and by assessing a physical growth of children by relating with nutrition indicators of infants and children in their second year.

The first questionnaire *Infant and young child feeding (IYCF Infant and young child feeding)* was adapted for exploring the nutrition of Lithuanian infants and children in their second year upon obtaining the permission of manager of WHO Country Office in Lithuania to use the publication *Indicators for assessing infant and young child feeding practices – Part 2 Measurement, WHO, 2010* and by making a double translation of questionnaire from English to Lithuanian and from Lithuanian to English.

The paper analyzed the prevalent of breastfeeding of infants and children in their second year, the trends of its change were compared with data from research that has already been carried out Lithuania. The relationship of breastfeeding duration, introduction of solid, semi-solid or soft foods, dietary diversity, acceptable diet of infants and children in their second year of the City of Vilnius with children's age, their health, age of mother, education, experience in bringing up the children and financial situation of family was assessed. Mothers' awareness about feeding the infants and children in their second year and support in family, and their influence on breastfeeding duration, introduction of solid, semi-solid or soft foods, dietary diversity was explored.

By using the methodological recommendations of Prof. J. Tutkuvienė "Vaikų augimo ir brendimo vertinimas" (1995), a physical condition of infants and children in their second year, as well as the relationship of physical growth of children with their nutrition indicators were assessed.

1.4. Practical importance of the study

The review of infant breastfeeding in Lithuania, covering the period of 1993–2011, revealed the striking increase in dynamics of indicators from 1999, which might be related with implementation of "Programme for Improvement of Nutrition of Infants and Children under 3 Year Old" of the Government of the Republic of Lithuania (1994). In 1993, there were 8,6 percent of women, breastfeeding their infants under 6 months, while in 1999, this number was equal to 22,2 percent (increased by almost three times). The aim of aforementioned programme is promotion and organization of infant and young children breastfeeding, a rational, suitable complementary feeding and formula-feeding (when breastfeeding is impossible) with biologically valuable products.

The nutritional status and relationship of breastfeeding duration, introduction of solid, semi-solid or soft foods, dietary diversity, acceptable diet of children of 6-23 months of age, registered in Šeškinė Outpatient Clinic, public institution of the city of Vilnius, with children's age, their health, age of mother, education, financial situation of family and experience in bringing up the children, was researched.

The results of research have been published in scientific literature, medical society was familiarized with nutritional status of infants and children in their second year, its change trends in Lithuania, relationships with physical, social, demographic factors, as well as children's health condition.

The results of paper will be useful for programme participants themselves, since following the findings of completed research, it will be possible to assess the changes of nutritional status of infants and children in their second year during the recent years, and to prepare the measures, which can improve the nutritional status of infants and children in their second year in Lithuania.

This paper can be useful to public health professionals, nursing specialists, family doctors and health politicians, while preparing and putting the prevention and health education programmes in practice.

1.5. Statements to defend

- It is likely that improper breastfeeding practice in the city of Vilnius might be determined by social and demographical factors (age, education, financial situation, marital status) and other factors of mothers: late putting the infant to the breast, breastfeeding method, giving a pacifier and method of childbirth.
- It is likely that improper complementary feeding practice in the city of Vilnius is determined by low level of education of mothers and worse economic situation in family.
- It is likely that improper nutritional status of infants and children in their second year is related with the following health care factors: insufficient attendance of prenatal courses, insufficient training during childbirth and a lack of contacts with health care professionals after childbirth.
- It is likely that higher morbidity of infants and children in their second year may be determined by short duration of breastfeeding.

2. MATERIAL AND METHODS OF THE STUDY

2.1. Target population

A target population of the study was children of 6-23 months of age of the city of Vilnius and their mothers. The group of subjects was formed from the mothers, who visited Šeškinė Outpatient Clinic, public institution of the city of Vilnius and who brought up the children of 6-23 months of age. The respondents were selected for survey by using the **inclusion criteria**:

- mothers, bringing up children, whose age was from 6 to 23 months;
- children without gastrointestinal diseases, hereditary metabolic and nervous system diseases and other chronic diseases during research;
- mothers, whom the verbal contact was possible with, who were of stable mental condition, were able to adequately understand and answer the given questions, and who accepted to take part in survey.

Exclusion criteria of respondents:

- mothers, who bring up children above 24 months of age;
- children, who were with gastrointestinal diseases, hereditary metabolic and nervous system diseases and other chronic diseases during research.

Survey sample

Assuming that the lowest prevalence estimate in the group of breastfeeding and complementary feeding indicators will be 5 percent, an absolute accuracy will make 1 percent, a confidence interval of estimate is 95 percent, a size of population is 3 000, the sample of survey should be 1 135 for determination of estimates of prevalence indicators.

It was planned to explore the relationship of breastfeeding, introduction of solid, semi-solid or soft foods, dietary diversity, acceptable diet of infants and children in their second year with 5–9 independent variables. The method of logistic regression was selected for research. It was assumed that the expected incidence could be not lower than 5,0 percent. It was planned that the number of the main variables in final model is 5–9. Following the recommendations of Hosmer and Lemeshow (2000), a number of positive cases of each variable for logistic regression should be at least 10. Thus, the acceptable sample for his analysis should include 1 000–1 800 respondents.

1 200 questionnaires were distributed, 980 (81,6 percent) questionnaires were collected, 102 of them were filled in improperly, while the remaining 878 – used in research. The actual group of subjects included **878** women and their children of 6–23 months of age, who visited

family doctor or paediatrician and agreed to take part in survey, and whose presented data were suitable for data analysis.

2.2. Methods of the study

The questionnaire of two parts and data collection form, designed for analysis of medical data (Child's Health Development Histories), was prepared.

Part I – questionnaire "Infant and young child feeding" (IYCF), prepared by adapting from WHO publication *Indicators for assessing infant and young child feeding practices. Part II: Measurement, 2010.* Part II – the questionnaire of 30 questions, prepared by author.

Part I – questionnaire *"Infant and young child feeding" (IYCF).* In 15 03 2011, the permission of manager of WHO Country Office in Lithuania R. Petkevičius to use the publication *Indicators for assessing infant and young child feeding practices – Part 2 Measurement, WHO*, according to which the questionnaire was prepared, was obtained and double translation of questionnaire from English to Lithuanian and from Lithuanian to English was made.

The indicators, presented in questionnaire IYCF *Infant and young child feeding* are widely used in studying the nutrition of children under 24 months of age: breastfeeding duration, introduction of solid, semi-solid or soft foods, dietary diversity, meal frequency and acceptable diet. The indicators of questionnaire "Infant and young child feeding" (IYCF) were applied in many countries, while observing the nutrition practice of infants and young children.

The questionnaire "Infant and young child feeding as" (IYCF) included 27 questions, divided into four subgroups. Subgroup I – demographical data: age, gender, number of children (4 questions). Subgroup II – breastfeeding module (IFB *Infant breastfeeding*), whereby it is sought to determine the prevalence of early initiation of breastfeeding (5 questions). Subgroup III – infant and young child feeding module (IYCF *Infant and young child feeding*) (13 questions). The questions reflected the prevalence of breastfeeding, the prevalence of complementary feeding, dietary diversity, and meal frequency. Subgroup IV – additional questions about iron-fortified foods and products (IFF *Iron-fortified foods*) (4 questions). The questions reflected the consumption of iron-fortified foods.

Part II – 30 questions, prepared by author. The groups of questions reflected: pregnancy, childbirth method (9–11, 13 questions), prevalence of exclusive breastfeeding, duration of infant breastfeeding, reasons of cessation of breastfeeding, introduction of solid, semi-solid or soft foods, principles of proper introduction of solid, semi-solid or soft foods, prevalence of introduction of formula feeding and cow milk feeding (15–24, 26–29 questions),

provision of knowledge, information on the issues of feeding the infants and children in their second year (12, 14, 25, 30 questions). A part of social and demographical features included age, marital status of respondents (lives in registered marriage; with friend / partner; single; separately from her or husband's parents; together with her or husband's parents), education (lower than secondary, secondary [including vocational], higher non-university [including advanced vocational education – technical schools and colleges], higher university), social status (currently employed; unemployed), financial situation (average family income: up to LTL 1 500; LTL 1 501–2 500; LTL 2 501–3 500; LTL 3 501 and more; financial situation – better than the one of majority of residents; average; worse than the one of majority of residents), age of children (1–8 questions).

The indicators of breastfeeding and complementary feeding, as well as their differences and relationship with factors of respondents (age, education, marital status, experience in bringing up the children, financial situation, pregnancy, childbirth method), children (age, gender, maturity) and awareness factors were analyzed.

Grouping the variables:

The distribution of age of mother was of normal nature, 25th percentile (27 year-old) was selected for formation of groups). Mothers were grouped into the following groups: < 27 year-old, 28–33 year-old, > 34 year-old. When the number of respondents was low during analysis of separate questions, two groups were made: < 30 year-old and > 30 year-old. According to education level of respondents, the women were divided into four groups: lower than secondary; secondary; higher non-university (including advanced vocational); higher university. As there were no subjects with lower than secondary education, three groups of respondents were formed, according to education. According to marital status, the respondents were grouped into two groups: registered marriage; non-registered marriage; single. Due to low number of subjects, when analyzing individual questions, the number of groups was reduced to two: registered marriage; non-registered marriage / single. According to average family income, the subjects were divided into four groups: < 1 500 litas; 1 501–2 500 litas; 2 501–3 500 litas; > 3 501 litas.

The number of children in family was intended to assess the experience of mothers in bringing up the children. Division of children into two and not three groups was chosen because of the fact that the third group of children (3 and more children) was too small for data analysis. The respondents were divided into two groups – one child, two and more children. The indicators of breastfeeding and complementary feeding were calculated, according to

calculations, presented in WHO methodology *[Indicators for assessing infant and young child feeding practices. Part II: Measurement, 2010]*.

Part III – analysis of medical documents

Following the data collection form, made by author, Child's Health Development Histories were analyzed. The following data was collected: information about child's health condition, i.e., what diseases he had and how often he was ill during the first and second year of age, haemoglobin (HGB) test results (deciding, whether HB is within a normal range), physical data (height, weight). A physical growth of surveyed children was assessed, following J. Tutkuvienė's methodological recommendations "Vaikų augimo ir brendimo įvertinimas" (1995).

2.3. Survey procedure

The permission of Vilnius Regional Biomedical Research Ethics Committee, dated 04 10 2011, No. 158200-10-408-11, and permission of State Data Protection Inspectorate, dated 17 04 2011, No. 2R-1435(2.6.1) was obtained for biomedical research. In 15 03 2011, the permission of manager of WHO Country Office in Lithuania R. Petkevičius to use the publication *Indicators for assessing infant and young child feeding practices – Part 2 Measurement, WHO,* according to which the first questionnaire "Infant and young child feeding" was prepared, and double translation of questionnaire from English to Lithuanian and from Lithuanian to English was made.

At the start of the survey, two questionnaires were tested with a preliminary survey of 50 mothers, who were bringing up the children of 6 – 23 months of age. Unclear questions were corrected.

In order to check the reliability of questionnaire (part II), made by researchers, *kappa* coefficient was calculated. The survey of trial group was conducted twice with interval of 1 week. Kappa coefficient varied within the limits of 0,8307–1,00 ($p < 0,005$). The results of pilot test of questionnaire show a very high degree of results overlap, i.e., very reliable measure.

Survey was conducted in public institution of the city of Vilnius "Šeškinė Outpatient Clinic" during the period of November, 2011 – March, 2013.

The survey was conducted by following the provisions of professional ethics of sociological and medical research. As mother with child of 6 – 23 months of age came at doctor, the specially instructed community nurse proposed to take part in research. Before giving a written consent to take part in research, a mother was informed in understandable form about the aim, the plan of biomedical research, the methods applied, the data manager, etc. If a person

agrees to take part in research, she signs the *Informed Consent Foryear-old* The respondents used to give the filled questionnaires to nurse, who used to hand them to researcher. Those, who agreed to take part in survey, filled the questionnaires by themselves. In cases when a mother refused to fill in the questionnaire, the latter was given to other mother.

Analysis of medical documents. Seeking to assess how the data collection form functions, the Child's Health Development Histories of 20 researched children were selected. The following data were collected from Child's Health Development Histories: information about child's health condition: what diseases he had and how often he was ill during the first and second year of age, haemoglobin (HGB) test results, physical data (height, weight). The latter were assessed during 4 periods: upon birth of child, 6 months, 12 months and 18 months of age.

Children were grouped into two groups, according to maturity: full-term and pre-term / post-term. It was examined what diseases and how often children were ill during the first and second year of age. Diseases were divided into the following groups: respiratory diseases; gastrointestinal diseases; urinary tract diseases; allergic diseases; rickets and anaemia. According to number of disease cases, children were divided into three groups: (1) – absence of diseases; (2) – disease history of 1–3 times; (3) – disease history of more than 3 times.

Haemoglobin (HGB) test results were examined – it was decided, whether HB is within a normal range.

The dimensions of physical condition, i.e., height and weight of children under two year-old, were assessed during research. A physical condition was assessed by percentile method. The variation range of weight and height indicators was divided into 100 intervals, which are called percentiles (‰). Gaps between percentiles are known as corridors. The following are the main ones: I: values up to 3 ‰ – very low indicators; II: from 3 to 10 ‰ – low indicators; III: from 10 to 25 ‰ – rather low indicators; IV: from 25 to 50 ‰ – close to average indicators; V: from 50 to 75 ‰ – average indicators of intervals; VI: from 75 to 90 ‰ – rather high indicators; VII: from 90 to 97 ‰ – high indicators; VIII: values above 97 ‰ – very high indicators.

Assessment (interpretation) of height, weight: average one is from 25 to 75 ‰; from 10 to 25 ‰ – quite low; from 75 to 90 ‰ – quite high; from 3 to 10 ‰ – low; from 90 to 97 ‰ – high; less than 3 ‰ – very low; more than 97 ‰ – very high.

The most important thing is the balance (harmony) of physical condition, i.e., when indicators (weight) correspond with height, while weight is in the same percentile corridor as height. Physical condition was assessed in the following way:

Balanced (harmonious) growth (HG, when height is normal (N), i.e., corresponds with age or is deviated from the average within the permissible limits. This version includes children

of average height, quite short and quite tall children, and tall and short children (height is in one of the corridors from 3 to 97 ‰, when weight is proportional to height, growth rate is normal or moderately deviated from average, i.e., growth rate is from 3 to 97 ‰). The first group – HGN average height; HGN quite short; HGN quite tall; HGN tall; or HGN short children.

Balanced (harmonious) growth, when height is extreme (E) clearly does not correspond with age: higher than 97 ‰ (HGE: very tall) or lower than 3 ‰ (HGE: very short), while weight corresponds with height. The second group – HGE very tall; HGE very short.

*Disharmonious (disproportional) growth (*DHG), when child's weight is disproportional to height (deviates from height corridor by more than one corridor). The third group – DHG (when, for example, DHG: average height, high weight; DHG: high height, very low weight; DHG: very short, weight very high; etc.).

2.4. Statistical analysis of the data

Traditional methods of descriptive and inferential statistics were used for statistical analysis. In order to describe the general characteristics of continuous data, the averages, median, standard deviation (SD) were calculated. Frequency of categorical data was assessed by absolute numbers and percentage, while confidence level of 95 percent was calculated for interval assessment of estimate.

