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PECULIARITIES OF NUTRITION, HEALTH EDUCATION AND LEISURE OF PRE-SCHOOL AGE CHILDREN

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Abstract

The aim of the research – to assess the nutrition, health education and leisure of pre-school age children. The study involved 3549 children of pre-school education institutions in Šiauliai. A questionnaire survey was selected as the main tool for the research. The research was conducted on the basis of the quantitative research methods. Questionnaires were distributed to and completed by parents. Questionnaire data were processed, analyzed and provided using graphical representation.

Keywords: *pre-school age, health, nutrition, health education, physical activity, leisure.*

Introduction

According to Aleksejevaitė, Namajūnaitė, Paulauskienė, and others (2012) each age stage is characterized by the peculiarities of growth and development, which are very important in organizing education processes of children and health care. Pre-school age (about 3-5 years) is a period of rapid growth and development when nutritional, physical activity and sitting behaviour skills develop; therefore, this age is considered critical (Määttä, Ray, Vepsäläinen, Lehto, Kaukonen, Ylönen, & Roos, 2018). According to Rutkauskaitė & Bukauskė (2016), Žalnieraitienė & Smolnikova (2018), family, friends, and social environment have a great influence on the attitude of a child towards lifestyle. A level of good health is maintained by interacting nutrition, physical activity, body tempering and physical capacity with each other. It has been noticed that physically active parents pay much more attention to the health and development of their children. Bartkevičiūtė & Barzda, and others (2016) approve that parents are the health educators of pre-school age children, promoters of healthy diet and they take the greatest responsibility for the healthy development and upbringing of a child. It is noticeable

that further public health will be dependent on the strengthening and preserving the child's health in early childhood.

Child nutrition is influenced not only by the parents' attitude towards a healthy diet, but also by financial, social status, age, education, number of children in the family, etc. Therefore, pre-school education institutions that are increasingly involved in health promotion projects, organizing events, classroom lessons, which promote healthy lifestyle and form habits, skills, attitudes and behaviors, benefit to health provisions of children (Montvilienė & Žuravliova, 2014; Žalnieraitienė & Smolnikova, 2018). According to Stukas & Šurkienė (2009), Žalnieraitienė & Smolnikova (2018), a healthy diet influences the height, sickness rate, maturity, development, working capacity, life expectancy, and general health condition of the child, as the appropriate foodstuffs provide energy, contribute to growth, physical activity, they also maintain vital functions of the body and provide construction materials. According to the research results of Bartkevičiūtė, Barzda, and others (2016), pre-school children have breakfast every day and have food 4-5 times a day and more often, as recommended, however, some of them have food irregularly and in the long run they can disrupt the digestive process and it can become a cause of disease. A research carried out by Gerikienė & Kareivė (2016) showed that when parents of pre-school children were interviewed, it became clear that they have their own food and give the same food to their children without food choices in pyramids and dietary recommendations or some parents did not know about this pyramid at all.

Sheldrick, Tyler, Mackintosh, & Stratton (2018) argue that obesity in children is a major public health problem, especially in Wales, which is most prevalent in the United Kingdom. This problem is related to cardiovascular diseases, diabetes and other chronic diseases. It has been proved that the obesity epidemic is influenced by low physical activity, poor nutrition, inadequate sleep, and passive behavior. Healthy lifestyle is determined by a healthy diet (having fruit and vegetables, having breakfast, restricting junk food). The research revealed that less than 20% of children in the UK are physically more active for at least 60 minutes during the day. Sitting activities occupy up to 9 hours a day. It was found that the factors of a healthy and unhealthy lifestyle differed by gender, although physical activity remained similar.

According to Česnauskienė & Gudžinskienė (2014), the World Health Organization in 2000 stated that at least 95% of children should have had the opportunity to learn about health promotion and education and to acquire the necessary skills in education institutions. In the process of integrated health education, the educator must be interested in providing knowledge and information to the learners about health, their strengthening and education. Health must be presented as a value.

