Playful Learning Paired with Age-Appropriate Educational Reinforcement Can Affect the Food choice of Pre-K Children in a Simulated Grocery Shopping Activity

**Keywords:** Pre-K nutrition; Playful learning; Children’s food choices

**Abstract**

This study tested the benefits of a six-week, age-appropriate nutrition education program directed toward the food choices of Pre-K children ages 3 to 5 years. While it is well known that children learn through play, the researchers investigated the utility of play in teaching Pre-K children to make wise food choices. A mock grocery store was created and equipped with a child-sized shopping cart, play money, and child-sized cash register along with a wide selection of foods typically found in a supermarket. A classic pretest/posttest design was used in which each child was given a chance to “shop” and select any five items of their choice. The pretest shopping experience was followed by a six-week nutrition education program delivered in the form of puppets, stories, songs, and discussions of good foods and “sometime foods”. Following the nutrition education program, the children were again given the chance to “shop” and select five items of their choice. Pretest and posttest food choices were evaluated for any potential trends or changes in the children’s food choices.

**Introduction**

The concept of play as a mechanism for learning in children has been widely researched [1-3]. Since play is undoubtedly a favorite activity for children, it is believed that optimal learning takes place in the play environment. Not only is play fun for young children, but it is also challenging. It can stimulate intellect and imagination in numerous ways and can aid youngsters in discovering things at a comfortable and non-stressful pace [2].

According to the National Association for the Education of Young Children (NAEYC), play results in cognitive, social and emotional benefits. NAEYC’s position statement, “Play is an important vehicle in the learning process of children, no significant studies were identified that examine the use of play as a mechanism for learning about nutrition in preschool populations. In addition, much of the available information concentrates on using theoretical constructs [8] to teach nutrition to preschool children or the evaluation of nutrition education programs [9] involving caretakers of small children. The bulk of the available statistical data on the efficacy of nutrition education programs is conducted with older subjects. In a study conducted with fourth graders, DeVault et al. utilized a pretest/posttest design to determine the efficacy of It’s All About Kids, a six-week school-based nutrition education program [10]. Results indicated that the intervention groups showed significant improvement in nutrition knowledge. In a similar study conducted by Wall, Least, Gromis, and Lohse [11], comparing vegetable-related attitude, self-efficacy, preference, and knowledge of an intervention group versus a control group in fourth grade students, it was determined that “a defined intervention” can have a positive effect on vegetable intake.

It's All About...
Materials and Methods

A convenience sample of twelve pre-school children (7 males and 5 females) ages 3 to 5 years, attending a half-day child study program at a regional university, participated in a study to test the effect of a nutrition education program on the subjects’ food choices. A classic pretest/posttest design was applied to measure changes in food choices after a nutrition education intervention.

For the pretest component of the study, a mock grocery store, offering a wide variety of foods and beverages, was set up in a location adjacent to the child center.

Each child was given an opportunity to “grocery shop” and instructed to choose any five items from the mock grocery store. The food choices of each child were recorded and evaluated for the following nutritional components: kilocalories; grams of carbohydrates; grams of fiber; grams of fat; and servings of fruits and vegetables.

The intervention component of the study consisted of a six-week nutrition education program (delivered in 15 minute increments for a total of 1 hour per week and 6 hours total over the six week program) introduced in an age-appropriate format using puppetry, stories, and songs designed by the researchers. Emphases were placed on the health benefits of: consuming low fat and low sugar foods; increasing foods with fiber; and increasing intake of fruits and vegetables. In addition, examples of foods chosen by the subjects in the pretest component of the study were identified as “good choices” or “sometimes foods” (foods that should be consumed occasionally).

During the posttest component of the study, the mock grocery store activity was repeated, and the children were instructed to choose five items. Once again, the food choices of each child were recorded and evaluated for the following nutritional components: kilocalories; grams of carbohydrate; grams of fiber; grams of fat; and servings of fruits and vegetables. This part was followed by comparison of the nutritional components of the pretest food choices versus the posttest food choices.

Statistical Analysis

A paired t-tests was used to evaluate differences in mean pretest and posttest nutritional data with the same group of children. The level of significance established at p≤0.05. The data was analyzed using SPSS, Statistical Package for Social Sciences, Release 22 (2013, SPSS, Inc., Chicago, IL) [12].

Results

The six-week study included twelve children (7 males and 5 females) of average age of 3.83 with a range of 3 to 5 years. The majority of children were Caucasian (83.3%) with 16.7% children of mixed ethnicity. During the study, the children participated in a mock grocery shopping activity, selecting items from a wide variety of typical supermarket foods for their shopping carts (baseline pretest) followed by a six-week follow-up (posttest) after the nutrition education intervention. Nutritional content of the children’s food choices is presented in Table 1. Comparison of pre- and posttest nutritional data with the same group of children. The means found a significant decrease (p≤0.05) in Calories (203 kcals) and fat (12 grams). Although not significant there was a decrease in total and simple carbohydrates of 17.6 and 3.1 grams, respectively. The children were not able to distinguish high-fiber foods. It is worth noting the children did increase selection of fruits and vegetables with 50% (n=6) choosing 2 or more foods posttest vs 17% (n=2) pretest.

The results show that nutrition education is effective in teaching young children healthy food choices while grocery shopping.

Discussion

Overall, the results of this small pilot study are promising and suggest that age-appropriate nutrition education programs may be effective with regard to improving the food choices of preschool children healthy food choices while grocery shopping.

Table 1: Nutritional Analysis of Children’s Food Choices for Mock Grocery Shopping Activity.
children. The nutrition education program appears to be particularly effective in teaching children to choose foods with fewer calories and fewer grams of fat. In order to fully validate these findings, additional studies utilizing a larger sample is necessary.

References


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