

## **Investigation of the Effectiveness of Nutrition Education Applied to Preschool Children**

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### **Abstract**

This study was conducted to evaluate the 12-week nutrition education given to pre-school children during the "Let's move fun and eat healthy" project which was supported to the Pınar Institute. In order to determine the effectiveness of the nutrition activities, interview form consisting of 9 questions was developed by the researchers. 33 children were interviewed from 19 pre-school education institutions affiliated to İzmir Provincial Directorate of National Education where the project was implemented. Data were analyzed by the researchers and answers categorized. When asked children "what is the nutrition for you" children gave 35 different answers and they categorized three subjects. Children have defined nutrition as eating something, names of meals or as a name of food like apple, orange or yogurt. When we asked children for their most favorite meals they said that it is the carbohydrates. Only nine children define feeding plate truly. Most of them define it as a circle. Also only one children know the nutrition pyramid before the education. As a result of the study, we can said that 12 week nutrition education is affected children knowledge of healthy nutrition. Also teaching healthy nutrition basics in early age is important for promoting of health.

**Keywords:** Investigation, effectiveness, nutrition, education, applied, preschool, children

## Introduction

Nutrition, which has a very important place in every period of human life, is one of the basic stones of the life cycle starting from mother's womb (Şanlıer,2003). The concept of diet and nutrition in preschool period plays an important role. It also plays an important role in bringing children into an adequate and balanced way of life (Uzakgiden, 2015). Daily eating habits which have important impacts on the development of children, must be provided to get the children adopt this habit in very the first decade of their life, and this adopted habit must be maintained by refreshing it(Healthy Eating Guidelines, 2005). Education, which will form the basis of children's eating habits, should be supported by a well-equipped program in their school, as well as learning from their parents.

The results of the studies on nutrition in Turkey show that many health problems are experienced because of lack of knowledge about nutrition. In order to overcome such health problems, it is necessary to train all ages on nutrition and to emphasize the necessity of nutrition education (Baysal, 2004). Healthy and balanced nutrition information given to children in school will be a precautionary measure to prevent diseases that may occur in short or long term (Zembat ve ark., 2015).

Healthy eating habits are important for the normal growth and development of preschool children and to prevent nutrition related diseases in their future life. Some research show that the fat intake of children aged 2 to 5 years is approximately 34% of energy intake and it's above the recommended level of 30% calories from fat. Likewise,children's fruit and vegetable intake is approximately 31/2 servings per day, 11/2 servings short of national recommendations of 5 servings per day. Food habits that develop during childhood are maintained as children enter school, and the dietary choices of elementary school-aged children track into adolescence. Therefore, nutrition education during the preschool years may provide a foundation for lifelong healthy eating habits(Matheson et al. 2002).

One of the most important aims of nutrition education in preschool period is to teach children different food groups (Swadener, 1994). Studies have shown that children have problems in classifying nutrients. In addition to the difficulties that children experience in the concept of food groups, it is also stated that it is difficult to establish the relationship between food and health. (Matheson, Spranger ve Saxe, 2002).

The "Healthy Food and Physical Activity Pyramid" that we have observed in studies of abroad is based on the principles of healthy eating and nutritional diversity. Pyramide offers daily recommended consumption of portions and also reviews nutrients and nutrients that need to be consumed and reduced.

When the literature is examined, it is seen that a similar study is carried out by the US Department of Agriculture. Nutrition pyramid converted into a personalized multicolor animation is implemented as 'My Pyramide" (Palmer, 2014).

This study was conducted to investigate the effects of the 12-week healthy nutrition and mobility-training program on children in the framework of the project "Let's move fun and eat healthy" conducted by the Pınar Institute.

## **Method**

Experimental type study was done by using interview technique from qualitative data collection methods. We created 33 pre-school children studying with the contributions of independent kindergartens affiliated to İzmir Provincial Directorate of National Education within the scope of the project "Let's move fun and eat healthy".

Researchers developed the interview form from nine questions as data collection tool. In addition, a PowerPoint presentation consisting of 12 pictures was also prepared to be shown to the children during the questions. Research permit was obtained from relevant institutions. A letter was sent to the children's parents informing them of the study and to ask their consent. Children whose parents returned the signed consent forms were considered for inclusion in the study.

