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EDUCATIONAL ACTIVITIES AIMED AT PARENTS AS A BASIS FOR IMPROVING THE NUTRITION OF PRESCHOOL CHILDREN

Abstract: Proper nutrition of preschool children represents one of the fundamental prerequisites for their healthy growth and development. Parents play a key role in forming healthy eating habits, while preschool institutions can provide significant support through planned activities. The aim of this paper is to examine the influence of educational activities directed at parents on improving the nutrition of preschool-aged children. The research was conducted in two kindergartens within the Preschool Institution "Boško Buha" in Belgrade, on a sample of 50 parents of children aged 3 to 6 years. A descriptive cross-sectional study was applied, using a questionnaire for parents before and after the educational intervention. The results showed that systematic educational work aimed at parents contributed to changes in attitudes and behaviors regarding proper nutrition and improvement of dietary habits. It was also found that through the interventions, parents better understood the importance of increasing the frequency of fruit, vegetable, and fish consumption, as well as reducing the intake of sugar and industrial juices. It is concluded that systematic parent education represents an important component in health promotion and obesity prevention in preschool children.

Keywords: child nutrition, preschool age, obesity prevention, educational activities

1. Introduction

When we talk about healthy nutrition, we naturally associate it with a healthy life. Alongside various external factors, proper nutrition and healthy lifestyle habits represent the foundation of maintaining the health of both the individual and society (Grad, 2002). One of the most effective methods of preventing disease and preserving health is precisely healthy nutrition, which should be adopted from early childhood. In this process, parents play a key role, while preschool teachers and educators join later, contributing to the formation of long-term healthy habits (Oudat et al., 2025). Dietary habits that a child develops in early childhood largely depend on factors such as the lifestyle of the family, the environment, and cultural norms. To adequately understand food choices, it is important to consider both cultural and social influences that shape children's eating habits. Modern nutrition science has been developing since the early 20th century, when the first micronutrients were discovered. Today, eating habits are marked by a modern lifestyle, a lack of physical activity, and excessive consumption of processed foods, which contribute to the rise of metabolic and cardiovascular diseases (Ivanović et al., 2019). Considering that food is a basic human need and that proper nutrition is essential for health and vitality, the importance of education on this topic becomes clear. Contemporary research increasingly highlights the importance of parent's knowledge as a key factor in preventing obesity and forming healthy dietary habits in early

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childhood. Studies also emphasize that, in addition to parental knowledge, sleep duration plays a significant role in the development of obesity (Dev et al., 2013). Research on the dietary habits of preschool children highlights obesity as one of the key risk factors. Statistics indicate that childhood obesity rates are continuously rising worldwide. According to the Food and Nutrition Institute in Warsaw, the percentage of overweight children has been steadily increasing since 2000. In the United States, it is around 35%, while in Europe it is about 20%. In Serbia, according to a study by Lesovic and colleagues, the rate of overweight children increased from 4.4% to 11.6% over the last ten years (Lešović et al., 2018). In year of 2023. The American Academy of Pediatrics (AAP) has issued new guidelines on proper nutrition. Among their goals are reducing visceral fat, maintaining an optimal lipid profile, and preventing diabetes and obesity, with physical activity emphasized as an integral part of a healthy lifestyle (Hampl et al., 2023). Also, in accordance with these recommendations, UNICEF advises that children's diets be diverse and include all food groups in appropriate proportions—grains, fruits, vegetables, dairy products, and fish (Stevanović et al., 2016; UNICEF, 2018).

