



Nutritional training to students for developing proper food choices and habits

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Abstract

In this study, simple random sampling method was used; a questionnaire was applied to obtain information on current nutrition knowledge, eating behaviors and related habits of students. Research data were obtained from 263 primary, 236 secondary school and 286 university students. The results of questionnaire applied before and after nutrition education. The regular breakfast habit that was high in the primary school period, but it was decreased towards the university. Breakfast was skipped meal depending on increase either the age and education level. The young adolescents do not have three regular meals daily. University students consumed healthy foods less than at the required level, also they had selectivity in eating vegetables, and consumed food unconsciously or skipped meals, and its result is malnutrition or inadequate nutrition. This study demonstrated that participant students in the research improved dietary pattern and related behaviors after a theoretical nutrition education training. Reductions in morbidity and mortality associated with lifestyle diseases may be achievable if satisfactory nutritional practices are adopted in early life and maintained in the long-term.

Keywords: Nutrition education; food; students; habits

1. Introduction

Today, it is known that nutrition plays a key role in the prevention of many chronic diseases such as cardiovascular diseases, many types of cancer, obesity, hypertension, diabetes, allergic diseases, osteoporosis and tooth decay (Deshpande, Basil & Basil, 2009). Reductions in morbidity and mortality associated with lifestyle diseases may be achievable if satisfactory nutritional practices are adopted in early life and maintained in the long-term. Being physically and mentally healthy at every stage of life and maintaining the health are possible with adequate and balanced nutrition (Gracey, Stanley, Burke, Corti & Beilin, 1996; Yurtseven et al., 2014). Research conducted revealed that insufficient and unbalanced nutrition-related health problems resulted from the lack of knowledge and mistakes made in practice rather than economic difficulties. Chronic diseases usually occur in adulthood, but the foundations lay in childhood and teenage years (Özmen et al., 2007). Van Cauwenberghe and colleagues (2010) tried to systematically review the evidence for effectiveness from studies conducted across Europe on school-based healthful diet promotion among children and adolescents on changes in nutrition behaviors and body composition. Their search strategy was

designed to be inclusive and focused on three key elements: population (e.g. children and adolescents); intervention (e.g. school-based); outcome (e.g. diet and nutrition). The evidence was found that educational interventions in school-aged children and adolescents can improve dietary behavior. Educational institutions were thought to be the right places to take the first step towards the creation of public awareness and enabling individuals to gain healthy and adequate eating habits.

One of the most important needs of a community is health. Health is one of the most important elements of the development, progress and peace of the community. Eating habits acquired in infancy, childhood and adolescence periods, when particularly rapid growth and development processes take place, is important for an individual's adequate, balanced and healthy nutrition. Nutrition habits of the young community which will be an important human resource of the future are not well known (Orak, Akgün, & Orhan, 2006). Silveira et al., (2011) evaluated the effectiveness of school-based nutrition education in reducing or preventing overweight and obesity in children and adolescents. The results were

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shown that interventions in schools to reduce overweight and obesity, as well as to increase fruits and vegetable consumption, have demonstrated effectiveness in the best-conducted studies. The information provided on foods and nutrition is not always understood well by young community. Therefore, ways in which information is communicated have to be considered very carefully (Sanco D4 European Commission, 2001; Sovyanhadi, & Cort, 2004). The purpose of this case study was to examine how school levels of students

have influenced to nutrition knowledge, eating habits and food preferences by the nutrition education.

The purpose of this case study was to examine and understanding of the nutrition education impact on eating habits, food preferences at the different profiles of students' age and educational level. Our aim also was to improve nutrition-related behaviors of participants, and develop an approach between education and students.

2. Materials and Methods

In this study, the students of elementary, secondary and higher education schools were selected as the target group and it was conducted as a cross-sectional research in 1 faculty and 1 academy, 4 high schools and 4 elementary schools that are in Bilecik, Turkey during the 2007-2008 academic year. Research objectives were to develop correct eating habits of the school-age children, the young and the adolescents in Bilecik Province, and, in accordance with the previously mentioned objectives, provide face-to-face information for them to take proper nourishment and survive a quality life.

Questionnaire interview were conducted to gather information such as demographic information, nutritional habits and dietary consumption of the students by a self-administered questionnaire. The

main studies conducted under the project; 1- Meetings were held with officials from Provincial Education and Provincial Health Departments. 2- Target groups and educators group were determined. 3- Educational materials for target groups (training CD, leaflets) were prepared. 4- A survey was conducted again for target groups to determine whether the training given before and after education was useful. The target group was divided into 3 groups; 7-12 age groups was determined as primary education, 12-17 age group was determined as adolescent, and 17-24 age group was determined as university group. 5- In addition, in order to deliver the project to a larger audience, 750 brochures that were prepared for 3 different groups and included information forming the basis in the survey for the target groups were distributed.