## **Results and Discussion**

Findings that are derived from face-to-face interviews about "nutrition", "their favorite and dislike foods", "what healthy foods are for them", "food pyramids", "nutrition plates" and "movement activities" are listed below. The interviews were made before and after the training with the same children but not all the children were reached due to the relocation or absenteeism of some children in the interviews after the training.

Table 1: Distribution of the answers given before and after the training for the question "What is the nutrition for you?"

	Before	After
Children answers	N	N
It is health	2	5
Strenghting	3	2
Growing	2	1
Saying meal names	8	6
Saying food names	10	3
No answer	2	5
Other	9	4
Total	36	26

When we asked the children “what is the nutrition for you?”, the answers were examined and it was determined that the pre-education children gave a name to the food item predominantly. After the training, the children gave a meal name and said it is health. Among the answers of the children these expressions attract attention C1 “Feel hungry”, C5 “Finished our meals”, C13 “when we feel hungry after we feel full”, Acıkınca doymak demek” C23 “My mom” C25 “Store up”.

In a study which is entitled as "A Qualitative Study of the Nutrition Information of Primary School Children and Parents in Tehran" conducted by Abdollahi et al. In 2008, it was found that 8 primary schools in Tehran, 128 children aged 6-11 years and 32 mothers, 16 children There were 20 focus group discussions, 4 for mothers. In contrast to our study, it has been determined that children have information about the advantages of different food groups, including digestion and growth, and intelligence.

Also in a qualitative study conducted by Özyürek et al. (2013) was determined that the parents of children between five and six years of age had training needs regarding the feeding of their children.

Table 2: Distribution of the answers given before and after the training for the question "What is the healthiest food?"

	Before	After
Children answers	N	N
Wholemeal cereals and breads, pasta and rice	6	3
Fruits and vegetables	18	12
Milk, yogurt and cheese	1	3
Meat, pouter, fish, eggs, beans and nuts	12	8
Fats, sugars and salt	1	2
Total	38	28

When we examined the answer of children before and after training, and children's answers changed. The answer that includes milk, yogurt and cheese options, increase after training of the children more healthily. It was found that children perceived bread and cereal group as less healthy after education. In the study "Nutritional Information and Good Food Perception between Kindergarten Children in Kenya - Kisumu District" Ayieko and Anyango in 2011 found that 39.2% of the children had accurate information about the food they needed frequently. It shows us healthy nutrition education affect children's food choices.

Table 3: Distribution of the answers given before and after the training for the question "What is the most favorite meals for you?"

	Before	After
Children answers	N	N
Wholemeal cereals and breads, pasta and rice	18	10
Fruits and vegetables	8	6
Milk, yogurt and cheese	3	1
Meat, poultry, fish, eggs, beans and nuts	5	8
Fats, sugars and salt	3	3
Total	32	28

When children were asked the name of their favorite meal, it was determined that the children answered **this question in** 5 different categories. Although the children's favorite foods before the training were 18 different versions of pastry, this rate decreased after the training. It was observed that children mainly gave answers such as pasta, potato, rice and pie. It was found that children expressed more milk and cheese from the milk, yoghurt and cheese group. Also they gave such as cucumber, carrot, apple, olive, apple, spinach from fruit and vegetable group. In the group of Meat, poultry, fish, eggs, beans and nuts the children mainly used meatballs, especially the expression "mother meatballs".

Ayieko and Anyango (2011)'s study it is confirmed that even a three-year old child possesses some discretion about food selection and few go further and have limited nutritional knowledge about the foods they eat. Although the children's knowledge is not well defined, they have an idea of what good food is and **they** can make a choice faced with several options to select from. It is similar to this study because before the training children's favorite food choices were pastry.

Table 4: Distribution of the answers given before and after the training for the question “Would you say the name of a meal you do not like?”

	Before	After
Children answers	N	N
Wholemeal cereals and breads, pasta and rice	2	6
Fruits and vegetables	17	8
Milk, yogurt and cheese	2	-
Meat, poultry, fish, eggs, beans and nuts	7	8
Fats, sugars and salt	5	3
Total	2	2
Children answers	35	

When children were asked to name the food they did not like, children were found to respond in 6 different categories. The most striking point after the training is that the child does not like milk, yoghurt and cheese anymore. Fruits and vegetables groups, especially children do not like the hot pepper is remarkable.