According to Hesketh, Lakshman, & Sluijs (2017), high physical activity is beneficial from infancy, although most researches show that children (0-6 years) are relatively passive. A qualitative analysis of literature was carried out, which revealed that the physical activity of pre-school children is insufficient – children sit a large part of the day. A sedentary lifestyle appears in early childhood, as parents tend to spend more time with children on the television, and various interventional measures that are integrated into formal programs have been developed to promote activity and reduce sedentary behavior. National Sports and Physical Education Associations emphasize that the child has to engage in physical activity that requires physical exercise as much time as possible. The World Health Organization (WHO) indicates that physical activity should last at least 60 minutes a day (going to school for a walk, climbing the stairs, riding a bike) (Bidzan-Blum & Lipowska, 2018).

Määtaä, Ray, & Vepsäläinen and others (2018), Rutkauskaitė & Bukauskė (2016); Strazdienė, Strukčinskienė, & Griškonis (2015), Aleksejevaitė, Šurkienė, & Valinčiūtė and others (2014) revealed that the physical activity of pre-school children is lower than it should be. Children of this age should be more physically active for at least one hour a day. The research data of the authors showed that children spend 1-2 hours less on physically active rest on weekdays than at weekends, a link between parental physical activity and immobility of children has been noticed as well. One-fifth of children spend 1-2 hours on a computer and television on weekdays and much longer at weekends.

According to Adaškevičienė & Purlytė (2015), girls compared to boys are more physically passive and less actively engaged in physically active activities as they are not interested in the activities offered. The research of Lee, Tamminen, Clark, & Slater and others (2015) revealed that the attitude of parents towards outdoor games varied according to the gender of a child. Boys were given more freedom and less constraint and care than girls.

The aim of research

To evaluate the nutrition, health education, and leisure of pre-school children.

Problem questions of the research

1. What is the relationship between nutrition of children of pre-school age, health and health education?
2. How is physical activity related to leisure?

Research methods

1. Questionnaire survey
2. Statistical mathematical data analysis (SPSS 19.0; Microsoft Excel 2007)

Research participants

The research involved 3549 children of pre-school education institutions in Šiauliai, 50.3% (N=1785) of which were boys, 49.2% (N=1745) – girls, the rest did not indicate gender.

Research Organisation and Methodology

3549 pre-school and pre-primary age children were chosen as a target group. All data were collected at the pre-school education institutions of Šiauliai. In order to carry out a quantitative study, revealing the relevance of the problem, a questionnaire survey method was chosen. This method is convenient as a larger group of respondents can be interviewed. The main research tool – the questionnaire – consisted of the blocks of questions on health, nutrition, physical activity, leisure, and health education. The questionnaire was compiled by the Public Health Bureau of Šiauliai City Municipality. The analysis of the research data was performed using the statistical package SPSS (Statistical Package for the Social Sciences 19.0).

The research includes calculation of percentages, Chi-square (χ^2) and Mann-Whitney non-parametric criteria, mean, the chosen significance level is $p \leq 0{,}05$.

Research Results

The aim of the research is to reveal the interconnections between nutrition and health of children of pre-school age, health education and nutrition, physical activity and leisure.

Peer evaluation of nutrition and health

The research examines how often children who do not attend kindergarten due to colds, trauma and digestive diseases have healthy and unhealthy food. By applying the non-parametric Chi-square criterion, a statistically reliable result was obtained that 75.3 percent of pre-school children who did not attend kindergarten due to digestive problems had fruit every day (χ^2=7.732, df=2, p=0.021), 9.4% fewer children had vegetables every day (χ^2=7.408, df=2, p=0.025), 1 percent of children never had fruit and vegetables. Having fruit and vegetables is statistically not associated with colds and traumas (p>0.05). Common interactions between colds, digestive diseases, traumas and having sweets are being tried to find. Statistically insignificant result appeared (p>0.05). By applying a non-parametric Chi-square, a statistically significant result (χ^2= 6.727, df=2, p=0.035) showed that 59.7% of children who did not attend kindergarten due to digestive problems drink carbonated drinks such as Coca-Cola sometimes or every day, statistically insignificant results also show that they sometimes have chips (p=0.33). It should be noted that almost every second child never drinks carbonated drinks, and one-third of children do not have chips. It is noticed that although the results were not statistically reliable (p>0.05), however, the incidence of unhealthy food and drink has no relation to colds or traumatic diseases.