Among all nutrition related diseases, the two most common conditions in childhood are obesity and malnutrition. An excessive intake of simple carbohydrates leads to increased fat deposits and disrupted metabolic balance (Bukara-Radujković & Zdravković, 2008). According to the World Health Organization (WHO), obesity is considered a chronic disease and one of the most significant public health challenges. UNICEF data shows that every seventh child in Serbia struggles with overweight. Globally, only 40% of children are exclusively breastfed, while the triple burden of malnutrition - undernutrition, hidden hunger, and obesity has become an increasing challenge even in developed countries (UNICEF: Children, Food and Nutrition, 2019). A study by Liu et al. demonstrated that early childhood malnutrition negatively affects children's cognitive development, while a meta-analysis by Pizzol et al. confirmed that malnourished children achieve lower scores on cognitive ability tests. On the other hand, obesity is associated with social isolation, depression, and low self-esteem (Kornilaki, 2020; Sonneville et al., 2013; Liu et al., 2003; Pizzol et al., 2021).

Despite widely available recommendations and guidelines on proper child nutrition, as well as numerous initiatives from educational institutions focusing on this topic, a gap remains between the theoretical knowledge parents possess and their practical application in daily life. The core issue lies in insufficient implementation of acquired knowledge, which directly contributes to an increased risk of obesity and malnutrition in early childhood. In their work, Nedimović and Đorđev highlight the importance of raising children in conditions that enable them to reach their full potential from education to health and nutrition (Nedimović & Đorđev, 2025).

It is therefore essential, in forming lifelong healthy habits, to consider the role of educational measures and materials intended for parents that may influence the attitudes of parents of preschool children regarding nutrition. Based on the above, this paper examines the impact of educational materials on proper nutrition that could potentially improve the dietary habits of preschool children, as well as the possibilities for applying such materials within kindergarten activities. Since the need for proper nutrition in preschool-aged children increasingly requires that preschool institutions follow the guidelines and principles of healthy child nutrition and bring them closer to the educational context through cooperation with families, activities should be directed accordingly.

This multidisciplinary approach can lead to long-term changes in dietary habits and significantly contribute to improving children's health.

The aim of the study is to determine whether the knowledge acquired through the implemented educational activities and materials on proper nutrition, according to parents, positively influences changes in the dietary habits of preschool-aged children.

The hypotheses are as follows:

1. Educational measures and programs intended for parents help them come to a better understanding and more consistent application of the principles of proper child nutrition in everyday life.
2. In the nutrition of preschool children, the application of relevant pedagogical and health guidelines is recognized (meal duration, types of food, time spent in physical activity).

2. Method

Material and Methods

2.1. Type of Study:

Research on parents' knowledge of child nutrition was conducted as a descriptive cross-sectional study.

2.2. Study Setting:

The study was conducted in two kindergartens— "Poletarac" and "Malecka"—within the Preschool Institution "Boško Buha," located in the municipality of Palilula, in central Belgrade.

2.3. Study Period:

The research was carried out from November to January and lasted for three months.

2.4. Study Population:

Children aged 3 to 6 attending the selected kindergartens, as well as their parents, were included in the study.

2.5. Research Instrument:

The study was conducted using an anonymous questionnaire that contained questions necessary for achieving the research objectives.

2.6. Ethical Considerations:

Approval for the research was obtained from the Ethics Committee of the Preschool Institution "Boško Buha." Participation was voluntary and anonymous.

2.7. Study Description:

The study included 50 participants—parents of children aged 3 to 6 attending the kindergarten. Before the research began, all participants received written information regarding the aim and purpose of the study.

In the first phase of the study, parents completed an initial questionnaire designed to assess existing eating habits of their children and their own level of knowledge about proper nutrition. Based on the analysis of the responses, the most common dietary mistakes were identified, which served as the basis for preparing educational materials for parents.

In the second phase, an educational task was carried out, and parents were given written educational materials containing practical guidelines on proper nutrition for preschool children. An educational workshop and discussion on proper nutrition in preschool-aged children was also held, lasting 1 to 2 hours.

In the third phase, parents completed the final questionnaire, in which they assessed the extent to which the educational lectures and materials influenced their acquisition of knowledge about proper nutrition for preschool children, as well as any changes in their attitudes and practices related to nutrition.

