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SELECTED INDICES OF HEALTH STATUS IN 6-YEAR-OLD CHILDREN AND THEIR FAMILIES FROM SOUTHERN POLAND

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Summary

Aim. The aim was to analyse selected indices of health status in 6-year-old children and their families from southern Poland.

Material and methods. The studied population comprised 120 six-year-old children, 64 girls and 56 boys, who attended the last grade in the preschools in Nowy Sącz and the vicinity. The children's parents filled in questionnaires on selected indices of health status of the children and their families. Statistical analysis was carried out by means of the IBM SPSS Statistics 21 computer programme. The studied population was divided according to gender.

Results. Boys were characterised by statistically significantly higher birth weight than girls, 3.5 kg and 3.3 kg, respectively. Most children, 78.0%, took vitamin and mineral supplements, and substantial percentages of the children took medicines and suffered from food allergies or other allergies, 22.9%, 10.4% and 14.7%, respectively. Substantial percentages of parents informed that there were diet-related diseases in the studied children's families: myocardial infarction was reported by 20.2% of parents, obesity – by 21.8% of parents, whereas diabetes – by 32.8% of parents.

Conclusions. The prevalence of food allergies and other allergies in the studied 6-year-old children shows the need to spread the knowledge on allergy prevention in the society, especially among future parents. The prevalence of diet-related diseases in the families of the studied children shows the need to educate parents on the principles of nutrition in the prevention of these diseases and about the role of daily physical activity in preventing diet-related diseases.

Key words: health status, children, diet-related diseases, vitamin supplements, mineral supplements

INTRODUCTION

The needs of children, concerning both physical activity and nutrition, are great due to the children's rapid growth and development (1-4). To satisfy these needs and provide adequate conditions for appropriate growth and development, educational programmes for parents and other caregivers should be worked out and implemented, as well as intervention programmes aimed at educating caregivers on how to teach the children healthy food habits and the habit of daily physical activity. However, to work out an effective educational strategy and a successful intervention programme, it is indispensable to know the health status of the children and their families. Health status provides important information about what special recommendations on nutrition and physical activity should be included.

AIM

The aim of this study was to analyse selected indices of health status in 6-year-old children and their families from southern Poland.

MATERIAL AND METHODS

The studied population comprised 120 six-year-old children, 64 girls and 56 boys, who attended the last grade

in the preschools in Nowy Sącz and the vicinity. The preschools were associated with the Nowy Sącz League of Preschools and Schools Promoting Health. All the details on recruiting the children for the study are described in the previous article (5). The children's parents filled in questionnaires on selected indices of health status of the children and their families. When analysing positive answers to the questions about diet-related diseases in the children's families, the following answers were taken into account: mother, father, grandmother, grandfather, great-grandmother, great-grandfather, aunt (but only the mother's or father's sister) and uncle (but only the mother's or father's brother). The study was approved by the Bioethics Committee of the Poznań University of Medical Sciences.

Statistical analysis was carried out by means of the IBM SPSS Statistics computer programme, version 21. The studied population was divided according to gender. Means and standard deviations were calculated for children's birth weight. This variable was also analysed using the Shapiro-Wilk statistic for testing normality. Since the variable was not normally distributed, the non-parametric Mann-Whitney U test was used to investigate statistically significant differences. The level of significance was set at $p \leq 0.05$.

Qualitative variables were presented in contingency tables. Statistical significance was determined using Pearson's chi-square test, except for the variables with more than 20% of cells with an expected frequency of less than five. In this case, the Mann-Whitney U test was used. The level of significance was set at $p \leq 0.05$.

RESULTS

Table 1 shows health status of the studied 6-year-old children and their families. Boys were characterised by statistically significantly higher birth weight than girls, 3.5 kg and 3.3 kg, respectively.

It is important to note that most children, 78.0%, took vitamin and mineral supplements, and substantial percentages of the children took medicines and suffered from food allergies or other allergies, 22.9%, 10.4% and 14.7%, respectively. It is also noteworthy that substantial percentages of parents answered that there were diet-related diseases in the studied children's families: myocardial infarction was reported by 20.2% of parents, obesity – by 21.8% of parents, whereas diabetes – by 32.8% of parents.

DISCUSSION

Mean birth weight of the studied children was adequate and similar to the mean birth weight of other Polish children (6-9). The higher mean birth weight of boys compared to girls was typical and observed also in other populations (6-9).

The percentage of the studied 6-year-olds who suffered from food allergies was similar to the percentages of preschool children from other regions of Poland: slightly higher than in children from Pabianice, 7.9% (7), and Piła, 9.1% (6), and slightly lower than in children from Darłowo, 11.0% (9). Only among preschoolers from the Mazowsze region, the percentage of those

who suffered from food allergies, 16.8% (8), was much higher than among the studied children.

The prevalence of other allergies in the studied 6-year-olds was even higher than the prevalence of food allergies. Similar percentages of preschoolers from Darłowo, 14.0% (9), and the Mazowsze region, 13.0% (8), suffered from other allergies, while the percentage of preschoolers from Pabianice, 10.5% (7), was lower. Only among preschool children from Piła, higher percentage of those who suffered from other allergies was reported, 15.8% (6).