The non-parametric Mann-Whitney criterion revealed a statistically significant result (Z=-1,972, r=-0,03, p=0,049) that girls have vegetables more often than boys, indicating a ranking average (boys – 1737,57, girls – 3793.04). The non-parametric Mann-Whitney criterion revealed statistically significant results that boys are more likely to drink carbonated drinks than girls (Z=-2.181, r=-0.037, p= 0.026), which is meant by ranking averages (boys – 1794.08, girls – 1729.2) Also, boys have chips more often (ranking average: boys – 1793.71, girls – 1730.61) and this is a statistically reliable result, since Z=-2.23, r=-0.037, p=0.026.

It is observed that 62.5% of parents who assess the health of their child as poor often try and 37.5 percent sometimes try to have healthy food. 44.7% of parents who assess the health of their child as average never try or sometimes try to have healthy food. The majority of parents (99.1%) who sometimes try and often have healthy food assess the health of their child as good. These results were not statistically reliable, since p=0.383. A statistically insignificant result (p=0.103) found that one in three children (31.3%) whose health is assessed as poor never have breakfast, and only one-fifth (24.9%) of children have breakfast every day. 12.6 percent of children whose health is assessed as average never have breakfast, 1-5 days – 51.6 percent and 35.8 percent have breakfast every day. 34.4 percent of children whose health is assessed as good have breakfast every day, every 10th (10.9%) child never has breakfast, every second child (54.7%) has breakfast 1 to 5 days a week. The non-parametric Mann-Whitney criterion applied reveals that boys have breakfast more often than girls, as shown by the ranking average (boys – 1819.09, girls – 1696.37), and the data are statistically reliable, since Z=-3.799, r=-0.067, p=0.0001.

In order to find out how parents who assessed the health of their children as poor average or good, assessed nutrition in pre-school education institutions (Fig. 1), the non-parametric Chi-square criterion applied revealed statistically significant results (χ^2=14.059, df=6, p=0.029) and showed that one-third of parents who assessed the health of their children as good assessed nutrition at kindergartens as very good, almost 60% of parents assessed it as good. One-fifth of parents who assessed the health of their child as average assessed nutrition in kindergartens as very good, and 39.7 percent assessed it as good, every sixth – as average. A quarter of the parents who assessed the health of their children as poor assessed nutrition at

a pre-school education institution as average, a half of them assessed is as good, and almost every sixth respondent assessed it as very good. This suggests that, although there is a slight difference, the better parents assess the health of the child, the better nutrition at pre-school institutions is.

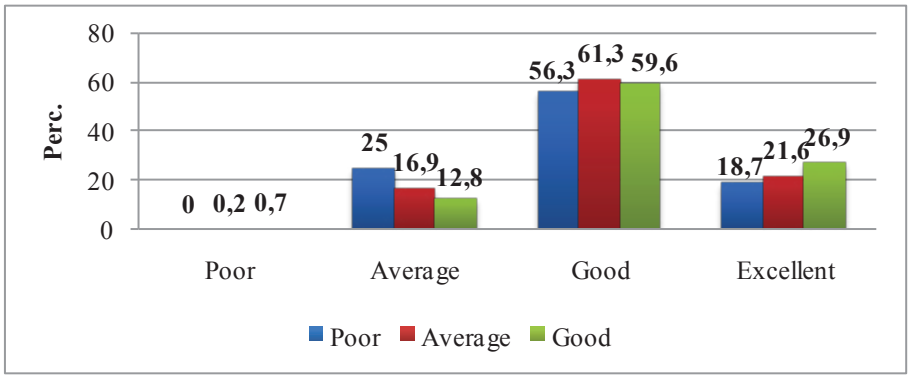

Fig. 1. Assessment of parental childcare in pre-school education institutions according to the assessment of the child's health (%)