3. Results

3.1. Results of the Initial Questionnaire

Table 1. *Frequency of Foods Consumed in Meals Among Children*

Breakfast			**Lunch**			**Dinner**		
Food item	**Number of parents (n)**	**%**	**Food item**	**Number of parents (n)**	**%**	**Food item**	**Number of parents (n)**	**%**
Eggs	27	54%	Cooked meals/ soup	23	46%	Cornmeal/ semolina/ cereals	15	30%
Cornmeal/ semolina/ cereals	25	50%	Meat	30	60%	Dairy products	10	20%
Dairy products	26	52%	Pasta	3	6%	Sandwiches/ cured meats/meat	14	28%
Bread/dough/ cornbread/pies /rolls	23	46%	Vegetables	33	66%	Biscuits (“Plazma”) with milk	4	8%
Biscuits (“Plazma”) with milk	4	8%	Fish	3	6%	Eggs	11	22%
Cured meats/meat/ fish	12	24%				Bread/dough /cornbread/ pizza/pies/ rolls	27	54%
						Leftovers from lunch	2	4%

3.2 Output Questionnaire Results

Chart 1. *Weekly Consumption of Fish and Fish Products in Children from Surveyed Families*

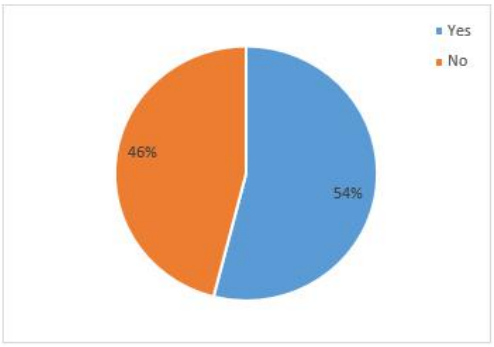


Chart 2. *Eating in Front of Screens Among Children from Surveyed Families*

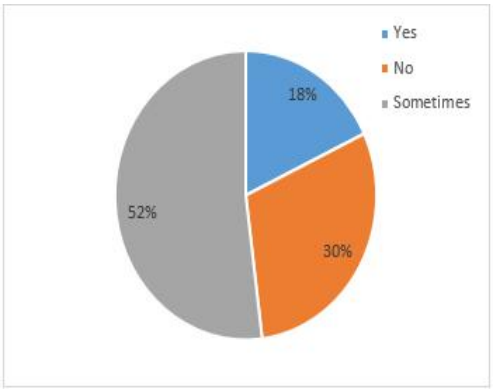


Chart 3. *Children from Surveyed Families Who Consume Fruit Daily*

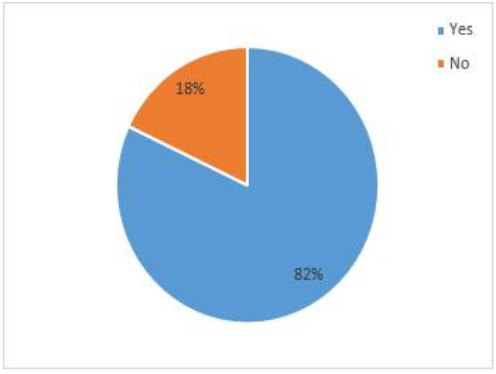


Chart 4. *Children from Surveyed Families Who Consume Vegetables Daily*

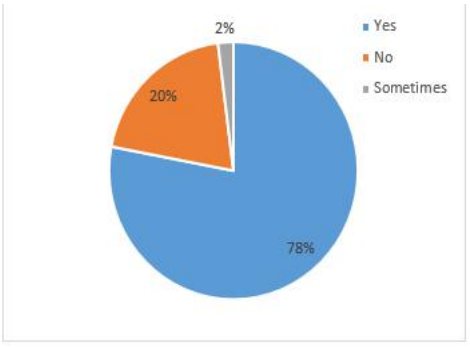


Chart 5. *Percentage of Children from Surveyed Families Who Spend at Least 45 Minutes Playing Outdoors Daily*