"The Determination of Inadequate and Unbalanced Nutritional Habits of the Students between 4 and 6 Years of Schooling" was conducted by Sumbul in 2009. When the results of the research are examined; It was determined that the consumption of daily vegetables, fruits, milk and dairy products, cereals, dried legumes, decrease in fast food and consumption of acidic beverages and increase in nutrition knowledge were found in children who were receiving nutrition education.

Table 5: Distribution of the responses to children About Food Pyramid photo before and after the training

	Before	After
Children answers	N	N
Triangle	15	9
Pyramid	5	-
It is related to sports	1	-
Castle	1	-
Usefull Foods	2	-
Something Healthy	1	-
I saw it in the School	5	6
Tells about Fruits and Vegetables	1	-
Tent	2	-
Don't know	3	2
Food Pyramid	1	13
Total	37	30

When the answers given by the children before the food pyramid education were examined, 15 expressions were triangulated while 1 food pyramid response was given. Children have defined the picture as something healthy, Castle, tent, pyramid. However, the majority are related to the formal geometric form. After the training, children's attention was drawn to the pyramid of nutrition. When describing the pyramid of nutrition, they have been identified as C18 "Healthy food triangles", C 9 "Color group foods". It has been observed that children frequently describe the pyramid of food and know their function after the training.

In the study entitled "The Effect of Nutrition Education to Children on Nutritional Knowledge, Behaviors and Anthropometric Measurements" conducted by Başkale in 2010, nutritional knowledge scores of the children in the experimental group increased after the training and the frequency of food consumption was positive according to the control group. In this study children's knowledge of the food pyramid was increased too.

Table 6: Distribution of the responses to children About Nutrition Plate photo before and after the training

	Before	After
Children answers	N	N
Circle and Round	20	11
Plate	9	8
Ball	2	-
Dont know	2	2
Streeing Wheel	1	-
Pizza Plate	1	-
Fr learning colors	1	2
Describes the healthy eatings	1	1
I did such an activity at school	1	13
Colors of the food pyramid		3
Total	38	40

When the children were presented with a nutrition plate, it was determined that they used 40 expressions in 7 different categories after the education they gave 38 different answers in 9 different categories before the training. The pre-training period, children usually describe the photo as a geometric figure by circling or rounding. It is striking that after the training the children clearly stated that they had done such an activity before they could clearly define the nutrition label. Children's nutritional labeling descriptions have been found to use the expressions C21 "Looks like the colors of the food pyramid", C9 "show the feeding groups", C12 "eating plate".

The plate illustrates the five food groups for healthy diet. When children use it they have to think before eating what they took their plate and glass.

In a survey conducted by Holub and Eizenman in 2008, nutrition information for preschool children was assessed for their answers to questions on food nutrition and their ability to create healthy, unhealthy food menus. As a result of the children's menus, it has been found that children can not make sufficient explanations about why they chose those foods.

In addition, children were presented with various photographs that reminded children of sedentary and physically active life. In this context, the use of the words "playing" mainly on children's photos, especially children's photographs using tablets, computers or mobile phones, suggests that children have more beliefs that these technological tools are for gaming purposes. It was important to have only two children using the phrase "doing business on the phone" or "doing research". In the photographs of children doing sports or cycling, it is observed that a few children whose children are focused on doing sports directly internalize these images as "I do gymnastics" and "I am cycling in summer".

In 1999, 844 children from 9 centers participated in the study conducted by D'Agostino and colleagues in 3 different regions. The study was carried out with a total of 3 groups consisting of 2 experimental and 1 control group. Participants were given different nutritional programs and nutritional information was collected by applying a pictorial knowledge test. At the end of the first year, the knowledge levels of nutritional information and beneficial foods of participating children were found to increase. It is thought that the gains that the children have achieved as a result of this study will increase their quality of life in the future.

## **Conclusion**

As a result of this study, it can be said that nutrition education given in early childhood is effective in children. While these programs are being developed, should be taken to ensure that they are designed to be game-based, reusable, allowing children to learn by doing.

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