Chi-square, Fisher's exact test, Mantel-Haenszel chi-square test and binary logistic regression methods were used for assessing the relationship of breastfeeding and complementary feeding indicators with factors of respondents (age, education, marital status, experience in bringing up the children, pregnancy, childbirth method), of children (age, gender, maturity) and awareness about the issues of young children nutrition. Expanded McNemar-Bowker test of symmetry was used for assessing the change of child growth harmony at 6 months, 12 months and 18 months of age. For general relationship (i.e., ignoring the influence of variables) between categorical variables, odds ratio (OR) and its confidence interval of 95 percent was calculated. This OR was marked as OR_p in interpretation of results of logistic regression. In order to make a multivariate model of logistic regression, the direct method was selected (the variables are selected, removed and changed by researcher). The variables for model were selected not only statistically, but also epidemiologically. The adjusted odds ratio (OR_a), calculated by multivariate logistic regression, and its confidence intervals of 95 percent were used for assessing the final conclusions about relationship of independent variables with dependent variable. The results of relationship between independent variable and dependent variable are presented in interpretation by specifying pooled (OR_p) and adjusted (OR_a) odds ratio.

The suitability of multivariate regression model was assessed by maximum likehood chi-square statistics, classification table, Cox&Snell and Negelkerke determination coefficients. Cook's distance, leverage was employed for logistic regression diagnostics. Seeking to assess the multilinearity, variance inflation factor (VIF) was calculated.

Statistical significance level was selected as $\alpha = 0,05$, the results were considered as statistically significant, when $p \leq 0,05$.

Statistical packages SPSS (v. 20.0), *WinPepi* (v.11.19) were used for data processing and analysis.

3. RESULTS OF THE STUDY

3.1. Analysis of social and demographical characteristics of respondents

878 mothers, who were bringing up the children of 6 – 23 months of age, were included into research of nutritional status of infants and children in their second year. The age of respondents varied from 19 to 43 year-old, the average age was 30,1 year-old (SD – 4,06), median (Mdn) – 30 year-old, the most frequently found age is 29 year-old, more than a half of respondents were 28–33 year-old – 481 (54,8 percent; Table 1).

Table 1. Social – demographical characteristics of respondents

Social and demographical characteristics	Target group		
		N	%
Age of respondents	< 27 year-old	225	25,6
	28–33 year-old	481	54,8
	> 34 year-old	172	19,6
Education	Secondary (vocational)	97	11,0
	Higher non university (technical school, college)	282	32,1
	Higher university	499	56,8
Marital status	Registered marriage	783	89,2
	Non-registered marriage	67	7,6
	Single	28	3,2
Live with parents	Separately from her or husband's parents	752	85,6
	Together with her or husband's parents	126	14,4
Average family income per month	LTL < 1 500	105	12,0
	LTL 1 501–2 500	250	28,5
	LTL 2 501–3 500	232	26,4
	LTL > 3 501	291	33,1
Currently employed	No	841	95,8
	Yes	37	4,2

It was determined that the higher proportion of women was married – 783 (89,2 percent), with higher university education – 499 (56,8 percent), lived separately from their or husband's parents – 752 (85,6 percent) and belonged to the group of subjects, whose average monthly income was 3 501 and more – 291 (33,1 percent) (Table 1).

The age of target children was from 6 to 23 months, average – 15,5 months (SD – 5,5), Mdn – 16,5 months. Almost all newborns were born as full-term – 844 (96,1 percent). According to age, children were divided into the following groups: 6–8 months, 9–11 months, 12–17 months and 18–23 months of age. The numbers of girls and boys were nearly equal (Table 2).

Table 2. Demographical characteristics of children

Demographical characteristics of children	Target group		
		N	%
Age of children	6–8 months	142	16,2
	9–11 months	122	13,9
	12–17 months	203	23,1
	18–23 months	411	46,8
	Children under one year-old	260	29,6
	Children under two year-old	618	70,4
Gender	Boy	438	49,9
	Girl	440	50,1
Number of children in family	One	476	54,2
	Two and more	402	45,8
Newborn was born	Full-term	844	96,1
	Pre-term	25	2,9
	Post-term	9	1,0

The majority of surveyed women – 678 (77,2 percent) – answered that they had planned the pregnancy, while there were 200 (22,8 percent) women, who had not planned the pregnancy. The survey of women showed that 652 (74,3 percent) women had given birth naturally, while 226 respondents (25,7 percent) had Caesarean section. More than two thirds of subjects planned the pregnancy.

3.2. Breastfeeding indicators

3.2.1. Early initiation of breastfeeding

The majority of respondents, 634 (72,2 percent), started to breastfed immediately after childbirth, i.e., within 1 hour. The remaining proportion of women, 244 (27,8 percent) first put the newborns to the breast later than after 1 hour. Mothers, who put the newborns to the breast later than 1 hours after birth, used to start breastfeeding after 5,7 hours on average (SD – 4,09),

median (Mdn) – 4,5 h. The respondents, who noted that they had started breastfeeding later than 24 hours after childbirth, started breastfeeding after 1,5 of days on average (SD – 1,16), median (Mdn) – 1 day.

While analyzing the early initiation of breastfeeding and pregnancy planning, it became clear that there are no statistically significant relationships between early initiation of breastfeeding and pregnancy planning (OR = 0,86, 95 % CI 0,59–1,25, p = 0,411) (Table 3).

It was determined that there is statistically significant inverse relationship between early initiation of breastfeeding and health problems (OR = 0,59, 95 % CI 0,40–0,87, p = 0,005), the change of early initiation of breastfeeding in the group of women, who had health problems, was 40 percent lower than in the group of women with no health problems.

Table 3. Assessment of early initiation of breastfeeding by taking into account the pregnancy planning, health problems during pregnancy, childbirth methods and maturity of newborn

Variables	First put to the breast		OR	95% CI	p
	Immediately within 1 hour (n=634)	Later than within 1 hour (n=244)			
	N (%)	N (%)			
Pregnancy					
intended	485 (71,5)	193 (28,5)	0,86	0,59-1,25	0,411
unintended	149 (74,5)	51 (25,5)	-	-	-
Health problems during pregnancy					
yes	95 (62,9)	56 (37,1)	0,59	0,40-0,87	0,005
no	539 (74,1)	188 (25,9)	-	-	-
Childbirth					
natural	565 (86,7)	87 (13,3)	14,78	10,13-21,58	<0,0005
Caesarean section	69 (30,5)	157 (69,5)	-	-	-
Born					
Full-term	619 (73,3)	225 (26,7)	3,48	1,64-7,49	<0,0005
Pre-term/ Post-term	15 (44,1)	19 (55,9)	-	-	-

When exploring the initiation of breastfeeding and childbirth, it became clear that the women, who had given birth naturally, more often started breastfeeding the infant immediately – 565 (86,7 percent) – than those with Caesarean section – 69 (30,5 percent). A close statistically significant direct relationship between early initiation of breastfeeding and childbirth method (OR = 14,78; 95 % CI 10,13–21,58; p < 0,001) was determined.

Maturity of newborn also directly influenced the early initiation of breastfeeding (OR = 3,48; 95 % CI 1,64–7,49; p < 0,001).

3.2.2. Prevalence of exclusive breastfeeding

The research revealed that the prevalence of exclusive breastfeeding up to 1 month made 770 (87,7 percent; 95 % CI 85,36–89,71), up to 3 months – 649 (73,9 percent; 95 % CI 70,91–76,71), while up to 6 months – 423 (48,2 percent; 95 % CI 44,89–51,48) (Fig. 1).

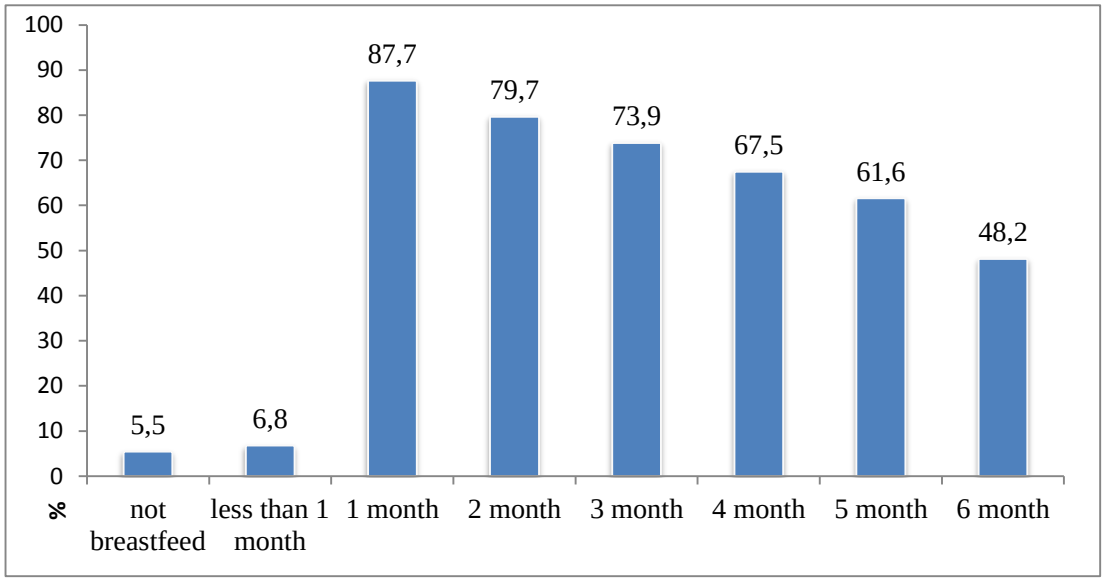

Fig. 1. Prevalence of exclusive breastfeeding

The majority of surveyed mothers responded that they breastfeed the infant at night – 854 (97,3 percent) and breastfeed their infants on demand – 725 (82,6 percent).

The relationship between exclusive breastfeeding, breastfeeding duration and giving additional liquids between feedings was determined: exclusive breastfeeding of mothers, who did not give additional liquids, was longer than of those, who gave additional liquids (Table 4).

Table 4. Frequency of giving additional liquids and prevalence of exclusive breastfeeding

Did you give additional liquids between breastfeedings during the first 6 months?	**Exclusive breastfeeding**				**p***
	N	**%**	**N**	**%**	
	Exclusively breastfeed infants for 1 month (n = 770)		Exclusively breastfeed infants for shorter than 1 month (n = 60)		
Each day (n = 420)	16	2,1	4	6,7	
Rarely (n = 238)	191	24,8	47	78,3	< 0,0005
Gave no liquids (n = 572)	563	73,1	9	15,0	

	Exclusively breastfeed infants for 3 months (n = 649)		Exclusively breastfeed infants for shorter than 3 months (n = 181)		
Each day (n = 20)	8	1,2	12	6,6	
Rarely (n = 238)	114	17,6	124	68,5	< 0,0005
Gave no liquids (n = 572)	527	81,2	45	24,9	
	Exclusively breastfeed infants for 6 months (n = 423)		Exclusively breastfeed infants for shorter than 6 months (n = 407)		
Each day (n = 20)	4	0,95	16	3,9	
Rarely (n = 238)	32	12,7	206	50,6	< 0,0005
Gave no liquids (n = 572)	387	91,5	185	45,5	

**Calculated, following the principle of Pearson's chi-squared test*

A significantly higher number of mothers, who have no additional liquids before feedings, were among those, who exclusively breastfed for 1 month – 563 (73,1 percent), 3 months - 527 (81,2 percent) and 6 months – 387 (91,5 percent), than among those, who breastfed shorter (analogous, 1 month – 9 (15,0 percent; $p < 0,0005$), 3 months – 45 (24,9 percent; $p < 0,0005$), 6 months – 185 (45,5 percent; $p < 0,0005$) (Table 4).

The relationship of exclusive breastfeeding with demographical-social factors (age, education, marriage, income), factors of mothers (early initiation of breastfeeding, natural childbirth, giving a pacifier, breastfeeding nature, experience in bringing up the children) was found (Table 5).

Following the model of logistic regression, it was determined that age and education has a close direct relationship with exclusive breastfeeding. Mothers, whose age 28 year-old and more, have 2–3 times higher chance for exclusive breastfeeding under 6 months than 27 year-old and younger mothers. Women with higher education 1,8–3,3 times higher chance for exclusive breastfeeding under 6 months than women with lower education. There was no significant relationship between income and exclusive breastfeeding.

The analysis of factors of mothers and newborn revealed a statistically significant inverse relationship between exclusive breastfeeding and Caesarean section (OR = 0,62; 95 % CI 0,40–0,96), giving a pacifier (OR = 0,29; 95 % CI 0,21–0,40), breastfeeding by time (OR = 0,57; 95 % CI 0,37–0,88) was found (Table 5).

Table 5. Factors determining the exclusive breastfeeding under 6 months

Variable	Exclusive breastfeeding			
	OR_p	**OR_a**	**95 % CI**	**p**
Age group				< 0,0005
< 27 year-old	1,00	1,00	–	–
28–33 year-old	2,87	2,06	1,64–3,34	< 0,0005
> 34 year-old	3,34	3,04	1,86–4,97	< 0,0005
Education				< 0,0005
secondary (vocational)	1,00	1,00	–	–
higher non university (technical school)	3,04	1,77	0,96–3,27	0,067
higher university	5,42	3,31	1,81–6,04	< 0,0005
Marriage				
registered marriage	1,00	1,00	–	–
non registered / single	0,33	0,73	0,42–1,27	0,265
Income				0,460
LTL < 1 500	1,00	1,00	–	–
LTL 1 501–2 500	1,34	0,95	0,55–1,67	0,870
LTL 2 501–3 500	2,05	0,80	0,45–1,43	0,457
LTL > 3 501	2,48	1,10	0,64–1,94	0,713
Early initiation of breastfeeding				
breastfeeding immediately	1,00	1,00	–	–
breastfeeding after > 1 hour	0,53	0,75	0,50–1,12	0,162
Natural childbirth				
natural	1,00	1,00	–	–
Caesarean section	0,62	0,62	0,40–0,96	0,033
Giving a pacifier				
did not give a pacifier	1,00	1,00	–	–
gave a pacifier	0,21	0,29	0,21–0,40	< 0,0005
Breastfeeding nature				
on demand	1,00	1,00	–	–
by time	0,33	0,57	0,37–0,88	0,010

Model $\chi 2 = 202,85$; df= 13; p < 0,0005; Cox, Shell R2 = 0,206; Nagelkerke R2 = 0,275.

3.2.3. Continued breastfeeding at 1 year

Continued breastfeeding at 1 year was assessed, according to WHO calculation methodology, the number of children of 12–15 months of age, who were breastfed on the

moment of carrying out the research. 135 children were 12–15 months of age, 39 of them (28,9 percent, 95 % CI 21,9–37,03) were breastfed at 1 year on the moment of carrying out the research.

The relationship of continued breastfeeding at 1 year with demographical and social factors (age, education, marriage) and factors of mother (giving a pacifier, pregnancy planning) was researched. The obtained results of research show that the most important factors, which determine the continued breastfeeding at 2 years, are age and education of mothers. A close relationship between infant continued breastfeeding at 1 year and the following factors was determined: mothers' age of 34 years and more (OR_a = 15,15; 95 % CI 3,50–65,56; p < 0,0005), higher university education (OR_a = 10,14; 95 % CI 3,43–29,93; p < 0,0005; Table 6).

Table 6. Factors determining the continued breastfeeding at 1 year

Variable	Children breastfeeding at 1 year			
	OR_p	**OR_a**	**95 % CI**	**p**
Age group				
< 27 year-old	1,00	1,00	–	–
28–33 year-old	1,68	1,43	0,40–5,14	0,585
> 34 year-old	10,83	15,15	3,50–65,56	< 0,0005
Education*				
secondary / higher non university	1,00	1,00	–	< 0,0005
higher university	6,75	10,14	3,43–29,93	

** The number of groups was reduced to two due to low number of subjects.*

Model χ^2 = 45,85; df= 3; p < 0,0005, correctly classified cases accounted for 82,2 percent, Cox, Shell R^2 = 0,29; Nagelkerke R^2 = 0,40.