Having analysed the dietary implications with the reasons for not attending kindergarten and assessing the health of the child, the further research analyses how nutrition is associated with allergies to certain foods. It turned out that even 70.6% of children who have certain allergies have fruit every day (p=0.435) and 66.3% have vegetables (p=0.061). 71 percent of children without allergies have vegetables every day. The non-parametric Chi-square criterion revealed a statistically significant result (χ^2=6.733, df=2, p=0.035) that 82.8% of children with allergies sometimes have sweets and chocolate, 15.8% – every day. Sweets and chocolate are found to be consumed every day by 2.3% fewer children without allergies. 92.3 percent of children sometimes have cakes and cookies and 2.8% of children with allergies have them every day. This was not a statistically reliable result, since p=0.190. The non-parametric Chi-square criterion showed a statistically reliable result (χ^2=14.591, df=2, p=0.001) that every second child with an allergy sometimes drinks carbonated drinks and 4.5% fewer children do not drink carbonated drinks at all. It has been revealed that the majority of children without allergies do not drink carbonated drinks at all, and almost every second child does not have or sometimes have chips. Statistically significant data (χ^2=7.848, df=2, p=0.02) revealed that one-third of children with allergies do not eat chips and 31.5% more children stated they have them sometimes. It is noted that allergies may have an association with the consumption of unhealthy food. The non-parametric Mann-Whitney criterion is used to reveal a statistically significant result (Z=-2.1921, r=-0.037, p=0.028), it is observed that in terms of gender allergies to certain foods are more marked by girls than boys, this difference is indicated by the ranking average (girls – 1779.96, boys – 1747.37).

Peer evaluation of health education and nutrition

The non-parametric Chi-square criterion applied revealed a statistically reliable result (χ^2=13,497, df=4, p=0.009) that most of the parents who often have a healthy diet say that health education of children is constantly being carried out in pre-school education institutions.

Every tenth respondent who never tries to be healthy says that health education of children is never implemented in pre-school education institutions. One-fifth of parents who do not try to have a healthy diet state that kindergartens never collaborate with the parents on the issues of health education of children. Every second child who sometimes or often has a healthy diet claims to be co-operating on the issues of health education, and more than one-third of them think that they are cooperating continuously (p=0.139).

The non-parametric Chi-square criterion applied revealed statistically significant results (Fig. 2) that every second parent and 6.9% fewer parents who sometimes and often have a healthy diet are interested in the issues of health education of children (χ^2=25.834, df=2, p=0.0001), and on average every second family who sometimes and often has a healthy diet would like to participate in the events of health education of children (χ^2=22.459, df=2, p=0.0001). By applying the non-parametric Chi-square criterion, statistically significant results show that parents who sometimes and often have a healthy diet lack the knowledge about disease prevention (χ^2=9.517, df=2, p=0.009), personal hygiene (χ^2=11.652, df=2, p=0.003) and about a healthy diet (χ^2=13.070, df=2, p=0.001). Every second family who often have a healthy diet lack the knowledge about health promotion (p=0.362), harmful addictions (p=0.349) and physical activity (p=0.815). From the point of view of parents, it would be the best for the child to learn about the development of health in families that often, sometimes and never have a healthy diet. Statistically significant data showed that the majority of parents whose families often have a healthy diet and more than one-third of those who sometimes have a healthy diet think that educational games (χ^2=11.630, df=2, p=0.003), lessons and trainings (χ^2=15.857, df=2, p=0.0001) would be the most appropriate methods to learn about the development of health and education. A statistically insignificant result revealed that 59.4% of parents who often have a healthy diet state that individual conversations (p=0.859), 2.2% fewer – mass events (p=0,810) and about 58% – trips, tours (p=0,566) would be the most appropriate methods.

