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The level of nutritional values on kids aged 4-6 years old fed in the preschools of Pollog region

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Abstract. The period of preschool kids is between 4-6 years old. Kids of this age need to eat healthy, they firstly need to satisfy energetic needs then the needs of macronutrients and micronutrients following the given recommendations, from which they will improve some eating habits too.

The study has been conducted on some public and private preschools on the Pollog region when kids aged 4-6 consume 75% of the daily food on which the study is based on.

From the conducted analysis it has been proven that the energy intake of the mentioned age is matching the normative which is around 1200 kcal for 75% of daily intake, the protein intake is matching the normative and also with an excellent ratio at 1:1 of proteins of plant and animal origin, the consumption of fats is matching the normative and there is a domination of unsaturated fats which fits in with the recommendations, the intake of carbohydrates is also matching the normative but with a higher intake of monosaccharides by 20%. There has been noticed a deficit of magnesium and copper.

Keywords: preschool, Pollog, protein, monosaccharides, magnesium.

INTRODUCTION

Man has always changed nutrition habits, sometimes at best but sometimes at his own expense. These changes are influenced by social, geographical and economic factors as well as new knowledge about the use and toxicity of certain types of food or their components. Child nutrition is extremely important because inadequate food can spur improper consequences on the physical and psychic development of the child [1]. The pre-school period is a time of intensive child growth and development. It is therefore important to know what, when, and how to offer the child a proper diet. Child nutrition in kindergartens is planned and controlled by the kindergarten and out-of-school institutions [2]. Unfortunately, conditions, norms, or legal provisions are not fully implemented and fully respected in all kindergartens in the country. Consumption of a healthy diet is essential for children to ensure that they undergo normal growth and development and to prevent a variety of nutrition related health problems, such as anemia, growth retardation, malnutrition, compromised cognitive achievement, obesity, dental problems, and chronic diseases later in life [3-5]. The importance of having proper nutrition has in recent years been emphasized as a key factor in leading a healthy life and has contributed to the trend toward healthier diets [6]. Insufficient nutrition information leads to many diet-related health problems, and it is necessary for people of all ages, especially children, to provide food education to mitigate these risks. In this respect, the most important mission of parents and particularly educators is to make the best use of the resources, teach students correct nutritional habits based on sound nutritional principles, correct wrong information and habits about nutrition and transform positive practices into a lifestyle [7]. Based on scientific research, the study analyzes the proper nutrition of a preschool child, respectively by analyzing the day menus that have those nurseries analyzed possible deviations of current menus in terms of energy values and nutritional values.

MATERIALS AND METHODS

The study included six gardens, and that three gardens from the city of Gostivar and from Tetovo, of which two in the city are public and a private one. The composition of food menus with nutrients is also different. Tables 1 and 2 provide menus for nursery X for a month where the first and third week have the same food composition and the second and fourth week have the same food composition.

Table 1. The composition of food in the nursery X for the first and third week

Day	Breakfast	Between ration	Lunch	Between ration
Monday	2 pieces of bread with marmalade and a glass of milk	2 seasonal fruits	Soup with chicken, 1 plate pasta with cheese	1 pudding
Tuesday	1 plate oat with yogurt	2 banana creams	1 plate of potatoes with minced meat and salad, 2 pieces of bread	2 seasonal fruits
Wednesday	2 pieces bread, cheese, eggs and 1 glass of lemon tea and 2 spoonful of honey	2 seasonal fruits	1 plate with minced meat, 1 seasonal salad, 2 pieces of bread	1 Croissant or jogobella
Thursday	3 pieces of bread, 2 zdenk, 10 g marmalade, 1 glass of milk	100 g biscuit with 150 ml of milk	Soup with vegetables, 1 plate mished patato with minced meat and 1 seasonal salad	2 seasonal fruits
Friday	2-3 pieces of bread, 1 chicken pate with yogurt	1 Jogobela	1 plate beans, 1 plate salad, 2 pieces of bread	1 glass of sulted seasonal fruit juice