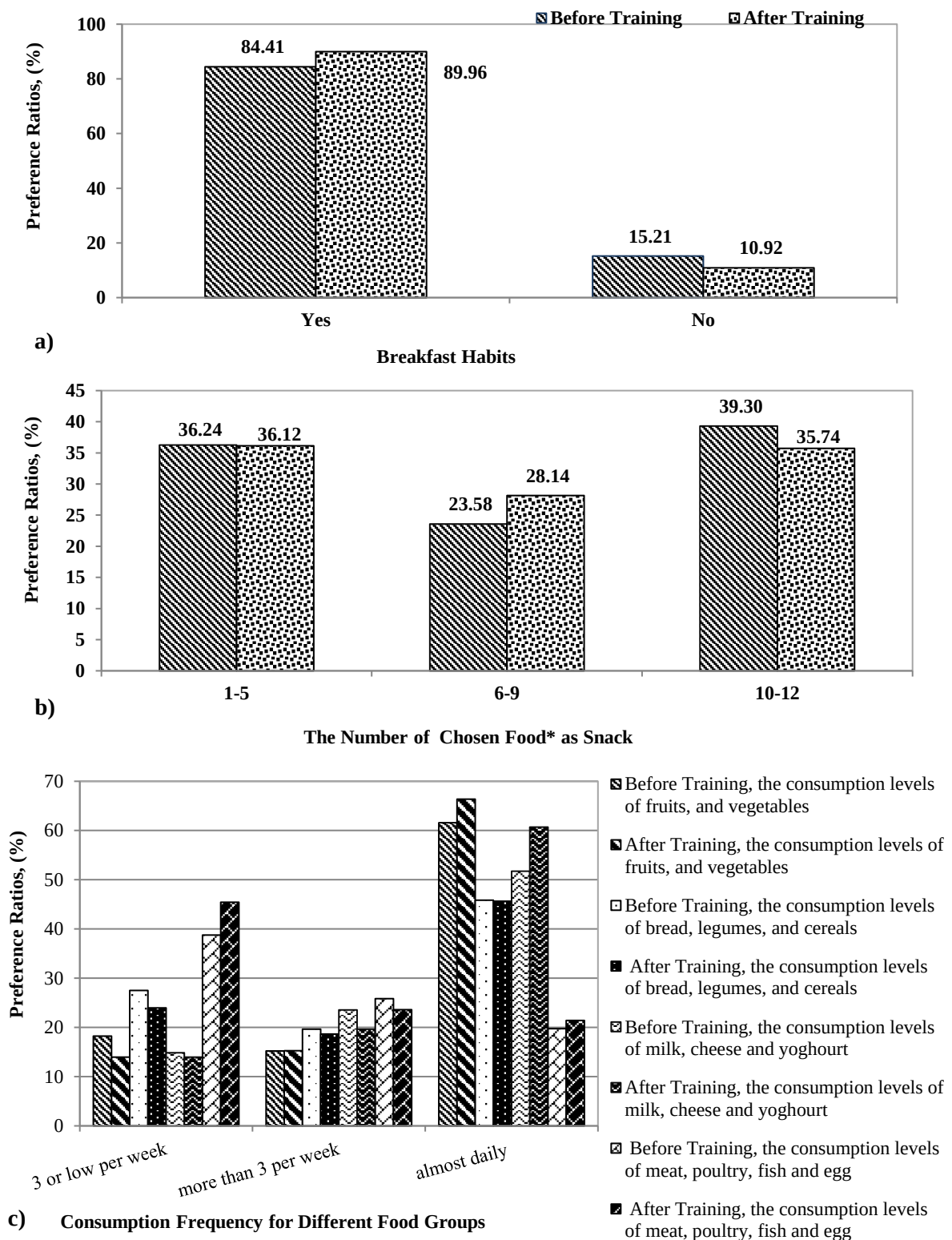
3. Results and Discussion

In research articles, findings should be given here and the above mentioned principles should be considered questionnaires prepared for different levels were applied to the elementary, high school and university students respectively both before and after the informational presentations about the nutritional profile of the food and dietary guidelines. Findings and results obtained from this study are presented below.

A healthy breakfast for primary school improves concentration, behavior and learning in school. It also improves children's social skills and helps mediate against obesity (Adolphus, Lawton, & Dye, 2013; The Health Promotion Unit, 2003). Many students at primary education in Bilecik, Turkey have the habit of making breakfast. As it can be seen in Figure 1a, a further increase in this ratio was

achieved by the education given. The reason for not having breakfast was explained as going to school too early and reluctance. Students were asked to choose among the food items at normal portions that they can have in their school bags: "Yoghurt, spreadable cheese, sliced cheese, boiled eggs, bread or sandwich bread, unsalted nuts, dried nuts and fruits, salads, fresh fruit, processed meats, water, milk, fruit juice."