The mountainous region where the studied 6-year-old children lived is characterised by high air pollution (10) which is considered to play a role in the development of allergies in children (11). Maternal exposure to air pollution before and during pregnancy could have been one of the factors which favoured allergy development in the studied children (11). Also, birth order is reported to have considerable influence on the onset of allergy in children with the first-born children being at the highest risk (12). As many as 64.1% of the studied children were born as the first child in the family (5).

It is interesting that the percentages of boys who suffered from food allergies were always higher than the percentages of girls: in the studied 6-year-olds and in the previously studied children (7-9), except for children from Piła (6). These findings confirm that male sex in children is the risk factor for food allergy (13). Also other allergies in the studied children were reported for higher percentage of boys than girls. In the previously studied children, other allergies were reported more frequently for boys than girls only in Pabianice (7) and Piła (6). In the general population (14), only the prevalence of allergies in general is included, without distinction between food allergies and other allergies, however, it is important to note that the percentage of boys who suffer

Table 1. Health status of the studied 6-year-old children and their families.

Variable	Girls (n = 64)	Boys (n = 56)	All children (n = 120)
Birth weight (kg)	3.3 ± 0.5 ^{1*}	3.5 ± 0.4 ^{1*}	3.4 ± 0.5 ¹
Food allergies (%)	9.7	11.3	10.4
Other allergies (%)	12.9	16.7	14.7
Taking medicines (%)	19.0	27.3	22.9
Taking vitamin and mineral supplements (%)	81.0	74.5	78.0
Familial diabetes (%)	29.7	36.4	32.8
Familial obesity (%)	23.4	20.0	21.8
Familial myocardial infarction (%)	18.8	21.8	20.2
Familial hyperlipidaemia (%)	4.7	1.8	3.4

¹mean ± standard deviation

*asterisks denote statistically significant results ($p = 0.044$)

from allergies is higher than in their female peers across all age categories from birth to 14 years of age.

The prevalence of allergies in the studied 6-year-olds resulted in quite high percentages of those who took medicines, with a higher percentage of boys than girls. This is because most of those children were treated with antiallergic agents.

It is highly disconcerting that the vast majority of the studied children took vitamin and mineral supplements. Applying supplementation with these micronutrients poses a high risk of exceeding Tolerable Upper Intake Level which is a health hazard and should be avoided. Vitamin and mineral supplementation should be applied only on the pediatrician's recommendation. In Poland, using vitamin and mineral supplementation without consulting it with a doctor is very popular. It is largely caused by advertising supplements as being good for everybody's health, especially for children.

It was very unfavourable that high percentages of parents reported diabetes, obesity and myocardial infarction in the children's families. In Poland, the percentage of people with obesity is 19% as reported in the NATPOL III PLUS study (15), the Polish national study on a representative sample of people aged 18-94 years, and 21.8% according to the results of the WOBASZ study (16), the Polish national study on a representative sample of people aged 20-74 years. The percentages of people with diabetes in Poland are 5.6% (15) and 6.8% (17) according to the NATPOL III PLUS and WOBASZ studies, respectively, and the percentage of people with myocardial infarction is 3.3% according to the Polish Central Statistical Office (14). Therefore, the prevalence of these diseases in the studied population may seem much higher than in the general population. However, it should be taken into account that a single child has several relatives which increases the probability of reporting at least one relative who suffers from a diet-related disease. It should also be taken into account that the percentages of people who suffer from diet-related diseases are not equally distributed through the age ranges and increase substantially in people aged 50-59 years, 60-69 years or 70-79 years, depending on the disease (14, 17). The studied children's parents reported those diseases mostly in the children's grandparents (either grandmother or grandfather, sometimes both). However, even if these percentages are overestimated, the children are probably highly predisposed to diet-related diseases because the region where they live is the part of the Małopolska voivodeship with one of the highest percentages of people with diabetes and coronary heart disease in Poland (14). One of the main reasons for this adverse tendency are inadequate food habits. The region where the studied children lived is known for the inhabitants' strong attachment to traditional Polish cuisine, which is characterised by high intake of red meat, especially pork, as well as butter, full-cream milk, cream,

white bread, sugar and honey. The results of such unfavourable traditional food habits are many mistaken nutritional beliefs which are reflected in poor nutritional knowledge (18-27).

It may therefore seem surprising that the percentage of parents who reported familial hyperlipidaemia was so low when taking into account the high prevalence of hypercholesterolemia in Poland: 61% according to the NATPOL 2011 study (28) and 65.5% according to the WOBASZ study (29). However, it turned out that as many as 72% of the subjects in the WOBASZ study did not know that they had hypercholesterolaemia (29). Most probably, it was also the same in the case of the studied children's relatives. Moreover, it cannot be excluded that the parents did not know what hyperlipidaemia meant. The doctors rarely use difficult medical terms when talking to their patients. Many parents did not answer this question leaving it blank or simply writing 'I don't know'.

CONCLUSIONS

1. The prevalence of food allergies and other allergies in the studied 6-year-old children shows the need to spread the knowledge on allergy prevention in the society, especially among future parents.

2. The prevalence of diet-related diseases in the families of the studied 6-year-old children shows the need to educate parents on the principles of nutrition in the prevention of these diseases and about the role of daily physical activity in preventing diet-related diseases. □

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