

THE ROLE OF NUTRITIONAL EDUCATION IN PRESCHOOLERS

D.T. Anton-Păduraru¹, E. Bunea², A. Druică³, A.S. Bocec¹

Abstract

Nutritional education plays a vital role in bringing about a greater awareness of the value nutrition has in adopting a healthy lifestyle. Broadly speaking, education is transformative, providing knowledge through instruction that first acts upon the attitudes of a person and then goes on influencing their behavior. The earlier this process begins, the more effective it is. That is why the provision of training as early as the pre-school years can be viewed as a future investment, considering that healthy eating habits are formed at early ages. Nutritional education must be continuous, effective and address all family members, caregivers and educators. The aim of nutritional education, therefore, is to instruct children on how to adopt an adequate and balanced diet, create a positive attitude about the food, encouraging the acceptance of various foods, eliminate unhealthy eating habits, use food resources economically by improving nutritional conditions and preserve the well-being of the body. By providing children with nutritional education during the preschool period, their future eating habits can be shaped in a healthy manner.

Keywords: education, nutrition, preschoolers.

Introduction

The first six years of a child's life represent a period of quick physical, emotional and mental development. During these formative years, children also interact with the social environment at the most intensive level [1]. As an individual who develops within a family, a child achieves eating habits during this period of development and change that are directly or indirectly affected by the eating habits of the family; that is, the mother, father, brothers or sisters or caregiver [2,3]. The family has a decisive influence on auto-control of food intake and creation of appropriate dietary habits or not [4]. The preschool years are a great time to help children develop positive attitudes towards food and good eating habits. Teaching children to make healthy choices in the food they choose is certainly a worthwhile goal and one that will affect their lives through adulthood [1].

Furthermore, during the preschool period, inadequate and unbalanced nutrition negatively impacts the physical and mental development and learning ability of a child. This negative impact on children results in learning disabilities and failure in the period of preschool education. 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 [5, 6].

As insufficient information about nutrition leads to many dietary-related health problems, it is necessary that persons of all ages be provided nutrition education to mitigate these risks. In addition to the family, schools and kindergartens should also be tasked with the responsibility of educating children on nutrition in order to create awareness about this issue. This will help children to not only improve their physical health but to also raise their levels of achievement at school.

For children, healthy eating is learned by actively observing and doing. In providing positive food experiences, early childhood programs help children to develop an awareness of good nutrition and to develop healthy eating habits for a lifetime [7]. It is of critical importance that nutrition education be given at early ages, particularly in the preschool period, to ensure that a healthy lifestyle is maintained. It has been well-established that nutrition education programs have a positive impact on nutritional knowledge and eating habits [8].

The role of nutritional education in the development of preschoolers food behavior

The preschool period is also the time when they begin to understand that nutrition plays a major role in their lives. Nutritional education during the first years of life, especially during pre-school, is important for lifelong health, but it is also difficult to achieve. Preschoolers do not always understand what they are explaining about nutrients and the nutrient-food relationship. They may not understand the effect of food on the body [9].

¹“Grigore T.Popa” University of Medicine and Pharmacy Iasi, Romania – Department of Mother and Child Medicine, Discipline Pediatrics

²“Grigore T.Popa” University of Medicine and Pharmacy Iasi, Romania – Resident doctor

³“Grigore T.Popa” University of Medicine and Pharmacy Iasi, Romania – PhD Student

E-mail: antondana66@yahoo.com, ilinca_grl@yahoo.com, andrada.druica@gmail.com, simonadrochio@yahoo.com

The information they receive must be simple, easy to understand and memorized, such as the need to have breakfast, drinking enough water, the consumption of a variety of different color foods at each meal, the size of the servings, examples of how to measure the servings correctly [10]. Also, the information must be age appropriate and delivered in an attractive manner.

25-50% of young children have food problems, especially when exposed to new foods. These problems are a cause of stress for parents and, over time, they can even affect the relationship between parent and child - an essential component of eating behavior [11].