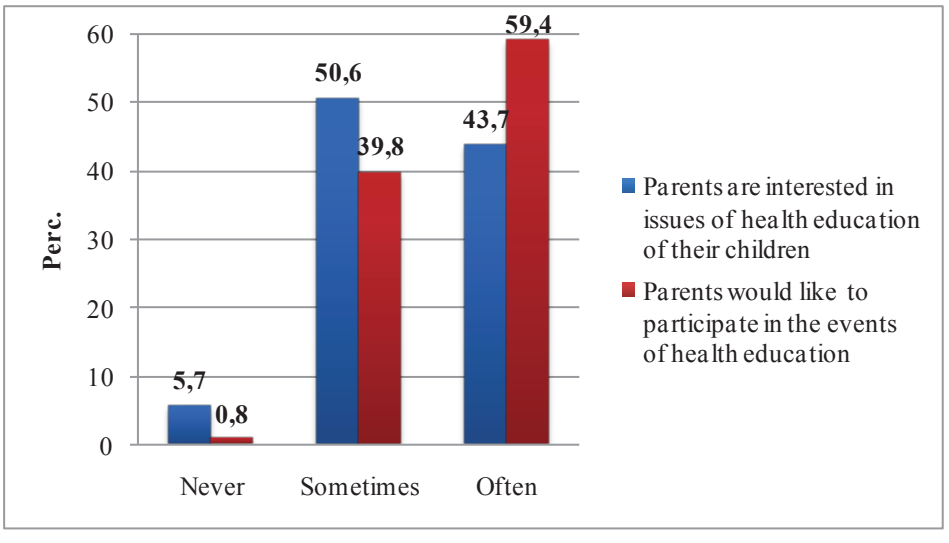

Fig. 2. Parental interest and participation in the issues of health education of children and events according to the rate of a healthy diet of their children (%)

Figure 3 shows the rate of health education measures of children and the assessment of nutrition at pre-school institutions. The non-parametric Chi-square criterion revealed a statistically significant result (χ^2=179,165, df=6, p=0.0001) that the more often health education of children and enhancement measures were implemented in pre-school education institutions the better nutrition was assessed by parents. The statistically significant result also revealed that the more often pre-school institutions collaborate with parents, the better they assess food (χ^2=231,077, df=6, p=0.0001).

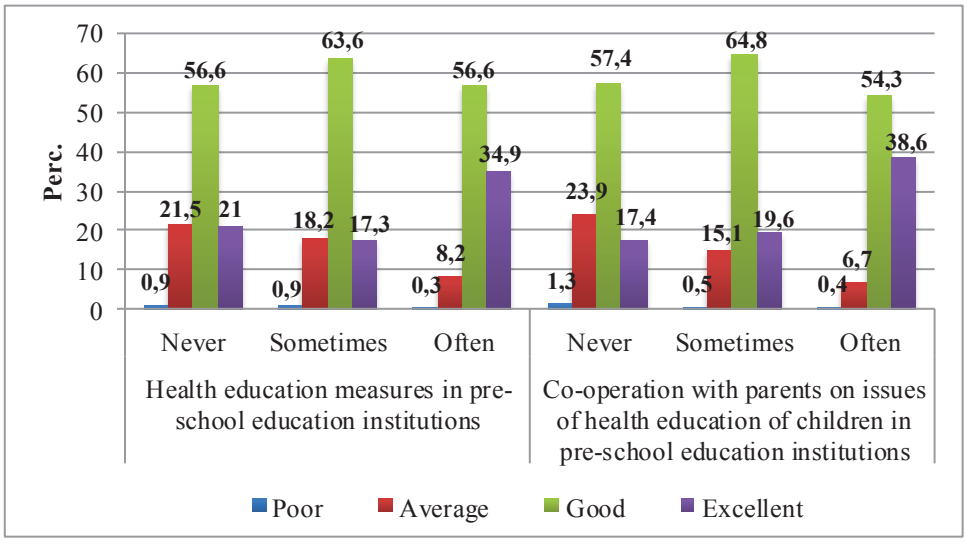

Fig. 3. Health education measures and co-operation with parents in pre-school education institutions, according to the assessment of nutrition of children in pre-school education institutions (%)