Older age (34 year-old and more) increases the chance of continued breastfeeding at 1 year by 15 times in comparison with younger age. The women with higher university education had 10 times higher chance to breastfeed their infants at 1 year than those, who are with lower education (Table 6).

3.2.4. Continued breastfeeding at 2 years

Continued breastfeeding at 2 years was assessed, according to WHO calculation methodology, the number of children of 20–23 months of age, who were breastfed on the moment of carrying out the research. 284 children were 20–23 months of age, 20 of them (,0

percent; 95 % CI 4,60–10,6) were breastfed at 2 years on the moment of carrying out the research.

The relationship of continued breastfeeding at 2 years with demographical and social factors (age, education, marriage) and factors of mother (giving a pacifier, pregnancy planning) was researched. The variable "giving a pacifier" was not a significant factor, while the variables of "pregnancy planning" and "marital status" could not be assessed due to low number of causes. The obtained results of research show that the most important factors, which determine the continued breastfeeding at 2 years, are education of mothers – higher university education (OR_a = 4,54; 95 % CI 1,25–16,53; p < 0,022). The women with higher university education had 4,5 times higher chance to breastfed their children at 2 years than those with lower education (Table 7).

Table 7. Factors determining the continued breastfeeding at 2 years

Variable	Children breastfeeding at 2 years			
	OR_p	**OR_a**	**95 % CI**	**p**
Age group				
< 27 year-old	1,00	1,00	–	–
28–33 year-old	2,63	1,46	0,38–5,68	0,583
> 34 year-old	1,43	1,03	0,19–5,68	0,975
Education*				
secondary / higher non university	1,00	1,00	–	–
higher university	5,75	4,54	1,25–16,53	0,022
Giving a pacifier				
did not give a pacifier	1,00	1,00	–	–
gave a pacifier	0,37	0,50	0,18–1,36	0,173

** The number of groups was reduced to two due to low number of subjects*

Model χ^2 = 13,19; df= 4, p < 0,010, correctly classified cases accounted for 93 percent; Cox, Shell R^2 = 0,045; Nagelkerke R^2 = 0,114.

3.3. Introduction of solid, semi-solid or soft foods, dietary diversity, meal frequency

3.3.1. Introduction of solid, semi-solid or soft foods

Timely introduction of suitable selected food products makes favourable conditions for improvement of health condition and physiological development of infants and young children, precisely during the period of faster growth. Almost all respondents – 860 (97,9 percent) –

introduced a complementary feeding not earlier than in 17th week, others – 18 (2,1 percent) – introduced it earlier than 17th week.

The relationship of timely introduction of solid, semi-solid or soft foods with demographical and social factors (age, education) and factors of mother (number of children, attendance of prenatal classes) was researched (Table 8).

Table 8. Factors, determining a timely introduction of solid, semi-solid or soft foods – age and education

Variable	Introduction of solid, semi-solid or soft foods			
	OR_p	OR_a	95 % CI	p
Age group				0,013
< 27 year-old	1,00	1,00	–	–
28–33 year-old	3,27	2,95	0,80–10,88	0,105
> 34 year-old	0,56	0,48	0,16–1,46	0,194
Education				0,278
secondary (vocational)	1,00	1,00	–	
higher non university (technical school)	2,99	3,26	0,77–13,87	0,110
higher university	2,10	1,96	0,57–6,74	0,286

Model χ^2 = 11,73; df4, p = 0,019; Cox, Shell R^2 = 0,013; Nagelkerke R^2 = 0,073; model correctly classifies 97,9 percent of cases.

According to model of logistic regression, the prevalence of timely complementary feeding is different in the researched age groups (p < 0,013). However, while comparing the older age groups with younger age group (< 27 year-old), no significant dependence was found. The education of subjects had no significant impact on introduction of solid, semi-solid or soft foods.

3.3.2. Minimum dietary diversity

Minimum dietary diversity – children of 6–23 months of age, receiving food, where there are four or more of seven food groups. The group of seven food products includes: 1) cereals, roots and tubers; 2) legumes and nuts; 3) dairy products, 4) meaty food (meat, fish, poultry, liver), 5) eggs, 6) fruits and vegetables, which are rich in vitamin A; 7) other fruits and vegetables.

It was determined that a great proportion of children, 825 (94,0 percent), were fed by 4 and more types of food products. Unsuitable dietary diversity made only 53 (6,0 percent). When carrying out the research, the majority of respondents used to include five groups of food products from seven ones into the diet of their children: grains and tubers, dairy products, fruits and vegetables, rich in vitamin A, and other fruits and vegetables.

When analyzing the feeding the children with grains and tubers, it was found out that 870 (99,1 percent) mothers gave cereal and tuber products yesterday. The prevalence of these products was different in analyzed groups of children age (p = 0,0397).

68 (7,7 percent) respondents used to give legumes and nuts to their children. No relationship between legumes and child age was determined (χ^2 = 7,362; df= 3; p = 0,061).

While analyzing the food of dairy products, only the following dairy products were calculated for breastfed infants: curds, cottage cheese, yogurt, cheese, kefir, sour cream, chocolate cream cheese, while for non-breastfed infants: all above named dairy products and formula, cow's milk, yogurt drink. It was determined that 776 (88,4 percent) of those surveyed gave dairy products to their children yesterday. A statistically significant trend about consumption of dairy products and child age was noticed (χ^2 = 132,770; p < 0,0005), the older the children, more often mothers introduce complementary dairy products. For example, 88 mothers (62,0 percent) fed the children of 6–8 months of age with dairy products, and 401 respondents (97,6 percent) fed the children of 18-23 months of age with dairy products.

Meat food, which included bovine liver, kidney, fish and any other meat, also was common in children's diet– 821 (93,5 percent). Usually, the group of meat food included any meat – 799 (91,0 percent), while the products as fish – 143 (16,3 percent) – bovine liver – 31 (3,5 percent) – were less popular. As a child grows, there was a statistically significant increase of meat food products in their diet (χ^2 = 103,764; p < 0,0005).

A small proportion of mothers – 160 (18,2 percent) – stated that their child ate eggs yesterday. The consumption of eggs in child's diet depended on child age (χ^2 = 28,224; p < 0,0005). The older the child, the more frequent the consumption of eggs is.

When analyzing children's feeding with fruits and vegetables, rich in vitamin A, it became clear that 800 (91,1 percent) mothers gave food products, rich in vitamin A, to their children yesterday. A statistically significant relationship was identified between increase of child age and giving the fruits and vegetables, rich in vitamin A (χ^2 = 453,291; p < 0,0005).

Other fruits and vegetables for child diet were selected by almost all surveyed mother – 856 (97,5 percent). The frequency of fruits and vegetables in diet depended on child age (χ^2 = 12,201; p < 0,0005).

The relationship of dietary diversity (more than 4 types of food products) with demographical and social factors (age, education, income) and factors of mother (number of children, attendance of prenatal classes, provision of information on nutrition issues at home) was researched (Table 9).

Table 9. Factors, determining the dietary diversity (more than 4 types of food products) of children of 6–23 months of age

Variable	OR	OR_a	95 % CI	p
Age				
< 27 year-old	1,00	1,00	–	0,127
28–33 year-old	0,96	1,57	0,707–3,481	0,268
≥ 34 year-old	0,31	0,54	0,15–1,89	0,332
Education				
secondary (vocational)	1,00	1,00	–	0,620
higher non university (technical school)	0,49	0,57	0,18–1,79	0,335
higher university	0,52	0,63	0,22–1,84	0,398
Attendance of prenatal classes				
did not attend	1,00	1,00	–	
attended	0,34	0,20	0,09–0,42	< 0,0005
Income				
LTL < 1 500	1,00	1,00	–	0,097
LTL 1 501–2 500	0,30	0,41	0,15–1,12	0,080
LTL 2 501–3 500	0,11	0,20	0,05–0,75	0,017
LTL ≥ 3 501	0,49	0,55	0,22–1,37	0,199
Group of child age:				< 0,0005
6–11 months	1,00	1,00	–	
12–17 months	0,07	0,07	0,02–0,25	< 0,0005
18–23 months	0,05	0,05	0,02–0,14	< 0,0005
Experience in bringing up the children				
one child	1,00	1,00	–	
two and more children	0,83	1,04	0,45–2,26	0,92

Model $\chi 2$ = 116,45; df12; p < 0,0005; Cox, Shell R^2 = 0,124; Nagelkerke R^2 = 0,339; model correctly classifies 93,6 percent of cases.

The variables as education, experience, age of mother were statistically insignificant.

The calculations of multivariate logistic regression confirmed that dietary diversity had positive impact on attendance of prenatal classes (OR_a = 0,20; 95 % CI 0,09–0,42; p < 0,0005), children's age of 18–23 months (OR_a = 0,05; 95 % CI 0,02–0,14; p < 0,0005) and higher family income than LTL 3 500 (OR_a = 0,55; 95 % CI 0,05–0,75; p < 0,017). Attendance of prenatal classes reduces the chance of dietary diversity (< 4 food types) by 80 percent, in comparison with non attendance of prenatal classes. The children of 18–23 months of age had 95,0 percent higher chance to be fed with 4 and more food products than younger than children of 18 months of age. The families with LTL 3 500 and higher income had 45 percent higher chance to provide more varied food than families with income of up to LTL 3 000 (Table 9).

3.3.3. Minimum suitable meal frequency

Minimum suitable meal frequency of breastfed children depends on age: ≥ 2 times, if a child is 6–8 months of age; ≥ 3 times, if a child is 9–23 months of age. Minimum suitable meal frequency of non-breastfed children does not depend on age: ≥ 4 times for all children from 6 to 23 months of age.

It was determined that breastfed infants of 6–8 months of age were fed with solid or semi-solid food two and more times 72 (94,7 percent) (p=0,248), while children of 9–23 months of age– three and more times a day (p < 0,0005; Table 10).

Table 10. Prevalence of Meal Frequency Taking into Account the Age of Breastfed Children

Children, who were breastfed during research	Meal Frequency				p
	< 2 times	≥ 2 times	< 3 times	≥ 3 times	
	N (%)	N (%)	N (%)	N (%)	
6–8 months (n = 76)	4 (5,3)	72 (94,7)	–	–	0,248
9–11 months (n = 55)	–	–	3 (5,5)	52 (94,5)	< 0,0005
12–17 months (n = 54)	–	–	3 (5,6)	51 (94,4)	
18–23 months (n = 46)	–	–	0	46 (100,0)	

Minimum meal frequency of non-breastfed children should be 4 times and more, while talking about all children from 6 to 23 months of age. Research revealed that the prevalence trend of meal frequency in children's age group was statistically significantly increasing (p < 0,0005; Table 11).

Table 11. Prevalence of meal frequency taking into account the age of non-breastfed children

Children, who were not breastfed during research	Meal Frequency		p
	< 4 times	≥ 4 times	
	N (%)	N (%)	
6–8 months (n = 66)	24 (36,4)	42 (63,6)	< 0,0005
9–11 months (n = 67)	10 (14,9)	57 (85,1)	
12–17 months (n = 146)	57 (39,0)	89 (61,0)	
18–23 months (n = 368)	21 (5,7)	347 (94,3)	

3.3.4. Minimum acceptable diet

Acceptable diet of breastfed and non-breastfed children of 6-23 months of age was applied for 83,6 percent of children. In case of breastfed children, acceptable diet was determined, when a child was breastfed yesterday, fed with 4 food groups from seven, and fed 2 and more times (6–8 months) or 3 and more times (9–23 months) a day.

Acceptable diet of non-breastfed children was determined, when a child was not breastfed yesterday, fed with 4 food groups from six, additional fluids (IF, CM or yogurt drink) were given 2 and more times, he was fed 4 and more times (6–23 months) a day.

The relationship of minimum acceptable diet with demographical and social factors (age, education, income) and factors of mother (education on feeding issues at home) was researched. The model with variables "experience in bringing up children" and "attendance of prenatal classes" was unstable (quite unreal estimates), therefore, the aforementioned variables were removed.

Following the developed model, the relationship between acceptable diet of children of 6–8 of age and mothers' education was found. As the results of model demonstrate, education is directly related with acceptable diet. Mothers with higher university education have 95 percent higher chance to feed the infants of 6–8 months of age by acceptable diet in comparison with respondents with secondary education (OR_a = 0,05; 95 % CI 0,01–0,44; p = 0,005). There was no significant relationship between income and acceptable diet (Table 12).

Table 12. Factors, determining the acceptable diet of breastfed children of 6–8 months of age

Variable	OR	OR_a	95 % CI	p
Age*				
< 30 year-old	1,00	1,00	–	0,436
≥ 30 year-old	0,97	0,61	0,18–2,10	
Education				
secondary (vocational)	1,00	1,00	–	
higher non university (technical school)	0,75	0,78	0,08–7,58	0,005
higher university	6,36	0,05	0,01–0,44	
Income				
LTL < 1 500	1,00	1,00	–	
LTL 1 501–2 500	3,00	3,41	0,16–74,62	0,444
LTL 2 501–3 500	1,50	2,88	0,16–52,01	
LTL ≥ 3 501	1,45	5,37	0,69–41,99	

** In age group > 34 year-old, the number of observations was equal to zero, therefore, the number of age groups was reduced and the groups < 30 year-old and ≥ 30 year-old were used.*

Model χ^2 = 18,69; df= 7; p = 0,009; Cox, Shell R^2 = 0,229; Nagelkerke R^2 = 0,315; model correctly classifies 73,6 percent of cases.

When researching the relationships of acceptable diet of breastfed children of 9–23 months of age with various factors, it was determined that family income is related with acceptable diet. Families, whose monthly income is ≥ LTL 3 501, have 5 times higher chance to impose an acceptable diet for children of 9-23 months, in comparison with families with lower income (OR_a = 0,11; 95 % CI 0,02–0,61; p = 0,011). No significant relationship between age of mothers and acceptable diet was found (Table 13).

Table 13. Factors, determining the acceptable diet of breastfed children of 9-23 months of age

Variable	OR	OR_a	95 % CI	p
Age*				
< 30 year-old	1,00	1,00	–	-
≥ 30 year-old	0,45	0,27	0,07–1,03	0,056
Income				
LTL < 1 500	1,00	1,00	–	-
LTL 1 501–2 500	2,50	0,39	0,08–1,78	0,222
LTL 2 501–3 500	7,78	0,07	0,01–0,75	0,028
LTL ≥ 3 501	5,00	0,11	0,02–0,61	0,011

Model χ^2 = 12,06; df= 5; p = 0,034; Cox, Shell R^2 = 0,078; Nagelkerke R^2 = 0,174; model correctly classifies 89,9 percent of cases.

** In age group > 34 year-old, the number of observations was equal to zero, therefore, the number of age groups was reduced and the groups < 30 year-old and ≥ 30 year-old were used.*

Logistic regression model revealed that income and age of child statistically significantly determine the acceptable diet of non-breastfed children of 6-23 months of age (Table 14).