The management of eating disorders include:

- setting up a 3-main meals and 2 snacks plan;
- providing the second course at the main meals after the first one was finished;
- serving the meal together in a calm atmosphere and appreciating the child if he ate well;
- positive feedback about food;
- having the meal together with other preschoolers;
- inclusion of the preschool in the process of food procurement and food preparation [12].

Some authors recommend using fruit and vegetable games and drawing fruit and vegetables as useful for increasing the consumption of new foods [13]. Heath et al. quoted by Nicklaus and Monnery [14] noted that preschoolers whose parents read them books with fruits and vegetables pictures are more willing to test them, although they did not initially accept or considered them unfamiliar.

It has been noticed that preschoolers are more vulnerable to messages that lead to the development of unhealthy food preferences, such as commercials on television. This also explains the link between exposure to television and media and childhood obesity [11]. Accessibility to particular foods as well as exposure to media influence eating behaviour and food choices [11]. Watching TV programs can affect the ability of parents and the child to monitor food intake, and is associated with increased intake of unhealthy food [15, 16].

Therefore, some EU Member States have implemented regulations to reduce exposure to advertising for food and drink, to restrict their marketing not only on TV and in stores but also on the Internet (EU Action Plan 2014-2020).

Family environment influences the diet at this age. Satter quoted by Eneli and col. [17] describes the ideal food environment as the "environment in which parents decide what foods are offered, where and when they are consumed and where children decide what to eat and how much to eat".

Child's food choices depend on what they see and what is more accessible to them. Thus, limiting the access to less healthy foods may improve health and prevent disease. Parents must be a model for the child in accordance with the principle of "eat what I eat" and not "eat what I say" (2). Often parents are not informed, they do not have the necessary knowledge or are not aware of their role in the promotion of healthy dietary behaviour. Lack of knowledge regarding healthy eating leads to the purchase of

poor nutrients food, the lack of cooking skills, sensitivity to food commercials that produce imbalances in diet [18].

Broadly speaking, the mother is the one that make the choices about the child nutrition [12,3]. Responsible mothers are a protection factor against eating disorders. The ones that have regular meals with nutritionally balanced food will extend this kind of behaviour to the child as well (4,17). The increased consumption of fruits and vegetables by the mother and the lower pressure on the child is associated with a small number of picky eating children (19). Jahnke et al. investigated the behavior of 142 children aged 3-6 years and their mothers by having a questionnaire filled in by mothers. Statistical analysis revealed gender differences in the transmission of eating behavior in favor of boys (20). The father has influence over the child diet and physical activity also, therefore he must be an active participant in developing the eating behaviour of the child.

The relationship between the child and parents/caregivers is the essential component of infant and preschool food behavior [11].

There are 4 types of parents in terms of to responsibility and control:

- a. authoritatively firm, but close and accepting
- b. authoritatively – strictly disciplinary
- c. indulgent (permissive)
- d. careless [12].

Another classification divides the eating behaviour of the parents in 2 types:

- open (exercising control that can be detected by the child; example: firmness about the consumed food);
- closed or hidden (it is not detected by the child; example: not bringing to the house unhealthy foods) [19].

The eating attitude of the parents can be positive (eating together with the child, the same food that the child should eat, pleasant interaction with the child during meals, adequate portions) or negative (forcing the child to eat healthy foods and to eat more when they think is not enough, giving prizes to encourage the child to eat more food or more kind of foods, encouraging to eat all the food in the plate) [19,12].

Pressing the child both positively or negatively can negatively impact food preferences, and restrictions may increase preferences and contribution to restricted foods. Rewards under the form of food can lower the preference for the food in question and may increase the preference for foods offered as a reward, for example sweets. According to the study conducted by Orrell-Valente quoted by DeCosta and col., 85% of parents used different strategies to encourage their children to eat more food (pressure to eat more, reward, punishment, restriction of access to some foods or favorites or to all foods), which can have both positive and negative consequences [19].