Peer evaluation of physical activity and leisure

After applying the non-parametric Mann-Whitney criterion, a statistically significant result was obtained (Z=-4.113, r=-0.069, p=0.0001) that the boys were more physically active than girls, this was shown by ranking average (boys – 1801.38, girls – 1709.71). The research also analyses how often the child is physically active following the types of family leisure activities. A statistically significant result (χ^2=15,031, df=2, p=0,001) revealed that the more often parents spend leisure time using active sports, the more a child is physically active (never 0.3%, sometimes 9.5%, often 90.2 percent). It also turned out that the child is often physically active when the family goes for a walk in leisure time (83.2 percent, p=0.777). Children are often physically active even if the family chooses passive leisure: they play computer games (83.1%, p=0.928), play table games (81.2%, p=0.09), read children's literature (83, 4 percent, p=0.236), watch TV shows together (83.9 percent, p=0.413), they do not organize leisure activities in any way (82 percent, p=0.909). The non-parametric Chi-square criterion applied revealed statistically significant results that every second person who is sometimes or every day physically active does active sports in leisure time (χ^2=175,787, df=2, p=0.0001), the majority of parents who are sometimes physically active and the quarter of those who are physically active every day spend their family leisure time while going for a walk (χ^2=43,931, df=2, p=0.0001). 62-76 percent of parents who are sometimes physically active and one fifth of those who are physically active every day in their leisure time choose physically passive

leisure types: playing table games (χ^2=7.571, df=2, p=0.023), reading literature for children (χ^2=19.184, df=2, p=0.0001), watching TV shows together (χ^2=7.980, df=2, p=0.018) do not organize anything (χ^2=52.515, df=2, p=0.0001).

Having determined the frequency of physical activity of the child and family in accordance with the types of family leisure choice, the leisure choice of a child and its frequency are further analysed. Figure 4 shows how much time on weekdays is spent for active rest in accordance with leisure choice types. The non-parametric Chi-square criterion applied showed a statistically significant result that every second child chooses to spend free time on a computer on working days for active rest for 1-2 hours, one third – for 3-4 hours and every eighth – for more than four hours (χ^2=32.1477, df=3, p=0.0001). Every second child who attends hobby groups spends 1-2 hours for active leisure, one-third – for 3-4 hours, one-eighth – for more than 4 hours (χ^2=12.255, df=3, p=0.007). The most active leisure time is spent by children who have active rest outside: almost every second child spends 1-2 hours, one third – 3-4 hours, one-fifth – even more than 4 hours (χ^2=71,049, df=3, p=0.0001). Every second child who spends leisure time while playing spends 1-2 hours for active rest on working days, one-third – 3-4 hours and every fifth child (χ^2=26,127, df=3, p=0.0001) – more than 4 hours. It is noticeable that according to the leisure choice types, children spend 1-2 hours for active leisure on weekdays, and 3-4 hours for several types. The Mann-Whitney criterion was applied to find out what leisure types are mostly chosen by boys and girls. Statistically significant data showed that boys more often than girls choose leisure time in front of a computer, it was shown by the ranking average (boys – 1811.96, girls – 1717.98) (Z=-4.421, r=-0.074, p=0.0001), while girls are more likely to read books (boys – 1608.11, girls – 1926.5) (Z=-10.721, r=-0.179, p=0.0001). Boys more often than girls spend leisure time outside on weekdays, as shown by the ranking average (boys – 1806.62, girls – 1723.43) (Z=-2.899, r=-0.449, p=0.004), boys are more likely to play in leisure time (boys – 1789.1, girls – 1741.36) (Z=-2.76, r=-0.046, p=0.006). Boys compared to girls prefer to spend more time on weekdays and less often read books.