Table 14. Factors, determining the acceptable diet of non-breastfed children of 6-23 months of age

Variable	OR	OR_a	95% CI	p
Age				
< 27 year-old	1,00	1,00	-	-
28–33 year-old	1,67	1,33	0,74 – 2,38	
≥ 34 year-old	3,12	2,20	0,89 – 5,46	0,229
Education				
secondary (vocational)	1,00	1,00	-	-
higher non university (technical school)	2,63	1,62	0,77-3,39	-
higher university	1,97	1,00	0,48-2,12	0,198
Attendance of prenatal classes				
did not attend	1,00	1,00	-	-
attended	1,43	0,87	0,50 – 1,51	0,619

Income				
LTL< 1 500	1,00	1,00	-	
LTL 1 501–2 500	3,77	2,26	1,12 – 4,58	
LTL 2 501–3 500	4,09	2,15	0,98 – 4,69	
LTL ≥ 3 501	4,77	3,41	1,56 – 7,46	0,02
Group of child age				
6–8 months	1,00	1,00	-	
9–11 months	2,3	1,86	0,75 – 4,61	
12–17 months	1,11	1,06	0,53 – 2,11	<0,0005
18–23 months	4,91	4,08	1,97 – 8,45	
Experience in bringing up the children				
One child	1,00	1,00	–	
Two and more children	0,92	1,31	0,70 – 2,41	0,388

Model Chi-Square 62,55, llsk. 12, p<0,0005, R2 (Cox, Snell) 0,092, R2 (Nagelkerke) 0,162, model correctly classifies 85,3 percent of cases.

Families, whose monthly income is ≥ LTL 3 501, have 3,4 times higher chance to impose an acceptable diet for children of 6-23 months, in comparison with families with lower income (OR_a = 3,41; 95 % CI 1,56–7,46; p = 0,02). Non-breastfed children of 18-23 months have 4 times higher probability to have acceptable diet, in comparison with children younger than 18 months of age (Table 14).

No significant relationship was found between age, education of respondents, their experience in bringing up the children, attendance of prenatal classes and the acceptable diet.

3.4. Mothers' awareness about feeding the infants and children in their second year, and support in family

Prenatal classes were attended by more than a half of respondents – 464 (52,8 percent), while prenatal classes were not attended by 414 (47,2 percent) surveyed mothers. Two thirds – 547 (62,3 percent) – of respondents stated that they were educated on infant feeding issues in maternity ward, however only one third of them, 306 (34,9 percent), received information after coming back home.

It was researched, whether mothers' awareness about feeding the infants and children in their second year influences the duration of exclusive breastfeeding (Table 15).

A statistically significant direct relationship between exclusive breastfeeding under 6 months and information provision in maternity ward was found (OR = 1,46; 95 % CI 1,10–1,94; p = 0,008) (Table 15). Information, received in prenatal classes and upon coming back home

after giving a birth, had no significant influence on duration of exclusive breastfeeding under 6 months.

Table 15. Mothers' awareness, determining the duration of exclusive breastfeeding

Variable	Exclusive breastfeeding under 6 months (n = 423)	Exclusive breastfeeding for shorter than 6 months (n = 455)	OR	95 % CI	p
	N (%)	N (%)			
Prenatal classes					
did not attend	195 (47,1)	219 (52,9)	1,00	–	
attended	228 (49,1)	236 (50,9)	1,09	0,82–1,43	0,547
Breastfeeding was taught in MW					
yes	283 (51,7)	264 (48,3)	1,46	1,10–1,94	0,008
no / insufficiently	140 (42,3)	191 (57,7)	1,00	–	
Feeding was taught at home					
taught	156 (51,0)	150 (49,0)	1,19	0,89–1,58	0,253
untaught / insufficiently	267 (46,7)	305 (53,3)	1,00	–	

It was researched, whether mothers' awareness about feeding the infants and children in their second year, acquired during pregnancy, in maternity ward and at home after childbirth influenced breastfeeding at one and two years (Table 16).

It was determined that mothers, who were informed, taught during prenatal classes or at home, had a higher chance for continued breastfeeding at one year-old ($p < 0,05$). A higher chance for continued breastfeeding at two year-old was had by the respondents, who received information during the whole pregnancy (OR = 31,19; 95 % CI 1,89–514,88; $p < 0,0005$; (Table 16).

Table 16. Mothers' awareness, determining the duration of breastfeeding at one – two years

Variable	Breastfeed at 1 year-old (n = 39)		OR	95 % CI	p
	Yes	No			
	N (%)				
Prenatal classes					
did not attend	15 (17,9)	69 (82,1)	1,00	–	
attended	24 (47,1)	27 (52,9)	4,09	1,74–9,68	< 0,0005
Breastfeeding was taught in MW					
yes	12 (20,3)	47(79,7)	0,46	0,19–1,08	0,053
no / insufficiently	27 (35,5)	49 (64,5)	1,00	-	

Feeding was taught at home					
taught	16 (43,2)	21 (56,8)	2,48	1,02–5,94	0,024
untaught / insufficiently	23 (23,5)	75 (76,5)	1,00	–	
Variable	**Breastfeed at 2 year-old (n = 20)**		**OR**	**95 % CI**	**p**
	Yes	**No**			
	N (%)				
Prenatal classes					
did not attend	0	114 (100,0)	1,00	–	
attended	20 (11,8)	150 (88,2)	31,19*	1,89–514,88	< 0,0005
Breastfeeding was taught in MW					
yes	17 (7,6)	207 (92,4)	1,56	0,4–8,59	0,356**
no / insufficiently	3 (5,0)	57 (95,0)	1,00	–	
Feeding was taught at home					
taught	13 (10,7)	108 (89,3)	2,68	0,95–8,19	0,062
untaught / insufficiently	7 (4,3)	156 (95,7)	1,00	-	

** adjusted OR, by adding 0,5 to each box in table 2 x 2*

*** Fisher's exact test*

While analyzing how mothers' awareness, teaching could determine a timely introduction of solid, semi-solid or soft food, it was determine that upon initiating a complementary feeding, a positive direct relationship was had by information provision in maternity ward and at home (Table 17).

All mothers, who were taught to breastfeed the infant at home, introduced the solid, semi-solid or soft foods in time – 306 (100 percent), in comparison with those, who were insufficiently taught how to breastfeed the infant, – 174 (95,6 percent), and those, who were not taught at all, – 380 (94,7 percent) (χ^2 = 11,904; df= 2; p = 0,003). Mothers, who attended classes during pregnancy, reported a timely introduction of solid, semi-solid or soft foods (Table 17).

Table 17. Mothers' awareness, determining the timely introduction of solid, semi-solid or soft foods

Variable	**Complementary feeding started not earlier than in 17th week**	**Complementary feeding started earlier than in 17th week**	**OR**	**95 % CI**	**p**
	N (%)	**N (%)**			
Prenatal classes					
did not attend	396 (95,7)	18 (4,3)	1,00	–	
attended	464 (100,0)	0	43,35*	2,61–719,37	< 0,0005

Breastfeeding taught in maternity ward					
did not teach to breastfeed	317 (95,8)	14 (4,2)	1,00	–	
taught to breastfeed	543 (99,3)	4 (0,7)	6,00	1,86–25,18	0,001
Taught to feed at home					
taught	306 (100)	–	16,92*	0,99–288,50	
insufficiently	174 (95,6)	8 (4,4)	0,57	0,20–1,70	0,026**
untaught	380 (97,4)	10 (2,6)	1,00	–	

** adjusted OR, by adding 0,5 to each box in table 2 x 2*

*** Mantel-Haenszel Chi-Square for Trend*

The relationship of dietary diversity with information, received during pregnancy, in maternity ward and at home, on feeding issues was researched (Table 18).

Table 18. Mothers' awareness, determining the prevalence of dietary diversity

Variable	≤ 4 types of food products (n = 53)	≥ 4 types of food products (n = 825)	OR	95 % CI	p
	N (%)	N (%)			
Prenatal classes					
did not attend	13 (3,1)	401 (96,9)	1,00	–	
attended	40 (8,6)	424 (91,4)	2,91	1,50–6,01	0,001
Breastfeeding taught in maternity ward					
did not teach to breastfeed	15 (9,7)	139 (90,3)	1,00	–	
taught to breastfeed	24 (4,4)	523 (95,6)	0,43	0,21–0,90	0,013
Taught to feed at home					
taught	17 (5,6)	289 (94,4)	0,88	0,46–1,95	0,891
insufficiently untaught	36 (9,2)	536 (90,8)	1,00	–	

Attendance of prenatal classes were directly related with low dietary diversity (OR = 2,91; 95 % CI 1,50–6,01). Meanwhile, teaching the mothers in maternity ward reduced the chance of low dietary diversity by 57 percent. No relationship between teaching at home and dietary diversity was found (Table 18).

The relationship of acceptable diet of 6–23 months of age children with attendance of prenatal classes, information provision in maternity ward and at home on nutrition issues was researched (Table 19). It was determined that mothers, who were educated on children's feeding

issues in maternity ward, had 3,53 times higher chance for introducing an acceptable diet ($p < 0,0005$). No significant relationship between attendance of prenatal classes and information provision at home, and acceptable diet was found (Table 19).

Table 19. Prevalence of acceptable diet of children of 6–23 months of age in various groups

Variable	Acceptable diet	Unacceptable diet	OR	95 % CI	p
	N (%)	N (%)			
Prenatal classes					
did not attend	341 (82,3)	73 (15,3)	1,00	–	
attended	393 (84,7)	71 (17,7)	1,18	0,82–1,72	0,401
Breastfeeding taught in maternity ward					
did not teach to breastfeed	240 (72,5)	91 (27,5)	1,00	–	
taught to breastfeed	494 (90,3)	53 (9,7)	3,53	2,44–5,13	< 0,0005
Taught to feed at home					
taught insufficiently	260 (85,0)	46 (15,0)	1,17	0,79–1,75	0,891
untaught	474 (82,9)	98 (17,1)	1,00	–	

It was noticed that those, who lived in registered marriage, had 3,07 times higher chance for exclusive breastfeeding under 6 months ($p < 0,0005$), 16,19 times higher chance for breastfeeding at one year-old ($p = 0,017$) and 2,26 times higher chance for introducing an acceptable diet ($p = 0,001$).

The question "Who did provide information about feeding the infants and children in their second?" was answered by majority of women by saying that health care specialists (doctors and nurses) – 708 (80,6 percent), while two thirds of subjects received information on children feeding issues from radio, television, books, magazines (Fig. 2).

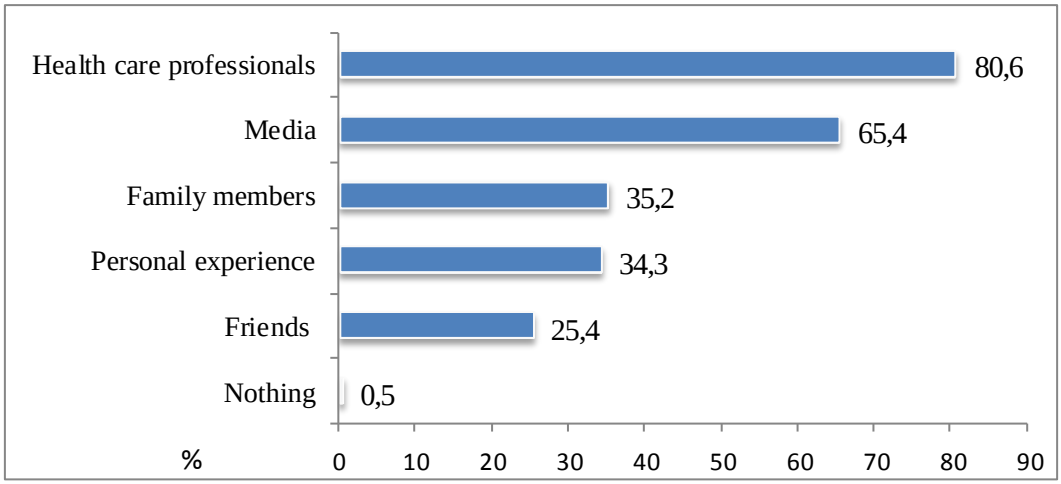

Fig. 2. Sources of knowledge about feeding the infants and children in their second year

3.5. Lack of Breast Milk

665 (75,7 percent) women from 878 respondents stated that they experienced a lack of breast milk (BM), while one fourth of them – 213 (24,3 percent) – had no lack of breast milk.

Almost a half of respondents 404 (46,0 percent) answered the question "What did you do upon noticing the reduction of breast milk" by saying that they attempted to increase the quantity of BM, therefore, put the infant to breast more frequently, while more than one third of respondents – 342 (39,0 percent) – introduced formula, and one fourth – 220 (25,1 percent) – tried to take more rest (Fig. 3).

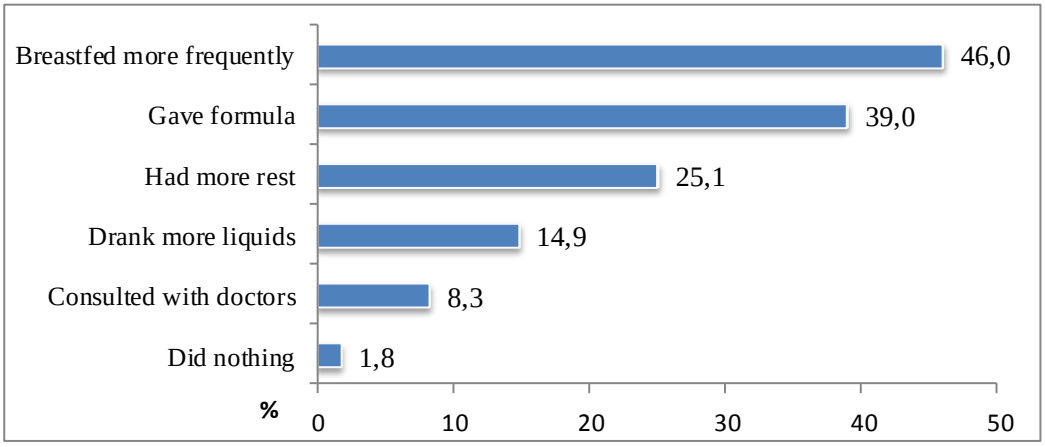

Fig. 3. Actions in case of lack of breast milk

Only 73 (8,3 percent) of surveyed mothers addressed doctors upon noticing a low supply of breast milk. On the moment of carrying out the research almost one third – 244 (27,8 percent) – of respondents have still been breastfeeding their infants. The remaining mothers did not breastfeed – 634 (72,2 percent). The average duration of breastfeeding was 7,88 months (SD = 5,45), median (Mdn) – 7 months.

The most common reason of cessation of breastfeeding was decrease in breast milk supply and disappearance of breast milk without any reasons– 376 (59,3 percent) (Fig. 4). In the second place – 117 (18,5 percent) respondents stated that the infant refused sucking, 87 (13,7 percent) thought that they breastfed for too long and ceased it themselves. Other reasons: for disease of mother – 18 (2,8 percent), for breastfeeding problems – 11 (1,7 percent), 10 (1,6 percent) respondents ceased breastfeeding due to neurotic experienced, needed to go to work – 8 (1,3 percent), for disease of child – 7 (1,1 percent).