Parents who allow their child to set the meal time and the ingested quantity contribute to development of food intake self-regulation, while parents who allow their child to explore the surroundings help them develop their social and motor skills [11].

Parents also have to involve the preschooler in purchasing the groceries, in selecting healthy foods and

preparing them [21]. The implication of the child in the process of cooking the meal may increase the desire to try new things, reduces neophobia and is associated with a better quality of the diet and a reduced number of picky eating children [19,22].

The preschooler must not be forced to finish all the food in his plate, nor to be criticized during the meal or in front of other children. Forcing the child to eat more than he can (the empty plate syndrome) may prevent the child from learning how to self-regulate the food intake, affects food choices and can lead to overweight/obesity or can determine the child to eat less than he needs [16,23]. Allowing the child to choose what and when to eat, the parents become more responsible to the child needs [16].

The nutritionist – the main factor in preschool care team

The nutritional education in preschool is a continuous process, a transformative one and with a continuously changing form because of the targeted public. Therefore, in a preventive medicine era, the nutritionist must provide up-to-date, accurate information and send clear messages about diet along with the need of physical activity and intervene when the eating problems occur.

It has been noticed that community-based interventions on children, parents and educators significantly increase the consumption of vegetables and low-fat milk at pre-school age [24]. Because at preschool age the child needs to ingest adequate servings, the nutritionist needs to teach the parents/caregivers, and afterwards the children, what is the correct size of the servings, and how to make changes in diet through evaluation of the size of daily servings of each food group [13].

The preschool age is defined by the manifestation of independence during meals [25], therefore the parents may encounter difficulties during the transition from toddler to preschooler and their tendency to independence can be a barrier to collaboration [26].

The nutritionist should teach parents to encourage the acceptance of a new food that should initially be given along with a favorite food, then separately. Eating together with the child helps them try new foods and communicate the feeling of hunger or satiety [11]. The acceptance of a new food requires 8 to 10 attempts. Growing up, it has been noticed that repeated exposure to new foods increases the rate of acceptance only if the food is tasted, the visual exposure is not enough at age 2-5 years [14]. If the parents give up after 5-6 attempts and conclude that the child dislikes that food is an error that can lead to unnecessary food restriction. De Sousa Maranhao and col. have studied the prevalence of eating disorder at 301 preschool children from kindergartens of north-east of Brazil through a questionnaire filled in by the mothers. Of them, 37.20% had food disorders from which 25.40% had a selective food intake and they concluded that the mother, as well as the mother-child relationship, have an important role in preventing such disorders [4].

Neophobia (the fear of accepting a new food) can be genetically determined, can be related to parental neophobia, or may be related to the child's sensory hypersensitivity. Most often, neophobia is associated with lower consumption of fruit and vegetables. Thus, it can be associated with constipation, probably due to the low fiber content of the diet. It has been noticed that those children that were breastfed and who received increased amounts of vegetables at the time of diversification, eat more vegetables at the age of 6 years. At the same time, the presence of neophobia at 4 years predicts the desire/acceptance of all foods. If preschoolers of 3-5 years offer food they do not like to colleagues who accept that food, then their preference for that food may also increase [27]. As an expression of neophobic behaviour, fruits and vegetables are the most frequent refused foods [13,23]. The neophobia can be prevented by repeatedly offering a wide variety of foods, parents having the meals together with the child, without pressing the child to eat the new food, offering food that is easy to eat (using the hand), rewarding the child with attention, not sweets and sweet beverages [12].

Likewise, the nutritionist needs to teach the parents to read the labels for finding the nutritional content of the food that help them to make healthy decisions. Beside the quantity of macro- and micronutrients/100g as much as important is the content of additives or sweeteners that have numerous side effects.