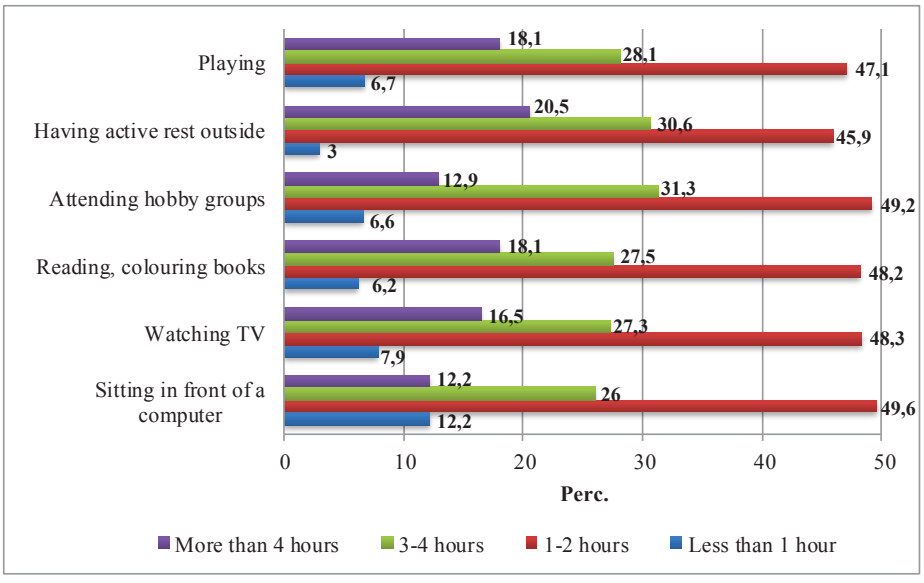

Fig. 4. Leisure average time spent for active rest on working days (%)

In the course of the research, it was sought to find out which gender is more likely to choose certain types of leisure outside. In order to achieve this, non-parametric Mann-Whitney criterion was used, the ranking average revealed statistically significant results that boys (1808.19) more often than girls (1721, 83) (Z=-3.318, r=-0.056, p=0.001) run outside, the girls (1842.41) are more likely to go outside with parents than boys (1690.31) (Z=-5.374, r=-0.09, p=0.0001), girls (1806.17) are more likely to play in the sandbox than boys (1725.75) (Z=-2.708, r=-0.045, p=0.007). The ranking average also revealed that girls were more likely to sit on the bench than boys (boys – 1744.92, girls – 1786.55), it is a statistically reliable result, since Z=-2.832, r=-0.048, p=0.005. The Mann-Whitney criteria showed a statistically significant result (Z=-4.779, r=-0.08, p=0.0001) that boys ride bicycles more often than girls, which was shown by the ranking average (boys – 1834.11, girls – 1695.31). It is noticeable that boys are more likely to choose more active physical activities than girls. It is relevant to find out in the research interconnections between the amount of leisure time spent on the TV or computer and after coming back home. It turned out that those children who do not watch TV or do not play computer games and every second child who spends more than 1-2 hours for that are more likely to go outside. On average, 37.3 percent of children were not influenced by the time spent on the TV or computer as they claim to feel the same as before going outside. Almost every tenth child who does not watch TV and spend time on a computer or who spends 1 hour on average feels tired during the day and wants to lie down after coming back home (p=0.009).

Answering to the problem questions of the research it could be stated that there is a relationship between pre-school age, health and health education, and physical activity determines the type of children's leisure.