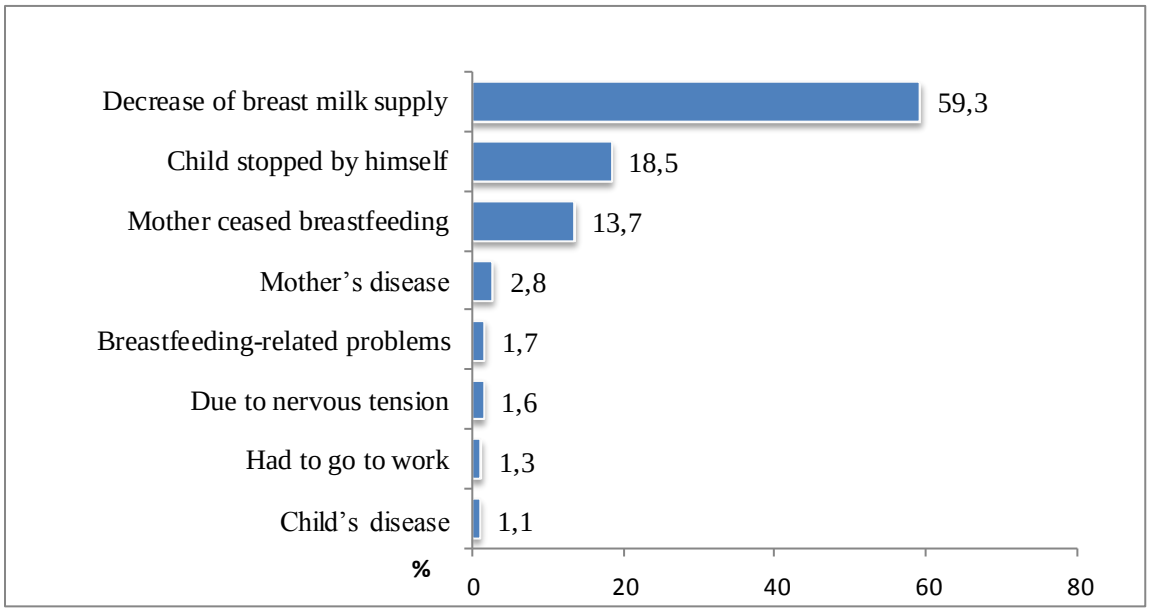

Fig. 4. Reasons of breastfeeding cessation

3.6. Influence of breastfeeding duration and introduction of solid, semi-solid or soft foods on children health

3.6.1. Influence of breastfeeding duration on infant health

Seeking to find out the influence of breastfeeding on child's health, 878 Child's Health Development Histories were analyzed. It was analyzed what diseases he had and how often he was ill during the first and second year of age. During the first year, most infants 640 (72,9 percent) were ill for 1–3 times; 149 (17,0 percent) – more than 3 times. 89 (10,1 percent) infants were not ill during the first year of their life. During the second year, the majority of children were ill for 1–3 times – 734 (83,6 percent); 106 (12,1 percent) – more than three times; 38 (4,3 percent) were not ill at all.

It was determined that children, who were breastfed at one year-old, were ill significantly more rarely during the first year of their life. 71 (68,9 percent) infants, breastfed shorter than for a year, were ill for 1 – 3 times during the first year, while these infants accounted only for one third – 32 (31,1 percent) ($p = 0,013$) – among those, who were breastfed for a long time (1 year) (Table 20).

It was observed that children, breastfed at 2 year-old, were less sick during the first and second year of their life, than children, who were breastfed shorter, however, the difference was not statistically significant. There was no any child, breastfed at 2 year-old, who would be ill 4 and

more times during the second year of life (p = 0,4345). Longer duration of breastfeeding reduces the chance of children to get ill within the first and second year of their life.

Table 20. Influence of breastfeeding duration on children health

Variable	Breastfeed at 1 year-old		OR	95 % CI	p
	Yes (n = 39)	No (n = 96)			
	N (%)				
Was ill during the first year					
was not ill	7 (41,2)	10 (58,8)	1,00	–	
1–3 times	32 (31,1)	71 (68,9)	0,64	0,20–2,19	0,013*
4 and more times	0	15 (100,0)	0,05	0,00–0,80	
Was ill during the second year					
was not ill	0	23 (100,0)	1,00	–	
1–3 times	20 (9,2)	197 (90,8)	4,88	0,30–78,59	0,476
4 and more times	0	44 (100,0)	–	–	
Variable	**Breastfeed at 2 year-old**		**OR**	**95 % CI**	**p**
	Yes (n = 20)	**No (n = 264)**			
	N (%)				
Was ill during the first year					
was not ill	0	4 (100,0)	1,00	–	
1–3 times	35 (35,0)	65 (65,0)	4,88	0,35–68,68	0,125*
4 and more times	4 (12,9)	27 (87,1)	1,47	0,09–24,01	
Was ill during the second year					
was not ill	0	12 (100,0)	–	–	
1–3 times	20 (11,5)	230 (88,5)	4,71	0,31–76,39	0,4345**
4 and more times	0	22 (100,0)	–	–	

* *Mantel-Haenszel Chi-Square for Trend*

** *Fisher's exact test*

It was determined that children most frequently had respiratory diseases (more than 80 percent), less than one fourth of them had gastrointestinal diseases and allergic diseases during the first and second year of their life. Children had allergic diseases, rickets and anaemia more often during the first year of their life than during the second one (Fig. 5).

The indicators of haemoglobin (HGB) tests were analyzed, it was examined how often this test was made during the first two years of a child, and it was decided, whether HGB is within the normal range (the normal range considered as HGB – 110–130g/L from 1 month to 1 year-old HGB – 110–130g/L, and 120–135 g/L from 1 to 5 year-old).

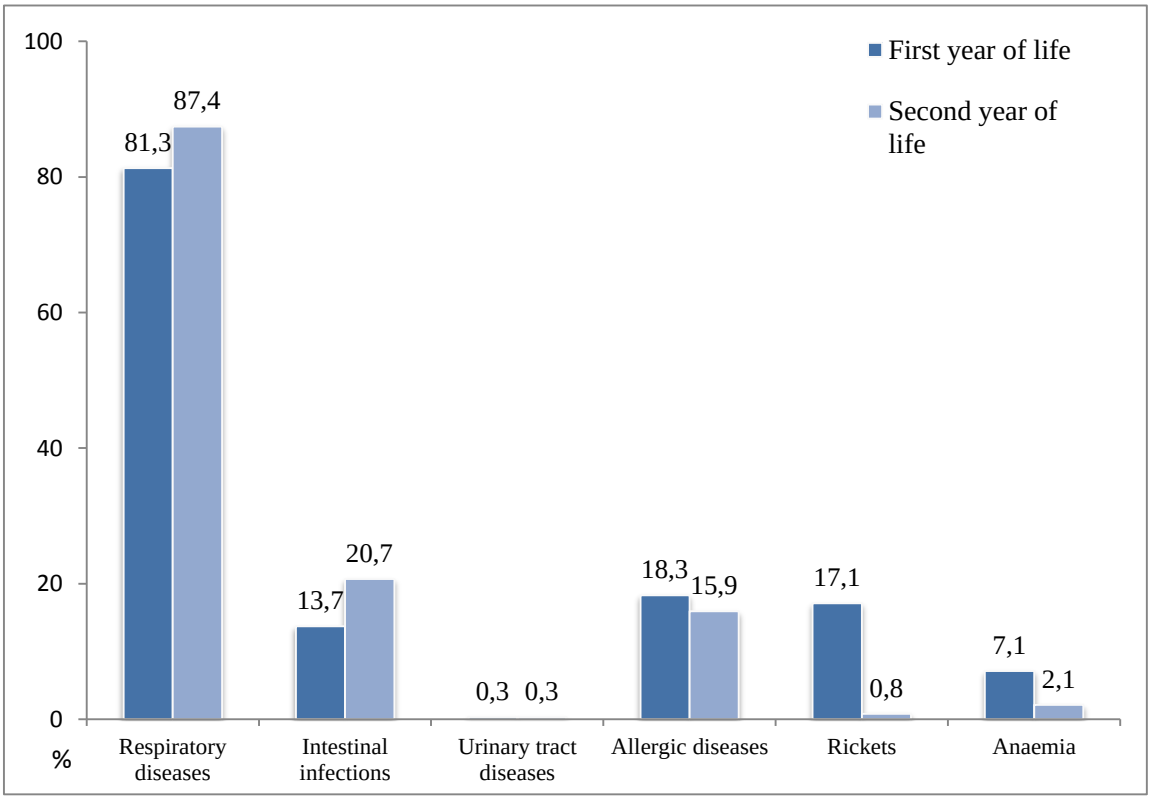

Fig. 5. Distribution of children, according to diseases during first – second year of life

Low HGB quantity in blood was determined for 93 (10,6 percent) children of 878 surveyed ones. It was found that in case of two third of children – 612 (69,7 percent) – the test was made 1 – 2 times a year, while for one third – 266 (30,3 percent) – 3 and more times. It was observed that children with low HGB quantity in blood had higher chance to have the blood test made, in comparison with those, whose HGB quantity in blood was within normal range (Table 21).

Table 21. HGB test frequency subject to HGB quantity

Variable	HGB test was made		OR	95 % CI	p
	1–2 times/2 year-old (n = 612)	> 3 times/2 year-old (n = 266)			
	N (%)				
Low HGB quantity					
Not found	594 (75,7)	191 (24,3)	12,96	7,42–23,57	< 0,0005
Found	18 (19,4)	75 (80,6)	1,00	–	

It was determined that children, who were breastfed at one and two year-old, had respiratory diseases more rarely ($p < 0,05$). Breastfeeding at one and two year-old has

preventive impact on respiratory diseases, since a longer duration of breastfeeding reduces the chance to have respiratory diseases. No significant relationship of breastfeeding duration and incidence of allergic diseases, intestinal infections and rickets (Table 22).

Table 22. Influence of breastfeeding duration on incidence of the most common diseases

First year of life	Breastfeed at 1 year-old		OR	95 % CI	p
	Yes (n = 39)	No (n = 96)			
	N (%)				
Had respiratory diseases					
Yes	24 (21,8)	86 (78,2)	0,19	0,07–0,51	< 0,0005
No	15 (60,0)	10 (40,0)	1,00	–	
Had intestinal infections					
Yes	4 (25,0)	12 (75,0)	0,88	0,18–2,89	> 0,99*
No	35 (29,4)	84 (70,6)	1,00	–	
Had allergic diseases					
Yes	4 (25,0)	12 (75,0)	0,80	0,18–2,89	> 0,99
No	35 (29,4)	84 (70,6)	1,00	–	
Had rickets					
Yes	4 (16,7)	20 (83,3)	0,43	0,10–1,44	0,227
No	35 (31,5)	76 (68,5)	1,00	–	
Second year of life	**Breastfeed at 2 year-old**		**OR**	**95 % CI**	**p**
	Yes (n = 20)	**No (n = 264)**			
	N (%)				
Had respiratory diseases					
Yes	13 (5,3)	234 (94,7)	0,24	0,08–0,77	0,008*
No	7 (18,9)	30 (81,1)	1,00	–	
Had intestinal infections					
Yes	3 (5,2)	55 (94,8)	0,67	0,12–2,44	0,774*
No	17 (7,7)	209 (92,3)	1,00	–	
Had allergic diseases					
Yes	7 (12,5)	49 (87,5)	2,36	0,75–6,75	0,084
No	13 (5,7)	215 (94,3)	1,00	–	
Had rickets					
Yes	0	3 (100,0)	1,82	0,13–24,66	> 0,99
No	20 (7,1)	261 (92,9)	1,00	–	

* *Fisher's Test*

3.6.2. Influence of introduction of solid, semi-solid or soft foods on children health

It was determined that children, who had a timely introduction of solid, semi-solid or soft foods (respectively: 98,5 percent of children had no intestinal infections, while 98,7 percent had no anaemia), and continued breastfeeding (respectively: 96,7 percent had no intestinal

infections, while 96,3 percent had no anaemia), significantly more often did not get ill with the specified diseases during the first year of their life, in comparison which children, who were introduced to solid, semi-solid or soft foods earlier than in 17th week (respectively: 1,5 percent had no intestinal infections, while 1,3 percent had no anaemia), and for whom the breastfeeding was ceased (respectively: 3,3 percent had no intestinal infections, while 3,7 percent had no anaemia ($p < 0,05$) (Table 23).

Table 23. Influence of introduction of solid, semi-solid or soft foods on children morbidity during the first year of their life

First year of life	Complementary feeding started not earlier than in 17th week	Complementary feeding started earlier than in 17th week	OR	95 % CI	p
	N (%)	N (%)			
Had intestinal infections					
Yes	113 (94,2)	7 (5,8)	0,24	0,08–0,74	0,007*
No	747 (98,5)	11 (1,5)	1,00	–	
Had anaemia					
Yes	55 (88,7)	7 (11,3)	0,11	0,04–0,34	< 0,0005*
No	805 (98,7)	11 (1,3)	1,00	–	
First year of life	**Breastfeeding was not ceased upon introduction of solid, semi-solid or soft foods**	**Breastfeeding was ceased upon introduction of solid, semi-solid or soft foods**	**OR**	**95 % CI**	**p**
	N (%)	**N (%)**			
Had intestinal infections					
Yes	108 (90,0)	12 (10,0)	0,31	0,14–0,69	0,001
No	733 (96,7)	25 (3,3)	1,00	–	
Had anaemia					
Yes	55 (88,7)	7 (11,3)	0,30	0,12–0,85	0,012*
No	786 (96,3)	30 (3,7)	1,00	–	

** Fisher's Test*

No significant relationship between introduction of solid, semi-solid or soft foods and incidence of respiratory diseases, rickets and allergic diseases was found.

The influence of introduction of solid, semi-solid or soft foods on incidence of the most common diseases during the second year of children life was researched (Table 24). It was noticed that children, who had a timely introduction of solid, semi-solid or soft foods, significantly more often did not get ill with allergic diseases during the second year of their life

727 (98,5 percent), while those, who were continued to breastfed upon introduction of solid, semi-solid or soft foods, did not have anaemia more often 826 (96,0 percent), in comparison with those, who were introduced with solid, semi-solid or soft foods earlier than in 17th week 11 (1,5 percent) and whose breastfeeding was ceased 34 (4,0 percent).

Table 24. Influence of introduction of solid, semi-solid or soft foods on children morbidity during the second year of their life

Second year of life	**Complementary feeding started not earlier than in 17th week**	**Complementary feeding started earlier than in 17th week**	**OR**	**95 % CI**	**p**
	N (%)	**N (%)**			
Had intestinal infections					
Yes	182 (100,0)	0	9,95	0,60–164,68	0,034*
No	678 (97,4)	18 (2,6)	1,00	–	
Had allergic diseases					
Yes	133 (95,0)	7 (5,0)	0,29	0,10–0,89	0,015*
No	727 (98,5)	11 (1,5)	1,00	–	
Second year of life	**Breastfeeding was not ceased upon introduction of solid, semi-solid or soft foods**	**Breastfeeding was ceased upon introduction of solid, semi-solid or soft foods**	**OR**	**95 % CI**	**p**
	N (%)	**N (%)**			
Had anaemia					
Yes	15 (83,3)	3 (16,7)	0,21	0,06–0,72	0,036*
No	826 (96,0)	34 (4,0)	1,00	-	

** Fisher's Test*

3.7. Assessment of physical condition of children under two year-old

The research paper assessed the dimensions of physical condition of children under two year-old, i.e., height and body weight. A physical condition was assessed by percentile method, following Prof. Tutkuvienė's (1995) methodological recommendations "Vaikų augimo ir brendimo įvertinimas".

After analyzing the physical data (height and body weight) of three age periods (6 months, 12 months and 18 months), recorded in Child's Health Development Histories, it was determined that the average – 52,81 cm (SD – 2,466), median (Mdn) – 53 cm of born children, while the average weight – 3 551,72 g (SD – 484,084), median (Mdn) – 3 550 g. It was revealed that the height and body weight averages of girls and boys during three periods met the average

norms of corresponding age that are specified in methodological recommendations of Prof. Tutkuvienė (1995) (Table 25).