Depending on their chosen alternatives their daily adequate nutritional status can be understood. According to the number of food they choose; 1-5 was determined as very inadequate, 5-9 was determined as adequate and controllable level, and 9-12 was determined as an indicator of gluttony.



*1.Yoghurt, 2.spreadable cheese, 3.sliced cheese, 4.boiled eggs, 5.bread or sandwich bread, 6.unsalted nuts, 7.dried nuts and fruits, 8.salads, 9.fresh fruit, 10.processed meats, 11.milk, 12.fruit juice.

Figure 1. Training effect to students at the primary school, for a) the breakfast habits, b) the choosing as snack alternatives, and c) alternative consumption as main course.

As it can be seen in figure 1b, most students' preferences were at gluttony level; these preferences were decreased by the education given. There is also evidence that early diet affects children's ability to think and perform in the long term. This suggests that appropriate early childhood diets can be important for subsequent school outcomes (Adolphus et al., 2013).

The Food Pyramid was used as the basis for healthy eating training. Eating a variety of nutritious foods means consuming different food types in appropriate amounts as the food pyramid (Feinstein et al., 2008). An increase in the consumption levels of meat and its derivatives, fruits, and vegetables that are quite important for the mental and physical development of students at primary education age was achieved, while bread, legumes, and cereals consumption was reduced (see Figure 1c). The level of food intake was substantially and positively associated with children's food preferences as similar as the result of the research by Fu, Cheng, Tu & Pan at 2007.

Eating habits throughout life are established at a young age. Therefore, learning to choose different foods in childhood provides the foundation for

healthy food choices in adulthood (Fu et al., 2007). Nutrition education for adolescents should incorporate self-efficacy, relevant health values and barriers-to-change, education about nutrients, and improved access to healthy foods. Healthy eating related negatively to television watching and positively to self-efficacy, nutrition knowledge, considering weight control and well-being as important, and having influence over foods at home.

Questions also asked whether regular meals were how many times in a day and whether individuals were consist of or included of meat or fish or chicken. Additional questions assessed consumption of breakfast menus with drinks and, the amount of television watching and computer using time in a day. With the education given, the time spent with television and computer by 12-17 age groups was able to be reduced (see Figure 2).

Preferences of food and related behaviors are established in early times of adolescence. But people made more and more independent eating decisions during the university days. (Deshpande et al., 2009; Papadaki, Hondros, Scott, & Kapsokefalou, 2007).

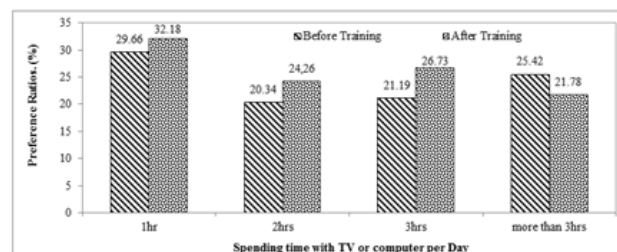


Figure 2. Training effect to minimize passive action time for adolescent group.

More than 3 hours spent for these activities have an effect of reducing physical activity and socialization, prompt to a passive motion in the individual, and this will lead to weight gain and slowly grown up (Table 1). After the training given for accurate food and balanced nutrition consumption, both the number of meals and right breakfast choice were achieved, and the awareness necessary for the realization of the right level of weekly meat or meal with meat or derivatives of meat consumption was developed (Table 1).

A greater percentage of university students consumed sugary foods like as candy, dessert compared to fruit and vegetables. It is observed that, with the health nutrition training given to university students, daily fruit and vegetable consumption increased from

36.7% to 46.2%, and the consumption of sugary food declined from 91.7% to 88.7% (see figure 3a).

Some positive changes occurred in the breakfast drinks (i.e. while decreasing in tea and caffeinated drinks consumption, milk and fruit- vegetable juice consumption was increased), after the food training given to university students. There was a relationship between nutrition training and attitude. This statement was also supported by figure 3b which indicated that nutrition knowledge and attitudes are significant and positively correlated; that was, the more the knowledge about nutrition the greater the positive attitude towards it. The diet consists of foods that are easily digestible and mildly seasoned. Fried foods, highly seasoned foods and most raw or gas-forming fruits and vegetables are eliminated.

Building a meal plan consisting of easy-to-digest foods helps relieve digestive stress (Rees-Parrish & Keith-Ferris, 2005).