Conclusions

1. Having assessed the health and nutritional characteristics of pre-school children, the link between a diet, child's health and allergies was noticed. Statistically reliable results (p<0,05) were revealed in non-attendance of nursery due to the problems with digestion and daily consumption of fruit and vegetables, the use of carbonated drinks at times and well-evaluated nutrition in pre-school education institutions. It was found that the less children eat vegetables and the more they eat fast food, their parents are less likely to assess their health as good. It was revealed that children with allergies comparing to those who are without allergies are more likely to eat unhealthy food products and visit fast food restaurants.
2. Having analyzed the links between health education and nutrition among pre-school children, it can be argued that the majority of parents who are often healthy compared with those who are less likely to be healthy say that pre-school education institutions are constantly implementing measures for the development of children's health, and they would also like to participate in children's health education events (p<0,05). Children's health is important for parents and they try to take care of a healthy diet, clearly emphasizing that there is a lack of knowledge about a healthy diet, prevention of diseases and harmful addictions (p<0,05). The more often the childcare facilities and the cooperation with parents were conducted in pre-school education institutions, the better parents assessed the child's nutrition in these institutions (p<0,05).
3. It was found that children whose parents spend their leisure time doing active sports (p<0,05) are more active. It was noticed that according to optional leisure types, children

spend 1-2 hours for active rest during working days ($p<0.05$). Compared to working days children spend much more time on active leisure during the rest-days. Boys are more likely to choose physically active activities (running, riding, cycling) than girls. The majority of children who do not watch TV and do not play computer games more often want to go outside ($p<0.05$).

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NUTRITION, HEALTH EDUCATION AND LEISURE OF PRE-SCHOOL AGE CHILDREN

Summary

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In the society of consumerism, high-speed communications and information technology, the way of life of young people mostly can be described as passive. The priority is given to fast food, leisure time on the computer, but not to active physical activities, while respecting the rules of a healthy diet and seeking coherence with other people.

The aim of the research was to assess the nutrition, health education and leisure of children of pre-school age. 3549 children of pre-school education institutions of Šiauliai were investigated using a questionnaire survey (50.3% (N=1785) – boys, 49.2% (N=1745) – girls, the rest did not indicate gender), as well as their parents. The analysis of the research data was performed using SPSS statistical package (SPSS 19.0). The percentages, the non-parametric criteria for Chi-square (χ^2) and Mann-Whitney's means were calculated in the article, and the significance level chosen was $p \leq 0.05$.

Having assessed the health and nutritional characteristics of pre-school children, the link between a diet, child's health and allergies was noticed. Statistically reliable results ($p<0,05$) were revealed in non-attendance of nursery due to the problems with digestion and daily consumption of fruit and vegetables, the use of carbonated drinks at times and well-evaluated nutrition in pre-school education institutions. It was found that the less children eat vegetables and the more they eat fast food, their parents are less likely to assess their health as good. It was revealed that children with allergies comparing to those who are without allergies are more likely to eat unhealthy food products and visit fast food restaurants.

Having analyzed the links between health education and nutrition among pre-school children, it can be argued that the majority of parents who are often healthy compared with those who are less likely to be healthy say that pre-school education institutions are constantly implementing measures for the development of children's health, and they would also like to participate in children's health education

events (p<0,05). Children's health is important for parents and they try to take care of a healthy diet, clearly emphasizing that there is a lack of knowledge about a healthy diet, prevention of diseases and harmful addictions (p<0,05). The more often the childcare facilities and the cooperation with parents were conducted in pre-school education institutions, the better parents assessed the child's nutrition in these institutions (p<0,05).

It was found that children whose parents spend their leisure time doing active sports (p<0,05) are more active. It was noticed that according to optional leisure types, children spend 1-2 hours for active rest during working days (p<0.05). Compared to working days children spend much more time on active leisure during the rest-days. Boys are more likely to choose physically active activities (running, riding, cycling) than girls. The majority of children who do not watch TV and do not play computer games more often want to go outside (p<0.05).

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