Table 25. Distribution of physical condition of children under two year-old, according to age

Criterion	Average	SD ±	Median (Mdn)	The lowest value	The highest value
General data					
Height of born child (cm) Weight of born child (g)	52,81 3 551,72	2,466 484,084	53 3 550	44 1 860	60,00 5 220
Height of infant of 6 months (cm)	68,65	2,400	68,50	58	76
Weight of infant of 6 months (g)	8 105,84	838,559	8 000	5 200	11 600
Height of child of 12 months (cm)	76,61	2,667	77	68	85
Weight of child of 12 months (g)	10 234,70	1 029,221	10 100	7 380	12 800
Height of child of 18 months (cm)	82,72	2,807	82,00	72	92
Weight of child of 18 months (g)	11 665,80	1 091,349	11 600	8 500	15 000
Girls					
Height of born child (cm) Weight of born child (g)	52,66 3 498,03	2,514 508,165	53,00 3 470,00	45,00 1 860	60,00 4 870
Height of infant of 6 months (cm)	68,02	2,091	68,00	61,00	74,00
Weight of infant of 6 months (g)	7 952,99	762,123	80 00,00	6 000	10 000
Height of child of 12 months (cm)	76,15	2,699	76	68	84
Weight of child of 12 months (g)	10 076,36	10 41,176	10 000,00	7 380	12 700
Height of child of 18 months (cm)	82,16	2,876	82	72	90
Weight of child of 18 months (g)	11 466,86	10 94,004	11 500	8 500	14 500
Boys					
Height of born child (cm) Weight of born child (g)	52,92 3 605,66	2,411 452,826	53,00 3 610,00	44 2050	60 5 220
Height of infant of 6 months (cm) Weight of infant of 6 months (g)	69,28 8 259,39	2,524 883,483	69,00 8200	58,00 5 200	76,00 11 600
Height of child of 12 months (cm) Weight of child of 12 months (g)	77,07 10 393,76	2,555 993,105	77 10300	71 8 000	85 12 800

Criterion	Average	SD ±	Median (Mdn)	The lowest value	The highest value
Height of child of 18 months (cm)	83,28	2,621	83	75	92
Weight of child of 18 months (g)	11 865,65	1 052,645	12000	9 000	15 000

The height and body weight of children of 6 months, 12 months and 18 months was assessed, according to gender and age. Fig. 6 shows the height of children of 6 months of age, which was assessed, according to one-dimensional height change curve.

$\chi^2 = 22{,}474$, $df = 6$, $p = 0{,}001$

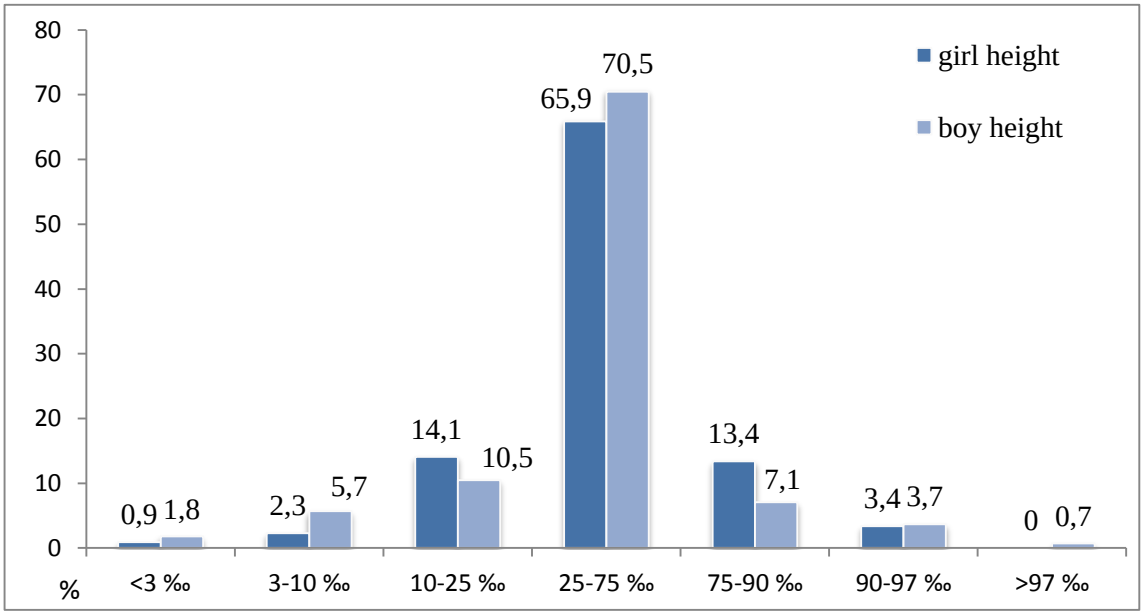

Fig. 6. Distribution of infants of 6 months, according to one-dimensional height change curve

It was noticed that the majority of children were of average height. While comparing girls with boys, the number of latter was slightly higher in the corridor of 25–75 ‰. It was also observed that during the period of 6 months, there was a higher number of quite short (10–25 ‰) – 62 (14,1 percent) – and lower number of quite high (75–90 ‰) – 59 (13,4 percent) girls, in comparison with boys, respectively: 46 (10,5 percent) and 31 (7,1 percent).

Fig. 7 shows the body weight of children of 6 months, which was assessed, according to one-dimensional weight change curve.

$\chi^2 = 30{,}295;\ df = 6;\ p < 0{,}0005$

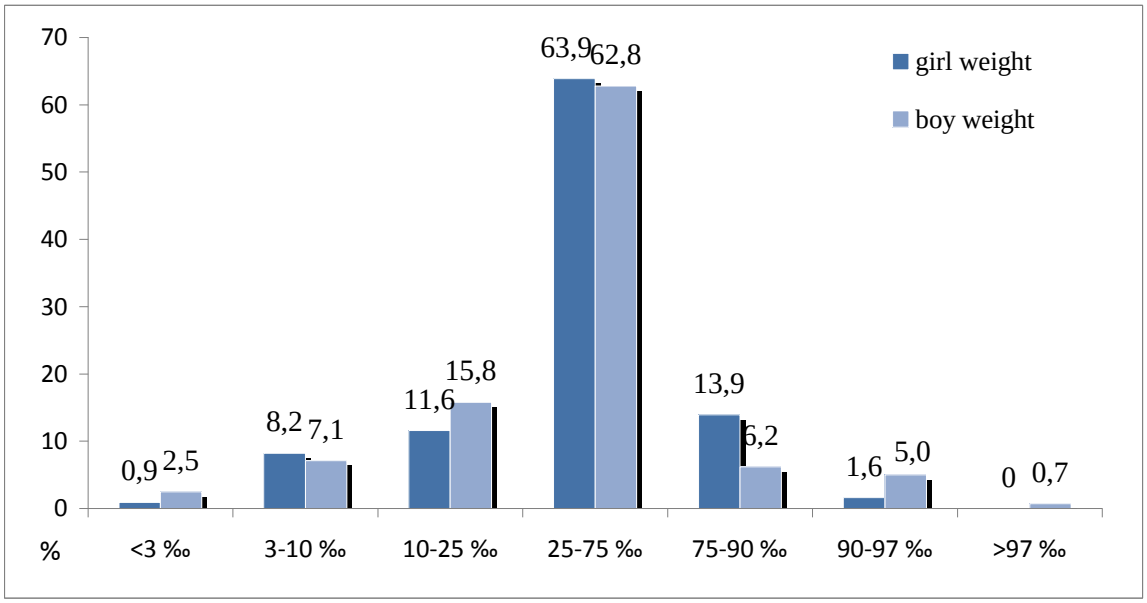

Fig. 7. Distribution of infants of 6 months, according to one-dimensional weight change curve

It was noticed that more than two thirds of children were of average weight. When comparing girls with boys, it was observed that that during the period of 6 months, there was a higher number of quite heavy (75–90 ‰) – 61 (13,9 percent) – and lower number of quite lightweight (10–25 ‰) – 51 (11,6 percent) boys, in comparison with boys, respectively: 27 (6,2 percent) and 69 (15,8 percent).

Fig. 8 shows the height of children of 12 months of age, which was assessed, according to one-dimensional height change curve. It was noticed that the majority of children were of average height. While comparing girls with boys, the number of latter was slightly higher in the corridor of 25–75 ‰.

$\chi^2 = 41{,}155,\ df = 5,\ p < 0{,}0005$

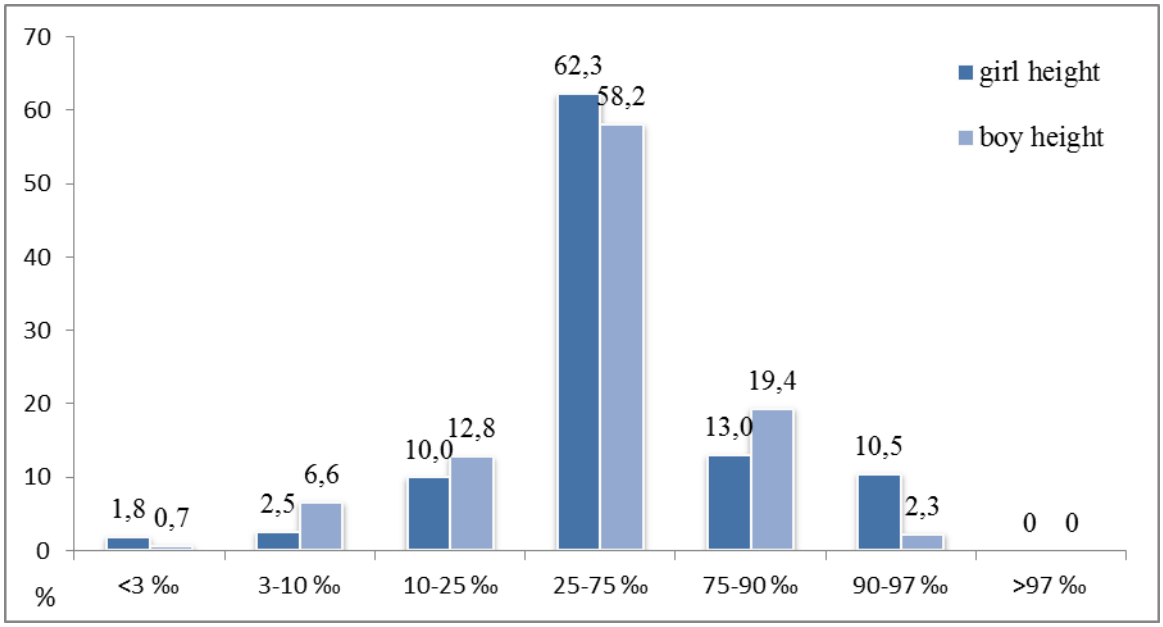

Fig. 8. Distribution of infants of 12 months, according to one-dimensional height change curve

It was also observed that during the period of 12 months, the number of tall girls was 5 times higher ((90–97 ‰) – 46 (10,5 percent) – and the number of quite tall girls was lower (75–90 ‰) – 57 (13,0 percent), in comparison with boys, respectively: 10 (2,3 percent) and 85 (19,4 percent).

Fig. 9 shows the body weight of children of 12 months, which was assessed, according to one-dimensional weight change curve. It was noticed that more than more than a half of children were of average weight. When comparing girls with boys, it was observed that that during the period of 12 months, there was a higher number of quite lightweight (10–25 ‰) girls, in comparison with boys, respectively: 110 (25,0 percent) and 87 (19,9 percent). It was noticed that 37 (8,4 percent) boys were very lightweight (< 3 ‰).

$\chi^2 = 17{,}489$, $df = 5$, $p = 0{,}004$

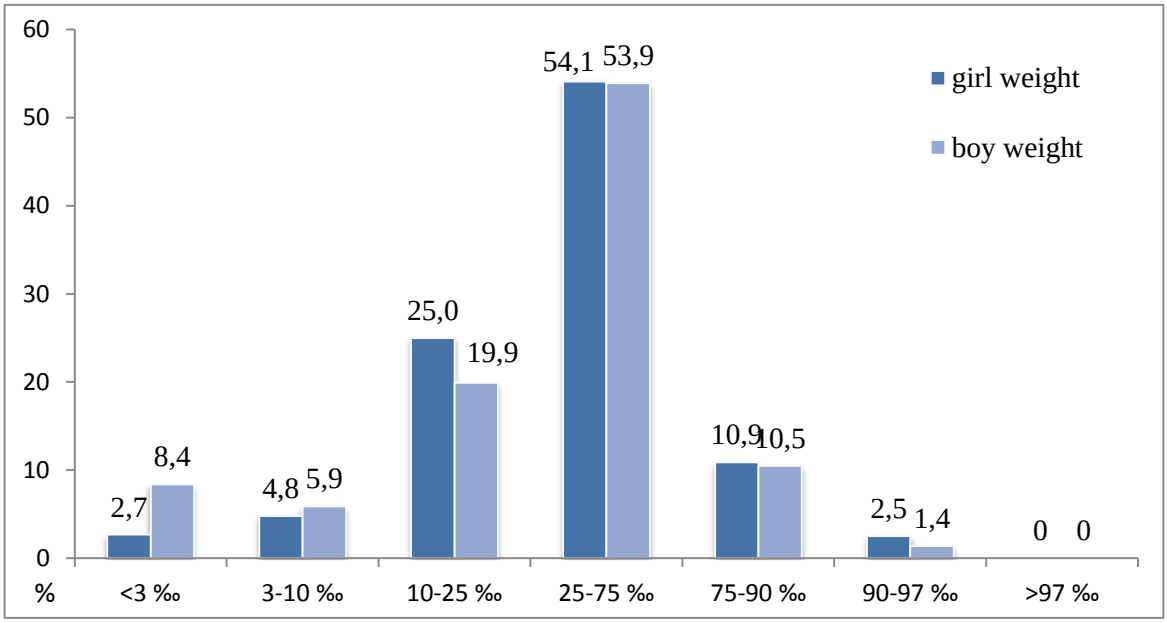

Fig. 9. Distribution of infants of 12 months, according to one-dimensional weight change curve

Fig. 10 shows the height of children of 18 months of age, which was assessed, according to one-dimensional height change curve. It was noticed that more than two thirds of children were of average height. While comparing girls with boys, no essential differences were observed, except the fact that the number of quite tall girls (75–90 ‰) was higher, in comparison with boys.