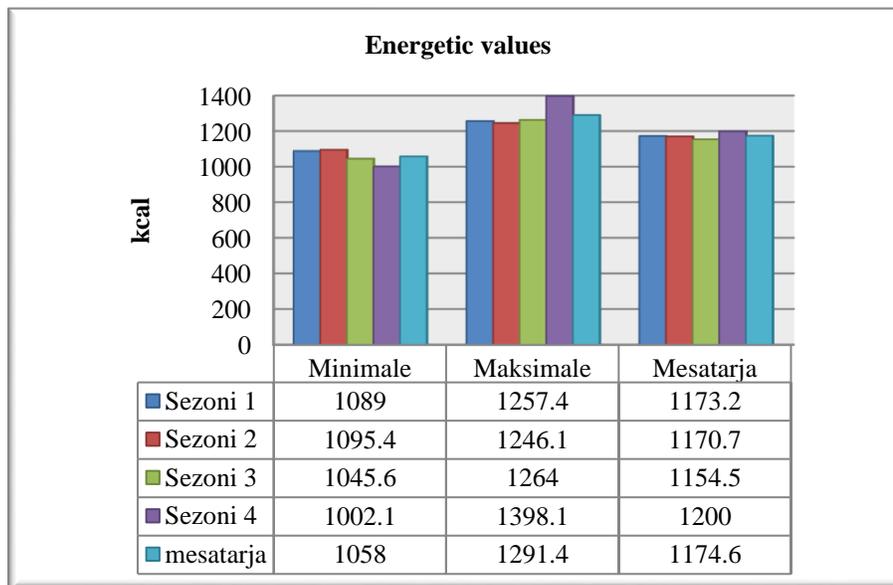
Table 2. The composition of the food in the nursery X for the second and the fourth week

Day	Breakfast	Between ration	Lunch	Between ration
Monday	2 -3 pieces of bread 10 g butter and 20 g cheese, milk	1 glass dense fruit juice	Soup with chicken meat, 1 plate beans, 1 plate salad shope, 2 – 3 pieces of bread	1 pudding
Tuesday	1 Plate polenta with yogurt	2 banana creams	1 plate of potatoes with minced meat and 1 plate village salad, 2 pieces of bread	2 seasonal fruits
Wednesday	2 pieces of bread, 25 g cheese, 2 eggs and lemon tea and 2 spoonful honey	2 seasonal fruits	1 plate goulash with rice and other vegetables, 1 mixed salad, 2 pieces of bread	Croissant or jogobela
Thursday	2 pieces of bread, 2 zdenk, 10 g honey, 1 glass milk	1 plate biscuits with milk	Soup with vegetables, puree with minced meat and seasonal salad, 2 pieces of bread	1 seasonal fruits
Friday	2 – 3 pieces of bread, 1 chicken pate with yogurt	1 Jogobela	Mixed soap, 1 fish meat, 1 salad, 2 pieces of bread	1 pancake with eurokrem

Normally the composition of the tables is different when it comes to the season when the food is consumed. While the content of the tables is calculated the daily energy content, macro-nutrient substances such as protein, fat and carbohydrates and containing mineral substances. Calculation is done on the basis of nutrition charts, while the minimum, maximum, average, and deficit or surplus is calculated in comparison with the recommended norms. The calculation was done based on tables for nutritional values.

RESULTS AND DISCUSSION

Taking nutrients for children aged 4-6 years in nurseries depends on the time the children spend in nurseries. Our study included children who should consume 75% of food in the nursery and the rest remained at home. This means that this food is also basic food and that it needs to satisfy all the nutritional needs of macro-nutrition and micronutrients. Macro nutrients are nutrients that, by their cleavage, provide energy to the organism. The macro-nutrition group includes carbohydrates, dietary fiber, fatty acids, fatty acids, cholesterol, proteins and amino acids [8]. In Graph 1, mean daily energy value is given during food consumption in the nursery 75%, from which we can observe that the average energy calculated in the seasons of the energy intake is 1174.6 kcal, which is according to the recommended norm of 1160-1200 kcal .