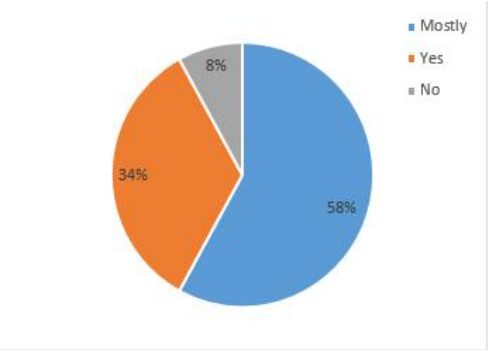


Chart 6. *Response to the Question: "What Are You Most Dissatisfied with in Your Child's Diet?"*

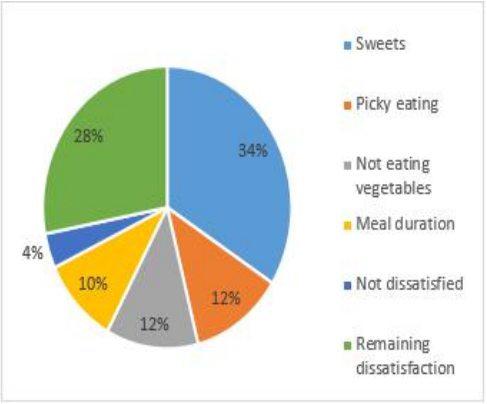
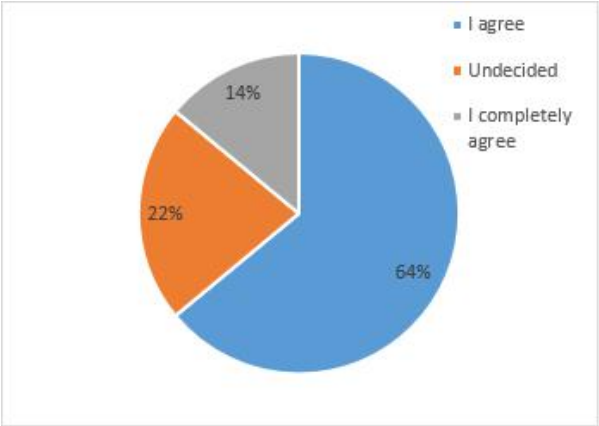


Chart 7. *Percentage of responses to the question "Do you think the knowledge you gained from the educational material had a positive effect on changing practices related to children's nutrition?"*



4. Discussion

Taking into account the frequency of foods consumed during main meals and snacks, most respondents offer food in accordance with the recommendations of the American Diabetes Association (ADA). Fish appears as a lunch option, which is a positive finding considering that our region is not Mediterranean. Although fish meals are not very frequent and there is room for improvement, the fact that about half of the children have at least one fish-based meal per week is encouraging. The recommendations of the American Academy of Pediatrics emphasize that fats should make up 20–30% of total intake, while meat, fish, proteins, and grains are more commonly consumed (Lee & Birch, 2002)

Regarding the manner in which meals are consumed, many children eat in front of screens, which is directly associated with reduced opportunities to learn proper table manners and develop social interaction skills, as well as longer meal duration. Concerning parental dissatisfaction related to their children's diet, most parents reported being unhappy with the number of sweets their children consume. It should be noted that parents and educators, through personal example and supportive activities related to proper nutrition, shape children's awareness of healthy food and social norms (Kužbićka & Rachoń, 2013; Miguel-Berges et al., 2019; Sklepić, 2015).