Table 1. Effect of training to choices of meal and alternative food of Adolescent students

Meal per day	Before Training (%)	After Training (%)
1	1.49	-
2	7.92	6.36
3	84.16	80.08
5	11.39	12.29
Alternatives of breakfast menu		
Cheese, olive, tomatoes, milk	52.12	59.90
Egg, jam, tomatoes, milk	23.73	22.28
Molasses with tahini, orange juice	7.20	7.43
Toast, chips, tea	16.10	15.35
Meat or meal with meat or derivatives of meat per week		
None	8.05	4.46
1 day	17.80	17.33
2-3 days	52.54	66.83
4 and more than 4 days	15.25	15.35

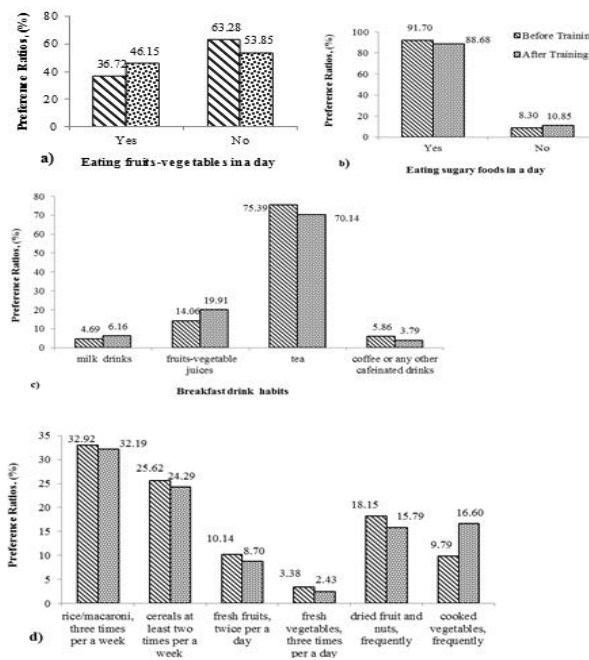


Figure. 3. Training effect to university students a) in daily consumption ratio of fruits and vegetables, b) sugary foods consumption ratio per day, c) breakfast beverage alternatives, d) consumption preferences of the digestible foods.

This information and training indicated that learning facts about nutrition and digestible foods were achieved favorable changes in food habits for university students (Figure 3c and 3d). Some research has shown that the most important factors predicting food selection were: taste, cost, nutrition, convenience, pleasure, and weight control (Deshpande et al., 2009).

4. Conclusions

The simple random sampling method was applied in this study, and the questionnaire was applied in order

to obtain information on current nutrition information, eating behaviors and nutrition habits of male and female students. In the study conducted by Önder, Oğuz, Özben, Attila, & Oral in 2004, it was expressed that knowing nutritional habits and determination of the relationship of these habits with economic, socio-demographic factors and health were guiding to the understanding of causes and consequences of nutritional habits. The students at a lower socio-economic level in the study, on which the study was conducted, were more likely not to have breakfast regularly. In the studies conducted, it was observed that the regular breakfast habit ratio that was high in the primary education age gradually reduced towards the university age (Önder et al., 2004; Mazıcıoğlu & Öztürk, 2003). Breakfast, which is the most important meal of the day, can be said to have become a meal skipped depending on the intensity experienced in parallel with the increase in the age and education level. The majority of university students studying in a place away from their families had difficulty in making the right choice when they first had the responsibility to prepare and buy their meal (Papadaki et al., 2007). However, the regulations introduced for fast-food nutrition at primary schools and high schools and the ban on the sale of this food were a few of the important measures (Ceylan & Turan, 2008). While

healthy and proper eating habits of adolescent and university students showed a negative change with the increase of time they spend in front of TV and computer and the use of alcohol, they started a conscious nutrition and doing sports when they had gained an objective to have a shaped and strong body (Tanrıverdi et al., 2011). Young adolescents were observed not to have three meals a day regularly. On the other hand, high school students were observed not to have a habit of doing regular exercises (Orak et al., 2006). It was understood that, although university students of the 17-24 age group, which is known as the transition to adulthood period, had main nutrition elements, they consumed milk and egg products that will positively affect their growth less, they were selective for vegetable meals, they had unconscious, insufficient and unbalanced nutrition habits with skipped meals (Turconi et al., 2008).

Knowledge about healthy food choices can be a predisposing factor for the adoption of a healthy diet but it is insufficient to motivate healthy eating and psychosocial factors must also be considered (Gracey et al., 1996). The results of the surveys conducted before and after the nutrition training showed that the nutrition education made improved healthy eating the types/amounts of foods to healthy habits and behaviors in future.

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