$\chi^2 = 25{,}578$, *l.l.sk .= 6, p < 0,0005*

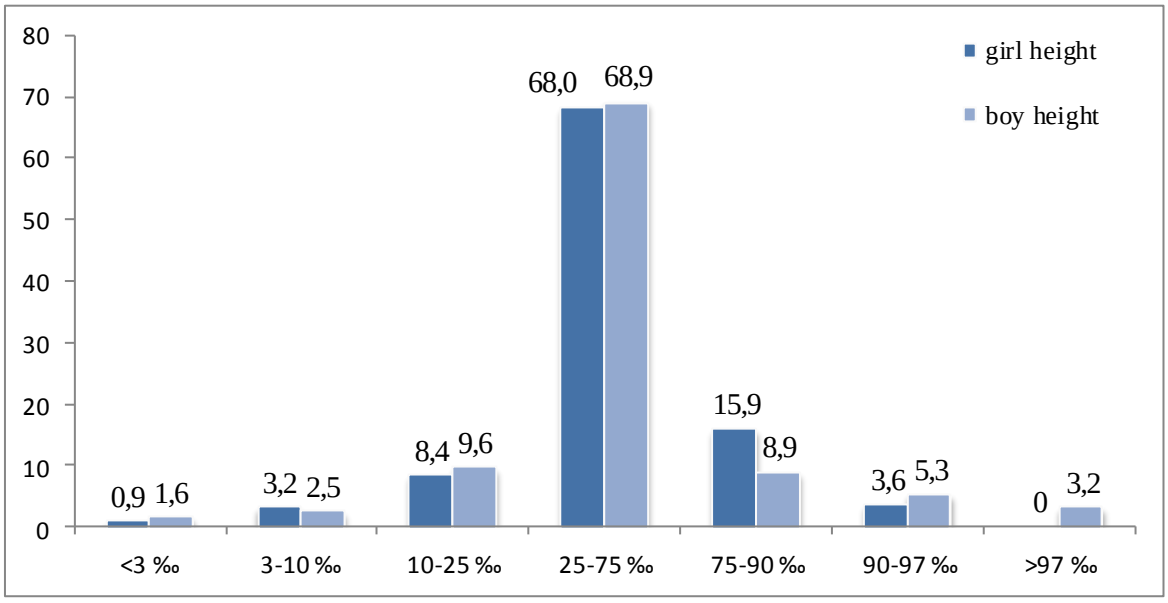

Fig. 10 Distribution of infants of 18 months, according to one-dimensional height change curve

Fig. 11 shows the height of children of 18 months of age, which was assessed, according to one-dimensional height change curve. It was noticed that more than a half of children were of average height. $\chi^2 = 10{,}438$; *df= 6; p = 0,107*

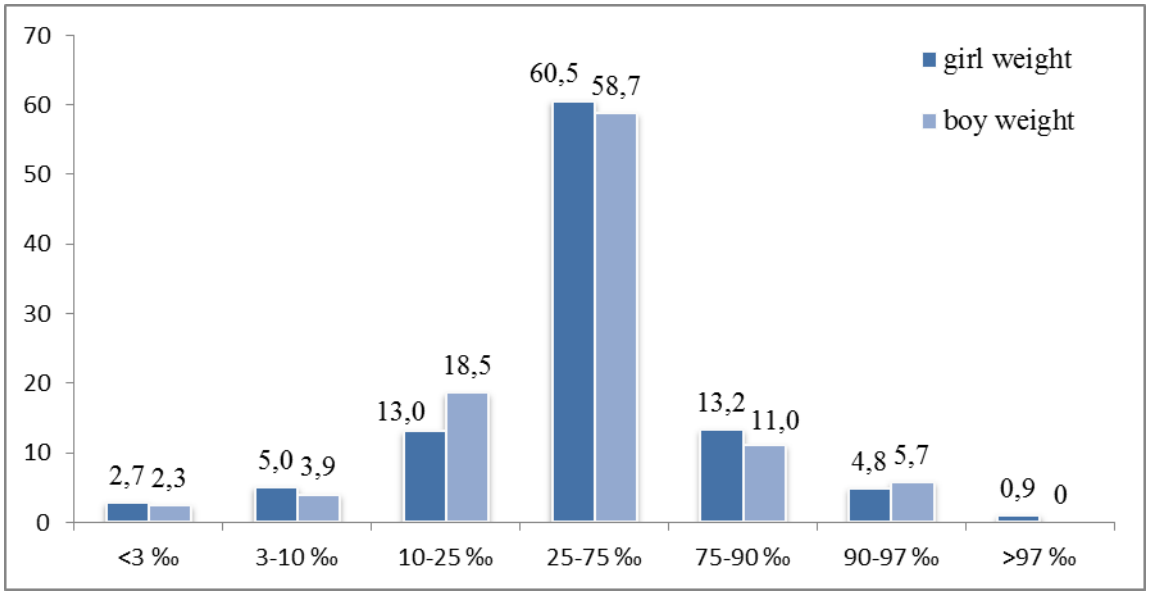

Fig. 11. Distribution of infants of 18 months, according to one-dimensional weight change curve

While comparing girls with boys, it was observed that during the period of 18 months, the number of quite lightweight girls (10–25 ‰) – 57 (13,0 percent) was lower, and the number of quite heavy girls (75–90 ‰) – 58 (13,2 percent) was slightly higher, in comparison with boys, respectively: 81 (18,5 percent) and 48 (11,0 percent).

It was determined that a physical development of the majority of children (more than 88 percent) was harmonious during all three analyzed periods (6, 12, 18 months).

A statistically significant change in distribution of growth harmony in case of 12 months of age, in comparison with infants of 6 months, was observed. There was a significant increase of proportion of children with disharmonious physical growth during the period of 12 months. Thus, the distributions of growth harmony of children of 6 months and 12 months are different. There were no significant changes in growth harmony of children of other observed age – 12 months and 18 months (p = 0,680), (Table 26).

Table 26. Distribution of physical growth harmony of children during the period of 6, 12, 18 months

Criterion	6 months	12 months	p*	18 months	p**
	N (%)	N (%)		N (%)	
Balanced (harmonious) growth (HGN)	824 (93,8)	778 (88,6)	< 0,0005	787 (89,6)	0,680
Balanced (harmonious) growth, when height is extreme (HGE)	13 (1,5)	11 (1,3)		11 (1,3)	
Disharmonious (disproportional) growth (DHG)	41 (4,7)	89 (10,1)		80 (9,1)	

** Expanded McNemar-Bowker test of symmetry*

*** Expanded McNemar-Bowker test of symmetry, when comparing the periods of 12 months and 18 months*

It was observed that the physical growth of children of 12 and 18 months was more disharmonious, in comparison with the period of 6 months (respectively: NHA: 6 months – 4,7 percent; 12 months – 10,1 percent; 18 months – 9,1 percent).

The research sought to find out, whether physical growth of children dependent of suitable nutrition – breastfeeding duration and acceptable diet.

Following the method of multivariate binary regression, it was determined that by taking into account the age, education, marital status of mothers, average family income, the main factors, which determine a harmonious physical growth of children under 18 months, are gestational age and exclusive breastfeeding under 6 months (Table 27).

Table 27. The factors, determining the harmony of physical growth of children of 18 months

Variable	OR_p	OR_a	95 % CI	p
Age group				< 0,0005
< 27 year-old	1,00	1,00	–	
28–33 year-old	0,08	0,75	0,02–0,25	< 0,0005
> 34 year-old	0,19	0,17	0,05–0,64	0,009
Education				0,233
secondary (vocational)	1,00	1,00	–	–
higher non university (technical school)	1,04	1,30	0,49–3,45	0,598
higher university	0,64	0,78	0,31–1,96	0,591
Marriage				
registered marriage	1,00	1,00	–	–
non registered / single	1,31	1,39	0,58–3,32	0,460
Income				
LTL < 1 500	1,00	1,00	–	0,480
LTL 1 501–2 500	1,03	1,12	0,48–2,60	0,800
LTL 2 501–3 500	1,22	1,77	0,73–4,30	0,210
LTL > 3 501	0,94	1,51	0,64–3,53	0,347
Born:				
full-term	2,81	2,98	1,19–7,50	0,020
pre-term	1,00	1,00	–	
Exclusive breastfeeding under 6 months				
breastfed under 6 months	1,21	1,72	1,05–2,82	0,032
non-breastfed under 6 months	1,00	1,00	–	
Acceptable diet				
acceptable	0,81	0,72	0,35–1,46	0,355
unacceptable	1,00	1,00	–	

Model χ^2 = 51,37; l.l.sk.= 11; p < 0,0005; correctly classified cases accounted for 90,9 percent; Cox, Shell R^2 = 0,058; Nagelkerke R^2 = 0,125.

Maturity and exclusive breastfeeding under 6 months are directly related with harmonious development of children under 18 months of age. The full-term children had 2,81 times higher chance of harmonious physical growth that pre-term ones. What is more, exclusive breastfeeding under 6 months increased the chance of harmonious physical growth by 1,21 times (Table 27).

4. CONCLUSIONS

1. Good indicators of breastfeeding were determined: more than two thirds (72,2 percent) of women began breastfeeding within first hour after birth; 48,2 percent of respondents exclusively breastfeed the infants under 6 months; one third of subjects breastfeed their child at one year, while 7,0 percent – at two year-old. The average duration of breastfeeding was almost 8 months.
2. The indicators of complementary feeding were very good: almost all mothers introduced solid, semi-solid or soft foods not earlier than in 17^{th} week.; a suitable dietary diversity was ensured for 94,0 percent of children; a right meal frequency a day in case of breastfed children of 6–23 months of age accounted for 95,7 percent, while in case of non-breastfed children – 82,7 percent; acceptable diet was applied to 83,6 percent of children of 6–23 months of age.
3. It was determined that a late put of newborn to the breast was determined by health problems of mother during pregnancy, Caesarean section surgery and prematurity of infants; more frequent exceptional breastfeeding under 6 months, breastfeeding at one or two year-old was determined by older age of mothers, higher education and life in marriage; Introduction of solid, semi-solid or soft foods was determined by experience in bringing up two and more children; a positive impact on dietary diversity was had by age of children (12 and more months) and higher family income, while the factors as older age of mothers, higher education and age of children (9 and more months) determined acceptable diet.
4. Least information on the issues of children feeding was received by mothers from medical staff when came back home after giving birth. More than a half of respondents acquired knowledge during pregnancy and in maternity ward, while at home – only 34,9 proc. Subjects' education and teaching on children feeding issues, as well as living in marriage had a positive impact on longer duration of breastfeeding, timely initiation of complementary feeding, higher dietary diversity and acceptable diet.
5. During the periods of 6 months, 12 months and 18 months of age, more than a half of target children were of average height and with average body weight (25–75 ‰). The most important factors, which influenced a harmonious physical growth of children up to 18 months, were maturity of newborn and exceptional breastfeeding under 6 months. It was determined than longer duration of breastfeeding was related with lower incidence of children's respiratory diseases during the first and second year of life.

5. PRACTICAL RECOMMENDATIONS

1. We recommend to continue observing a breastfeeding dynamics, seeking to determine the trends of increase in exclusive breastfeeding, breastfeeding at one year-old as one of prevention factors, which determine lower morbidity of children during the first two years of life.
2. The identified factors, determining the indicators of breastfeeding and complementary feeding, showed that there still is a need to promote longer breastfeeding by various initiatives, to teach the principles of introduction of solid, semi-solid or soft foods, to make optimum conditions for promotion of infant breastfeeding and dissemination of knowledge about children feeding.
3. While organizing the promotion of mothers to breastfeed and teaching on issues of children feeding, the attention should be paid on the factors as age, education, experience in bringing up two and more children, marital status, financial situation of family, childbirth method, and child's maturity.
4. We think that WHO questionnaire about nutrition of infants and children in their second year can be used in practice of public and health care professionals for assessing the nutrition of infants and children in their second year. Upon receiving information, it will be possible to observe and assess the indicators of breastfeeding and complementary feeding, which will lead to identification of groups of inadequately fed children.

6. LIST OF PUBLISHED WORKS ON THE THEME OF THE DISSERTATION

1. Stundžienė R, Kalibatienė D, Vingras A. *Kūdikių mitybos ypatumai pirmaisiais gyvenimo metais*. Medicinos teorija ir praktika. 2010; 16(4):379-386, ISSN 1392-1312.
2. Stundžienė R, Kalibatienė D. „*Kūdikių mityba Lietuvoje ir užsienio šalyse*". Medicinos teorija ir praktika 2012;19(4):359–367.
3. Stundžienė R, Kalibatienė D, Žagminas K. *Vilniaus miesto 6–23 mėnesių vaikų mitybos būklė, sąsajos su vaikų ir motinų socialiniais, demografiniais ir kitais veiksniais*. Given to editorial office of journal "Visuomenės sveikata" in September, 2013.

Presentations:

1. Stundžienė R. “Principles of Rational Nutrition of Infants”. Republican scientific practical conference of nursing specialists “Nursing science and practice 2010”, and report theses were prepared and printed. 30th of April, 2010, Vilnius.
2. Stundžienė R, Vingras A. “Children nutrition from 2 to 5 years of age”. Theses prepared and printed. International scientific conference “Nursing science and practice 2011”, 20th – 21th of May, 2011, Vilnius.
3. Stundžienė R. “Children nutrition at the age of 2 to 5”. International scientific conference “Nursing science and practice 2011”. 20th of May, 2011, Vilnius.
4. Stundžienė R. „The development of healthy eating habits among children at the age of 2 to 5“. Pediatric Nurses Conference of the Baltic States “Pediatric Care Development and Nursing Practice in the Baltic States”. 21st of October, 2011, Riga, Latvia.
5. Stundžienė R, Kalibatienė D. “Nutritional status of infants and children in their second year” Vilnius City Republican scientific practical conference of nursing specialists “Nursing science and practice 2013”. 21st of November, 2013, Vilnius.

Curriculum Vitae and Description of Scientific Activity

Surname:	Stundžienė
Name:	Rasa
Date of Birth:	21 08 1979
Nationality:	Lithuanian
Education:	Higher (university)
Education history:	
1986 – 1997	Gabija Secondary School (Gabija Gymnasium), Vilnius
1997–2001	Vilnius University Faculty of Medicine. Bachelor studies in nursing. Obtained Bachelor's degree in Rehabilitation and Nursing.
2001–2003	Vilnius University Faculty of Medicine. Master studies in nursing. Obtained Master's degree in Rehabilitation and Nursing.
Work experience:	
2003 – Present	Vilnius University Faculty of Medicine, Department of Nursing and Fundamentals of Internal Medicine, Assistant.
2006 – Present	Šeškinė Outpatient Clinic, Public Institution, senior nurse.
2001-2006	UAB "SK Impeks Medicinos diagnostikos centras" (Ltd.), general practice nurse.
Scientific activity (fields of research).	
Teaching activity (courses offered):	Childhood diseases and nursing, Community nursing: children nursing, Fundamentals of Nursing.
Social Activity:	
2003 - Present	The chairwoman of board of "Lithuanian Society of Nurses with University Education".

KŪDIKIŲ IR ANTRŲ METŲ VAIKŲ MITYBOS BŪKLĖ VILNIAUS MIESTE IR JĄ LEMIANTYS VEIKSNIAI

REZIUMĖ

Darbo aktualumas

Visavertė ir sveika mityba yra vienas iš svarbiausių veiksnių, nulemiančių sėkmingą naujagimio adaptaciją, gerą kūdikio augimą, vystymąsi ir sveikatos būklę. Specialistų manymu, nuo pat pirmųjų gimimo dienų mityba turi būti visavertė ir užtikrinti visus augančio ir besivystančio mažojo individo poreikius, lemti kokybišką imuninės sistemos brandą.

Per pastaruosius keletą dešimtmečių atlikti tyrimai patvirtina, jog žindymas turi didelės įtakos tam, kad vaikas augtų sveikas. Žindymo apsauga, skatinimas ir rėmimas yra visuomenės sveikatos prioritetas, nes žindymas yra natūralus kūdikių ir mažų vaikų maitinimo būdas. Išimtinis žindymas pirmuosius šešis gyvenimo mėnesius, vėliau papildytas tinkamu maistu, užtikrina optimalų vaiko augimą, vystymąsi ir sveikatą.

Žindymas nėra tinkamai skatinamas ir remiamas. Daugelis sveikatos priežiūros ir socialinių institucijų teikia paslaugas, kurios dažnai sudaro kliūtis žindymo inicijavimui ir tęstinumui. Pasaulyje vis dažniau motinos pienas keičiamas įvairiais dirbtiniais pieno mišiniais. Maži rodikliai ir ankstyvas žindymo nutraukimas turi svarbių sveikatos ir socialinių pasekmių moterims, vaikams, bendruomenei ir aplinkai, lemia didesnius nacionalinės sveikatos priežiūros kaštus ir didina sveikatos nelygybę.

Pasaulio sveikatos organizacijos (PSO) duomenimis, kiekvienais metais pasaulyje 1,5 mln. vaikų miršta ir milijonai nukenčia, nes yra netinkamai maitinami. Vaikai, kurių maitinimas yra nepakankamas arba nevisavertis, dažniau serga ir kenčia dėl raidos sutrikimo pasekmių. Dėl tokios situacijos PSO, UNICEF, įvairios visuomeninės organizacijos vykdo aktyvią veiklą propaguodamos ir skatindamos kūdikių žindymą. PSO rekomendacijose „Sveikata visiems XXI amžiuje“ pažymėta, kad sveikai žmogaus gyvenimo pradžiai labai svarbus kūdikių žindymo skatinimas ir palaikymas.