As for fruits and vegetables, most children consume them daily, in accordance with recommendations. Research on vegetable intake has shown that repeated exposure combined with rewards increases consumption among young children (Wolfenden et al., 2012). A varied diet in early childhood facilitates food acceptance and the development of positive eating habits. Regarding physical activity, more than half of the children spend at least 45 minutes outdoors daily, which is partially in line with expectations. Studies have shown that the amount of time children spend outside depends largely on parental attitudes and social factors (McFarland et al., 2014; Cleland et al., 2010). Increased awareness among parents and educators contributes to children spending more time outdoors, which has long-term positive effects on physical activity and social development.

The aim of the study was to assess parents' views on whether the educational materials they received contributed to changes in their children's eating habits. More than four-fifths of parents stated that the knowledge gained positively influenced their actions related to their children's diet, indicating that educational activities and interventions had significant health and pedagogical potential.

5. Conclusion

Based on the analysis of the proposed hypotheses, the following was determined:

- Educational activities focused on the principles of healthy nutrition help parents change their attitudes and practices related to their children's diet. This shows that healthcare workers in preschools, educators, and teachers can have a significant impact through professional guidance and support. As a result of greater adherence to organized pedagogical counseling on healthy nutrition and the introduction of various foods, preschools are continuously addressing the problem of excessive sugar intake. This highlights the need for pedagogical strategies that enable both children and parents to practically adopt healthy eating habits.
- Physical activity among preschool children is at a satisfactory level; however, there is space for additional engagement to increase structured and free physical activities both inside and outside the kindergarten, which support a healthy lifestyle.
- The joint efforts of educators and parents both independently and through close collaboration represent one of the most important factors in shaping healthy lifestyle habits. Through continuous educational support and collaboration, children develop lifelong healthy habits and lifestyle patterns.

Based on the obtained results, the following recommendations are proposed, with the emphasis on the pedagogical aspect:

1. Additional training for educators and staff focused on teaching methods and interventions that strengthen healthy eating habits and work with children.
2. Intensifying collaboration between parents and educators through workshops, practical examples, and everyday strategies for adopting healthy eating habits.
3. Planning weekly menus and meal preparation with the participation of educators, as part of the learning process and inclusion of children in food preparation activities.
4. Organizing games and activities that integrate physical activity with educational content, aimed at encouraging healthy lifestyle habits.
5. Continuous monitoring and evaluation of educational interventions and materials by both educators and parents.

The application of an adequate pedagogical approach, which includes interventions and educational materials aimed at improving children's nutrition, allows information on health and proper eating habits to become an integral part of children's and parents' everyday learning experiences. This creates a foundation for a healthy lifestyle.

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Biographical notes:

Marija Milovanović, born in 1986 in Sremska Mitrovica, holds a Bachelor's degree in Nursing. Since 2015, she has been employed as an associate in the field of endoscopic surgery. From 2017, she worked as a nurse at the Euromedik Health Center, and from 2018 to 2023 she served as an associate for the improvement of preventive health care in the Preschool Institution "Boško Buha," Palilula, Belgrade. In 2023, she was appointed Skills Instructor at the Preschool Teacher Training and Medical College in Vršac. Her areas of interest include preventive health care and educational work.

Milivoj Višacki, born in 1975 in Vršac, is a specialist in internal medicine and a subspecialist in pulmonology. From May 2003 to November 2019, he worked at the General Hospital in Vršac, Internal Medicine Department, in the Gastroenterology Unit. Since November 2019, he has been a lecturer at the Preschool Teacher Training and Medical College in Vršac. His areas of interest include sleep-disordered breathing, evidence-based practice, and self-help skills.

Katarina Runtić, born in 1985 in Sremska Mitrovica, is a specialist in dermatology and venereology. Since 2012, she has volunteered at the Nephrology Clinic of the Clinical Center of Vojvodina. In 2016, she became a professional consultant at the *Cim* Clinic. From November 2021 to November 2022, she was employed at a specialized dermatology practice. Since February 2024, she has been a lecturer at the Preschool Teacher Training and Medical College in Vršac, teaching dermatology, medical aesthetics, and educational work. Her areas of interest include dermatology, medical aesthetics, and educational practice.

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