Graph 1. Daily average variation of energy values in the season

Table 3 shows the participation of macronutrients in daily diet of children 4-6 years in nurseries. From where we can notice that the presence of proteins is on average 31.77 g, which corresponds to the recommended daily values of protein intake of 10-15%, respectively the normative of 26.00-32.00 g. Fat participation also responds to the recommendations and every day a day consumes 41.02 g of fat in the nursery that is in compliance with the norm of 35.5 - 44.40 g, while the carbohydrate content is 174.4 g, which is also in line with the recommendations and normative of 173.2 - 179.2 g.

Table 3.Participation of macronutrients energetic daily value

	Energy value (kcal)	Proteins (g)	Fats (g)	Carbohydrates (g)
Minimum	1058	26.76	32.61	159.78
Maximum	1291.4	36.79	49.44	189.07
Average	1174.6	31.77	41.02	174.4
Deficit	0.00	0.00	0.00	0.00
Suficit	0.00	0.00	0.00	0.00
Normative	1160.0-1200.0	26.00-32.00	35.5-44.40	173.2-179.2

Table 4 shows the participation of proteins of plant and animal origin. According to the recommendations, the consumption of proteins of plant and animal origin should be in the ratio of 1: 1, meaning that, according to the participation obtained for proteins of plant origin of 15.70 g and proteins of animal origin of 16.07 g, indicates an ideal ratio of them.

Table 4. Participation of proteins with plant and animal origin

Origin of proteins	Normative .min-max	Gram	kcal	% generally of energetic values
Plant	13.00 – 16.00	15.70	62.8	5.35
Animal	13.00 – 16.00	16.07	64.2	5.40

Minerals are inorganic substances, present in all body tissues and fluids and their presence is necessary for the elements or minerals for their normal life processes [9, 10].

Calcium is a major nutrient in the human body. Food science is mainly focused on calcium in babies and toddlers [11].

Scientific evidence indicates that calcium plays a key role in bone and teeth health, to sum, that of collagen tissues [12].

Table 5 shows the participation of mineral substances in daily diet of children 4-6 years in nurseries. From where we can observe that calcium participation with 589.18 mg is at normal limits although at a minimal value, iron participation is also within the normal range of 7.5 mg, phosphorus is also at normal limits with 589.83 mg, as well as the participation of zinc is at the normal limit of 4.56 mg. Regarding the participation of magnesium it is within the normal limits of 76.17mg or with a deficit of 15.37%, as well as the participation of copper is within the limits of 0.96 mg or with a deficit of 28.7%. on the other hand the sodium content is higher than normal with 676.60 or surplus of 11.3%.

Tabela 5. Average participation of minerals substances

Minarals mg / day	Na	Mg	Ca	Fe	Cu	P	Zn
Average	676.60	76.17	589.18	7.5	0.96	589.83	4.56
Deficit	0.00	15.37	0.00	0.00	28.7	0.00	0.00
Suficit	11.3	0.00	0.00	0.00	0.00	0.00	0.00
Normativ min-max	472.0-557.0	82.5-97.5	540.0-660.0	6.75-8.25	1.12-1.50	540.00-660.00	4.50-5.25

CONCLUSION

From the results it can be concluded that children aged 4-6 years who consume nursery food receive optimal energy values with 1174.6 kcal. Taking macro-nutrients such as protein, fat, and carbohydrates is at the normal limits, and also the protein ratio of plant and animal origin is ideal with 1: 1. Mineral recovery is in most cases normal, but magnesium and copper deficits are 15.37% and 28.7%, while sodium is in surplus of 11.3.

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