PSO šalys narės 2012 m. gegužės mėn. vykusioje 65-ojoje Pasaulio sveikatos asamblėjoje vieningai priėmė visuotinį motinų, kūdikių ir mažų vaikų mitybos planą, kuriuo siekiama, kad 2025 m. bent 50 proc. kūdikių visame pasaulyje būtų maitinami išimtinai motinos pienu. Šiuo metu išimtinai žindomi tik maždaug 38 proc. kūdikių iki 6 mėn. amžiaus. Pagal PSO 2009 m. statistinius duomenis, visame pasaulyje 2000–2008 m. tik 34,8 proc. kūdikių iki 6 mėn. buvo maitinami vien tik motinos pienu.

Lietuvoje daugėja žindomų kūdikių, tačiau, palyginti su kitomis Europos šalimis (Švedija, Norvegija), kur mažiausi vaikų mirtingumo ir sergamumo rodikliai, vis dar tebėra mažai žindomų kūdikių. Švedijoje iki 6 mėn. žindoma 80 proc. kūdikių, Norvegijoje – 72 proc., Lietuvoje – 31,0 proc. Todėl išlieka būtinybė įvairiomis iniciatyvomis skatinti žindymą ir formuoti palankų visuomenės požiūrį į jį bei siekti, kad kuo daugiau motinų kuo ilgiau žindytų savo kūdikius.

Lietuvoje ištirta, kad kūdikių ir mažų vaikų sveikata tiesiogiai priklauso nuo motinų sveikatos, mitybos, elgesio, darbo pobūdžio bei visuomeninės ir socialinės padėties, medikų praktikos ir kitų veiksnių. Šalyje nėra efektyvios žindymo skatinimo sistemos, per lėtai plečiamas Naujagimiams palankių ligoninių tinklas, dėl subjektyvių ir objektyvių priežasčių gimdymo priežiūros įstaigose dar nepavyksta išvengti informacijos ir reklamos, tiesiogiai ir netiesiogiai skatinančios dirbtinį kūdikių maitinimą.

Respublikinis mitybos centras (nuo 2010 m. balandžio 1 d. – Sveikatos mokymo ir ligų prevencijos centras) tyrė papildomą kūdikių maitinimą. Nustatyta, kad nemaža dalis motinų kūdikius maitina ne pagal vaikų mitybos specialistų rekomendacijas: papildomu maistu kūdikiai pradedami maitinti gerokai anksčiau nei rekomenduojama, papildomo maitinimo produktai dažniausiai būna nepakankamai maistingi ir saugūs.

Lietuvoje pastarąjį dešimtmetį tyrinėjama, kas skatina ar atvirkščiai – gali trukdyti motinoms žindyti savo kūdikius, analizuojami su žindymo trukme susiję veiksniai, neseniai pradėtos nagrinėti žindymo sąsajos su vaikų fizinės sveikatos ir elgesio ypatumais, tačiau tokių tyrimų, kuriuose būtų išsamiai nagrinėjamos natūralaus ir papildomo maitinimo sąsajos su įvairiais motinų veiksniais, vaikų sveikata ir jų fiziniu augimu, nėra arba tai tik pradedama tyrinėti.

Darbo tikslas ir uždaviniai

Darbo tikslas − įvertinti kūdikių ir antrų metų vaikų mitybos būklę Vilniaus mieste bei žindymo trukmės, papildomo maitinimo pradžios, maisto įvairovės, tinkamo maitinimo režimo sąsajas su vaikų amžiumi, fizine sveikatos būkle, motinų amžiumi, išsilavinimu, finansine šeimos padėtimi ir patirtimi auginant vaikus.

Siekiant darbo tikslo iškelti tokie uždaviniai:

1. Nustatyti natūralaus maitinimo paplitimą pagal jį apibūdinančius rodiklius: ankstyvo žindymo pradžią, išimtinio žindymo iki 6 mėn. bei vaikų žindymo iki vienerių–dviejų metų amžiaus trukmę.

2. Nustatyti papildomo maitinimo paplitimą pagal jį apibūdinančius rodiklius: papildomo maitinimo pradžią, maisto įvairovę, minimalų valgymų skaičių ir tinkamą maitinimo režimą.
3. Įvertinti kūdikių ir antrų metų vaikų natūralaus maitinimo, papildomo maitinimo pradžios, maisto įvairovės, tinkamo maitinimo režimo sąsajas su vaikų amžiumi, jų gimimo būdu, motinų amžiumi, išsilavinimu, patirtimi auginant vaikus ir finansine šeimos padėtimi.
4. Nustatyti motinų informuotumą apie kūdikių ir antrų metų vaikų maitinimą bei paramą šeimoje ir jo įtaką žindymo trukmei, papildomo maitinimo pradžiai, maisto įvairovei.
5. Įvertinti kūdikių ir antrų metų vaikų fizinės sveikatos būklės dinamiką per pirmuosius dvejus metus ir nustatyti jos sąsajas su mitybos rodikliais.

Darbo mokslinis naujumas

Pirmą kartą Lietuvoje buvo kompleksiškai ištirta kūdikių ir antrų metų vaikų mitybos būklė naudojant klausimynus – PSO dokumento *Indicators for assessing infant and young child feeding practices. Part II: Measurement, 2010* klausimyną „Kūdikių ir mažų vaikų maitinimas“ [IYCF – Infant and young child feeding]; autorės sudarytą klausimyną, atspindintį motinų socialinius ir demografinius požymius, nėštumo eigą, gimdymo būdą, žinias apie kūdikių ir antrų metų vaikų maitinimą bei vertinant vaikų fizinės sveikatos būklę, siejant ją su kūdikių ir antrų metų vaikų mitybos rodikliais.

Klausimynas *Kūdikių ir mažų vaikų maitinimas (IYCF Infant and young child feeding)* buvo pritaikytas tirti Lietuvos kūdikių ir antrų metų vaikų mitybą, gavus PSO biuro Lietuvoje vadovo leidimą naudotis dokumentu *Indicators for assessing infant and young child feeding practices – Part 2 Measurement, WHO, 2010* bei atlikus klausimyno dvigubą vertimą iš anglų į lietuvių ir lietuvių į anglų kalbas.

Darbe analizuotas kūdikių ir antrų metų vaikų natūralaus maitinimo paplitimas, jo kitimo tendencijos lygintos su Lietuvoje atliktų tyrimų duomenimis. Įvertintos Vilniaus miesto kūdikių ir antrų metų vaikų žindymo trukmės, papildomo maitinimo pradžios, maisto įvairovės, tinkamo maitinimo režimo sąsajos su vaikų amžiumi, jų sveikata, motinų amžiumi, išsilavinimu, finansine šeimos padėtimi ir patirtimi auginti vaikus. Tirtas motinų informuotumas apie kūdikių ir antrų metų vaikų maitinimą bei parama šeimoje ir jų įtaką žindymo trukmei, papildomo maitinimo pradžiai, maisto įvairovei.

Panaudojus prof. J. Tutkuvienės metodines rekomendacijas „Vaikų augimo ir brendimo vertinimas“ (1995) buvo vertinama kūdikių ir antrų metų vaikų fizinė būklė pirmaisiais ir antraisiais gyvenimo metais bei vaikų fizinio augimo sąsajos su jų mitybos rodikliais.

Disertacijos struktūra ir apimtys. Darbą sudaro pagrindiniai skyriai: įvadas, literatūros apžvalga, tyrimo medžiaga ir metodai, rezultatai, rezultatų aptarimas, išvados ir praktinės rekomendacijos; 58 lentelės ir 13 paveikslų. Įvade bendrais bruožais pateikiama tiriamoji problema, tyrimo tikslas ir įvardijami iškelti uždaviniai, darbo mokslinis naujumas. Literatūros apžvalgoje aprašoma: žindymo skatinimo politika Lietuvoje ir užsienio šalyse, žindymo paplitimas pasaulyje ir Lietuvoje, kūdikių bei antrų metų vaikų maitinimas ir jį lemiantys veiksniai, natūralaus ir papildomo maitinimo rodikliai bei juos lemiantys veiksniai, žindymo reikšmė vaikų sveikatai. Skyriuje „Tyrimo medžiaga ir metodai“ aprašoma tiriamoji populiacija, tyrimo metodai, tyrimo eiga, duomenų statistinė analizė. Rezultatų skyriuje pateikiami gauti tyrimo rezultatai, nurodomas jų statistinis patikimumas, galutiniam išvadų apie nepriklausomų kintamųjų ryšio su priklausomu kintamuoju vertinimui buvo naudotas daugiamate logistine regresija apskaičiuotas pakoreguotas šansų santykis (ŠSp) ir jo 95 proc. pasikliautinieji intervalai. Rezultatų aptarimo skyriuje gauti tyrimo rezultatai įvertinami ir lyginami su kitų tyrėjų duomenimis. Darbo pabaigoje, atsižvelgiant į darbe iškeltus uždavinius, apibendrinami tyrimo rezultatai ir pateikiamos išvados ir praktinės rekomendacijos. Disertacijos pabaigoje pateikiamas literatūros sąrašas, kuriame 226 bibliografiniai šaltiniai.

Atlikus tyrimą ir išanalizavus gautus rezultatus, padarytos šios išvados:

1. Nustatyti natūralaus maitinimo rodikliai: gimus naujagimiui, per pirmą valandą žindyti pradėjo daugiau nei du trečdaliai (72,2 proc.) apklaustų motinų; išimtinai iki 6 mėn. kūdikius žindė 48,2 proc. respondenčių; trečdalis tiriamųjų žindė savo vaiką iki vienerių metų, o 7,0 proc. – iki dviejų metų amžiaus, vidutinė žindymo trukmė siekė beveik 8 mėn.
2. Papildomo maitinimo rodikliai buvo labai geri: beveik visos motinos pradėjo papildomą maitinimą ne anksčiau 17 savaičių; tinkama maisto įvairovė buvo užtikrinta 94,0 proc. vaikų; teisingas valgymų per dieną dažnis sudarė 95,7 proc. žindomų ir 82,7 proc. – nežindomų 6–23 mėn. vaikų; tinkamas maitinimo režimas taikytas 83,6 proc. 6-23 mėn. vaikų.

3. Natūralaus ir papildomo maitinimo rodikliams turėjo įtakos kai kurie tiriamųjų sveikatos ir sociodemografiniai veiksniai. Vėlyvą naujagimio pridėjimą prie krūties pagimdžius lėmė motinos sveikatos sutrikimai per nėštumą, Cezario operacija ir naujagimio neišnešiotumas; dažnesnį išimtinį žindymą iki 6 mėn., žindymą iki vienerių ar dvejų metų lėmė vyresnis motinų amžius, aukštesnis išsilavinimas, gyvenimas susituokus; papildomo maitinimo pradžią lėmė patirtis auginant du ir daugiau vaikų; maisto įvairovei teigiamą poveikį turėjo vaikų amžius (12 ir daugiau mėn.) ir geresnės šeimos pajamos, o tokie veiksniai kaip vyresnis motinų amžius, aukštesnis išsilavinimas ir vaikų amžius (9 ir daugiau mėn.) lėmė teisingą vaikui maitinimo režimą.
4. Mažiausiai informacijos vaikų maitinimo klausimais iš sveikatos priežiūros personalo motinos sulaukė namuose, grįžusios po gimdymo. Daugiau nei pusė respondenčių žinių gavo per nėštumą ir gimdymo skyriuje, o namuose – tik 34,9 proc. Tiriamųjų švietimas ir mokymas vaikų maitinimo klausimais bei gyvenimas susituokus turėjo teigiamos įtakos ilgesnei žindymo trukmei, papildomo maitinimo pradžiai, didesnei maisto įvairovei bei teisingam vaiko maitinimo režimui.
5. 6 mėn., 12 mėn. ir 18 mėn. gyvenimo laikotarpiais daugiau nei pusė tirtų vaikų buvo vidutinio ūgio ir turėjo vidutinę kūno masę (25–75 ‰). Svarbiausi veiksniai, turėję įtakos darniam vaikų fiziniam augimui iki 18 mėn., buvo naujagimio išnešiotumas ir išimtinis žindymas iki 6 mėn. Nustatyta, kad ilgesnė žindymo trukmė buvo susijusi su mažesniu vaikų sergamumu kvėpavimo takų ligomis per pirmuosius ir antruosius gyvenimo metus.

Praktinės rekomendacijos

1. Rekomenduojame toliau stebėti žindymo dinamiką, siekiant nustatyti išimtinio žindymo, žindymo iki vienerių metų didėjimo tendencijas kaip vieną iš profilaktikos veiksnių, lemiančių mažesnį vaikų sergamumą per pirmuosius dvejus gyvenimo metus.
2. Nustatyti natūralaus ir papildomo maitinimo rodiklius lemiantys veiksniai parodė, kad ir toliau išlieka būtinybė įvairiomis iniciatyvomis skatinti ilgesnį motinų žindymą, mokyti papildomo maitinimo pradžios principų bei sveikatos priežiūros įstaigose sudaryti optimalias sąlygas kūdikių žindymui, skatinti žinių sklaidą apie vaikų maitinimą.
3. Organizuojant motinų skatinimą žindyti ir mokymą vaikų maitinimo klausimais, reikia atkreipti dėmesį į tokius veiksnius, kaip amžius, išsilavinimas, patirtis auginant du ir

daugiau vaikų, santuokos būklė, šeimos finansinė būklė, gimdymo būdas, vaiko išnešiotumas.

4. Manome, kad PSO klausimynas apie kūdikių ir antrų metų vaikų mitybą gali būti naudojamas visuomenės ir sveikatos priežiūros specialistų praktikoje vertinant kūdikių ir antrų metų vaikų mitybą. Gavus informaciją, bus galima stebėti, vertinti natūralaus ir papildomo maitinimo rodiklius, kuriuos išanalizavus, bus galima nustatyti neadekvačiai maitinamų vaikų grupes.

Gyvenimo ir mokslinės veiklos aprašymas

Pavardė:	Stundžienė
Vardas:	Rasa
Gimimo data:	1979 08 21
Pilietybė:	Lietuvos
Išsimokslinimas:	Aukštasis universitetinis
Mokymosi įstaigos:	
1986 – 1997 m.	Gabijos vidurinė mokykla (Gabijos gimnazijos mokykla), Vilnius
1997–2001 m.	Vilniaus universitetas Medicinos fakultetas. Slaugos bakalauro studijos. Įgytas reabilitacijos ir slaugos bakalauro laipsnis.
2001–2003 m.	Vilniaus universitetas Medicinos fakultetas. Slaugos magistrantūros studijos. Įgytas reabilitacijos ir slaugos magistro laipsnis.
Darbo patirtis:	
Nuo 2003 m. iki dabar	VU Medicinos fakulteto Slaugos ir vidaus ligų pagrindų katedra, asistentė.
Nuo 2006 m. iki dabar	Viešoji įstaiga Šeškinės poliklinika, vyresnioji slaugytoja.
2001-2006 m.	UAB „SK Impeks Medicinos diagnostikos centras“, bendrosios praktikos slaugytoja.
Veiklos sritis, nurodyta licencijoje:	
Bendrosios praktikos slaugytoja.	
Mokslinė ir pedagoginė veikla:	
Dėstomi dalykai:	Vaikų ligos ir slauga, Bendruomenės slauga: vaikų slauga, Slaugos pagrindai.
Visuomeninė veikla:	
Nuo 2003 m. iki dabar	Asociacijos „Lietuvos universitetinio išsilavinimo slaugytojų draugija“ valdybos pirmininkė.