Another task that must be fulfilled is that the nutritionist needs to provide information and offer guidance regarding cooking methods. It has been noticed that home cooked meals offer a better intake of nutrients [16]. The recommendations are to use a variety of cooking methods: boiling, cooking in the oven, steaming and only once/week frying and adherence to food hygiene rules in preparing meals.

An important issue that the nutritionist must cover during the nutrition education sessions is the risk of aspirating food in the airways. This risk is present at all ages, but it is higher for the small child. The parents must be informed about the appropriate age for children to eat solid foods and the risk can be minimized by careful supervision of the child by parents/educators during the meal, serving the table in a sitting position, not running around the table or play while eating, eating small pieces of the food that may be aspired (grapes, watermelon, apple, celery, carrot, popcorn, cherry, parsley, sausage), avoiding chewy foods (plums, peaches, nectarines) or fibrous foods (celery, raw pineapple) or peeling/removing fibrous parts [12,16]. Also, the possibility of food allergies (nuts, strawberries, kiwi, egg, cow's milk, gluten, sesame, etc.) of the preschool child is another fact that the nutritionist should discuss with parents [16].

The role of the nutritionist is also to prevent the occurrence of eating disorders that are common in the child and may have multiple causes (physical abnormalities, neurological diseases, metabolic diseases, appetite suppression disorders, picky eating, etc.) [28]. The picky eating (selectively) behavior can be determined by factors

such as parental pressure to eat, child's personality, different parenting practices, eating habits, social influences, diversification under 6 months, late introduction of foods to be chewed. There is no single accepted definition of picky eating. It is considered "the consumption of an inappropriate variety of food through the refusal of an increased number of familiar and unfamiliar foods" or "restrictive food intake, especially of vegetal and high preferences (including specific methods of preparation) that cause parents to give a different kind of food to the child than other family members "or" eating a small amount of food in the diet, refusing to try new foods, limited supply of vegetables, special food preparation "[29,30,31,32]. It has been observed that these children have a higher caloric intake or eat more dense energy foods, which leads to a decrease in the consumption of other foods (fruits, vegetables, whole grains) and to the disruption of the diet.

Nuria de la Osa and col., studied food problems through a questionnaire, (food refusal, food selection, neophobia, fussy eating, picky eating, low appetite, low interest in food) in 622 children aged 3- 5 years and the association between eating behavior and parental habits. The authors concluded that the diet and behavior of preschoolers should be one of the main concerns of parents and health care providers, as more than half of children experience such a disorder [33]. The nutritionist may encounter difficulties in communication with parents because they are either too busy and do not find time to talk, either consider the discussion with the child to be priority or are not receptive to nutrition education materials. However, the relationship between the parents and nutritionist must be based on mutual respect with positive communication, conflict avoidance in order to ensure child health [34].

There is an increased number of preschool age children with dental caries, therefore the cariogenic foods must be known by parents: high-grain cereal food products (pretzels, chips, crackers) causes the oral pH to drop below 5.5, desserts, candies, sweet drinks of fruit or not, ice-tea, soda, sugar, honey, corn syrup. Cariostatic or anti-cariogenic foods do not cause a decrease in salivary pH below 5.5: food proteins from eggs, fish, meat, beans, soybeans, peas, nuts, peanuts; fats, sugar-free chewing gum; fresh vegetables; dairy products [35].

Beside the time spent at home, the preschoolers spend time separately from the family at kindergarten and it is therefore important that the food received to be nutritionally appropriate because the meals served in the community can make a significant contribution to the development of healthy eating behavior [36]. Various studies mentioned in Sisson's work [37] revealed that preschoolers consume more fruit and vegetables and dairy products with moderate fat content at lunch at the kindergarten than they consume at home-served dinner.

At kindergarten the educators are responsible to make healthy food choices for the children, but Osman Galal, The General Secretary of the United States International Nutrition Union [38], noted that many of the teachers did not know the link between nutrition and cognitive function.

Given that 81% of pre-school children in developed countries attend kindergarten and spend a lot of time in collectivity, it is important for the nutritionist to improve both the educators' knowledge and the quality of the meals served in the kindergarten by limiting access to less healthy food [39]. If the child spends about 8 hours in kindergarten, he has to consume 1/2 of his daily needs in kindergarten. The difference should be consumed at breakfast and dinner. If he spends 4-7 hours a day in kindergarten, the preschool must consume 1/3 of the recommended daily ration (RDR). Usually in kindergartens, snacks do not contain fruits and vegetables, which can lead to a reduction in their daily number of meals containing fruits and vegetables [40].

Attending kindergarten influences the eating habits, and the influence of friends, colleagues, the media and marketing become greater [16,19]. Food marketing is a major factor influencing the child's diet by using different ways of transmitting messages (cartoons, toys, etc.). Exposure to unhealthy food during TV commercials will be associated with increasing preferences for advertised foods [25].

In 2015, under the coordination of WHO, the European Network for Reducing the Marketing Pressure on Children was established. The purpose of this network is to develop public health policies that restrict marketing to 17 categories of foods that should not be advertised among children. In Romania, in 2017-2018, the National Health Assessment and Health Education Program aims to improve health by promoting a healthy lifestyle and combating the main risk factors [41].

Nutritional education programs for preschool in Romania and their outcomes

1. "Traista cu sănătate" (Health-filled Bag)

The "Traista cu sănătate" program was launched in Iași in 2012. It is an educational program dedicated to children and their families, and it promotes a healthy lifestyle while respecting local traditions. It is based on scientific evidence and it is coordinated by experts from the "Grigore T. Popa" University of Medicine and Pharmacy of Iasi. It is recognized internationally, being included in the largest organization for the fight against pediatric obesity, EPODE International Network (EIN), along with programs from over 25 countries [42].

In this program, children learn about the elements of a healthy lifestyle, helped by a bag (The Bag of Health). Together with characters from fairy tales, children discover healthy eating. The educational materials are handbooks, worksheets, teaching boards, games and movies.

2. "Sănătos de mic" (Healthy since early age)

"Sănătos de mic" is a nutrition education program in kindergartens that includes training nutrition educators to teach this knowledge to preschools, parents and kindergarten staff, through healthy nutrition courses and workshops.

The results of the pilot project in 2017 were:

- elaboration of the preschool nutrition manual by the SAMAS Association in collaboration with the

representatives of all specialized institutions, as well as the manual of psycho-pedagogy.

- specialization of 12 medical staff (dieticians, kindergarten nurses, SAMAS perinatal educators) in the pre-school nutrition with a component of psycho-pedagogy.

- conducting the pilot project in 3 kindergartens in Bucharest by courses and workshops with teachers and kindergarten staff, cooking workshops and other teaching methods suitable for children, theater plays on nutrition for children in every kindergarten.

- analyzing the menu from kindergartens;

- completion by the parents of the questionnaire "Children's food habits"

- developing the Parents Guide for Pre-school Nutrition [43].

Conclusions

The personality of a child is largely shaped during the preschool period, and the behavioral habits that are formed during this period will go on to impact adult behavior. Therefore, the eating habits that a child acquires during the preschool period will be brought to bear on their future stages of life and, given that they have adopted healthy habits, be effective in preventing various nutritional problems in the future.

Good nutrition and healthy eating habits build a healthy foundation for children.

Nutritional education should be provided at every stage of the formal and informal education, to all people that are in contact with the child, including family, caregiver, educators, kindergarten staff.

Conflict of interests

The authors report no conflicts of interest.

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Correspondence to:

Elena Bunea
 Grigore T.Popa" University of Medicine and Pharmacy.
 16, str. Universității, Iași, Romania
 Tel. +40742415430
 E-mail: ilince_grl@yahoo.com