T.C.
YEDİTEPE UNIVERSITY
INSTITUTE OF HEALTH SCIENCES
DEPARTMENT OF NUTRITION AND DIETETICS

THE EFFECTS OF PEER-LED NUTRITION MODEL ON NUTRITION KNOWLEDGE AMONG ADOLESCENTS

MASTER OF NUTRITION AND DIETETICS THESIS

ECE ÖZBEKKANGAY

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DECLARATION

I hereby declare that this thesis is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which has been accepted for the award of any other degree except where due acknowledgment has been made in the text.

26/02/2020

Ece Özbekkangay

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LIST OF SYMBOLS AND ABBREVIATIONS

RDA	Recommended Dietary Allowence
AI	Adequate Intake
ABBID	Adölesan Beslenme Bilgi Düzeyi
SD	Standard Deviation
STDs	Sexually Transmitted Diseases
HIV	Human Immunodeficiency Virus
AIDS	Acquired Immune Deficiency Syndrome
WHO	World Health Organization

ABSTRACT

Özbekkangay, Ece (2020). The Effects of Peer-Led Nutrition Model on Nutrition Knowledge Among Adolescents. Yeditepe University, Institute of Health Science, Department of Nutrition and Dietetics, MSc Thesis, Istanbul.

Nutrition in the adolescent period is important for preventing diseases especially obesity, and for proper habits for prevention of chronic diseases that may occur especially when students are able to access fast and ready food. Since the students are open for being influenced by friends in the adolescent period, it is important to carry out studies that will use this situation positively. In this study, an education model: the peer education model trying to turn this situation to an advantage. A total of 72 students were divided randomly into two separate groups as traditional and peer led education group. Traditional education included basic nutrition education and was verbally explained. The other group was selected as the peer-led method and training was provided with the peer education model by dividing into two groups; narrators and audience. Narrators were given verbal training and then were asked to explain their peers with a sample of the same training. The content of both training was exactly the same. Adölesan Beslenme Bilgi Düzeyi (ABBID) questionnaire was used for pre and post knowledge levels. Increase in knowledge in both methods were found statistically significant ($p<0.05$). The increase in the peer-led method was more significant than the traditional education method group, but there was not a statistically significant difference between the narrator and the audience ($p>0.05$). This education found to be a useful way for adolescents to increase their nutritional knowledge levels, as well as to increase their friendship and self-confidence with their peers.

Keywords: nutrition education, nutritional knowledge level, peer education in adolescent

ABSTRACT (TURKISH)

Özbekkangay Ece. (2020). Adölesanlarda Akran Eğitimi ile Geleneksel Beslenme Eğitiminin Beslenme Bilgi Düzeyine Etkisinin Karşılaştırılması. Yeditepe Üniversitesi, Sağlık Bilimleri Enstitüsü, Beslenme ve Diyetetik ABD., Yüksek Lisans Tezi, İstanbul.

Adölesan dönemde beslenme, başta obeziteyi olmak üzere oluşabilecek hastalıkları önleme ve ileriki zamanlarda kazanılacak alışkanlıkları olumlu yönde kazandırmak açısından önemlidir. Özellikle lise çağındaki öğrencilerin hızlı ve hazır gıdaya ulaşımının bu kadar kolay olduğu bir dönemde sağlıklı alışkanlıklar kazandırmak sonrasında oluşabilecek kronik hastalıkların önüne geçeçektir. Aynı zamanda adölesan dönemde öğrenciler, arkadaş çevresinden etkilenmeye açık bir grup olduğundan dolayı bu durumu olumlu yönde kullanacak çalışmalar yapmanın önemi artmaktadır. Bu çalışmada ise bu durumu avantaja çevirmeye çalışan bir eğitim modeli kullanılmakta; bu model akran eğitim modeli olarak adlandırımaktadır. 72 öğrenciden oluşan örneklem rastgele iki ayrı gruba ayırarak bir gruba geleneksel eğitim modeli, diğer grup akran eğitim modeli kullanılarak eğitim verilmiştir. Geleneksel eğitim temel beslenme eğitimi içeriğinde olup sözel olarak anlatılmıştır. Diğer gruba akran eğitim modeli ile eğitim verilmiştir. Grup ikiye bölünerek öncelikle anlatıcı olan öğrencilere sözel eğitim verilip daha sonra aynı eğitimin kitapçık haline getirilmiş örneği ile dinleyici akranlarına anlatmaları istenmiştir. Her iki eğitimin içeriği de tamamen aynıdır. Eğitim öncesi ve sonras bilgi düzeylerini ölçmek için Adölesan Beslenme Bilgi Düzeyi (ABBİD) ölçeği kullanılmıştır. Sonuçta her iki gruptaki artış istatistiksel olarak anlamlı bulunmuştur ($p<0.05$). Artış, akran eğitim modelinde geleneksel eğitim modeline göre anlamlı olarak yüksek saptanmış, fakat anlatıcı ve dinleyici akranlar arasında istatistiksel olarak anlamlı bir farklılık bulunamamıştır ($p>0.05$). Bu eğitimin adölesanların beslenme bilgi düzeylerini arttırmlarının yanı sıra akranları ile olan arkadaşlık ilişkilerini ve kendilerine olan özgüvenlerini arttırmalarının yararlı bir yol olacağı düşünülmektedir.

Anahtar Kelimeler: adölesanlarda beslenme eğitimi, beslenme bilgi düzeyi, akran eğitimi

1. INFORMATION AND PURPOSE

Nutrition adventure has started from infancy continues until the end of our lives. Therefore, adolescents have to pay attention to nutrition at all time. Obesity has become the most important chronic disease of recent times and increasing day by day; especially children in adolescence tend to fast food consumption in nutrition.

The risk of obesity extends from adolescence to adulthood (1). Healthy eating behavior prevents chronic diseases in adulthood (2). As it is known, adolescence is a period in which mental and physical changes occur and children's eating habits occur. During this period, there are many external factors that affect adolescents and these factors affect their eating habits. They often turn to fast food chains because having not enough time for healthy eating (3). The adolescent period is a very key point to change this habit (1,4). Studies also have shown that adolescents are a nutritionally sensitive group for a number of reasons, including nutritional requirements, eating habits and lifestyles, risk-taking behaviors, and sensitivity to environmental influences (5,6). Providing information to establish healthy eating habits will significantly affect their choice after this phase. As mentioned before, adolescents are very much affected by each other's activities in nutrition as in all other subjects (4). Adolescents are mostly under the influence of peer pressure, so peer studies have been used in recent studies (1,4,7). Peer education among adolescents peers provides information, training and resources for nutrition and health promotion (1). Peer education in order to improve health in adolescents; it directly affects adolescents in such matters as being a positive role model and changing social norms (1,4).

The aim of this study is to compare the effects of traditional healthy nutrition education intervention with peer-led method intervention.

2. LITERATURE REVIEW

2.1. Adolescent Period

Adolescence is one of the fastest stages of human development (8). In other words, adolescence refers to the period that shows the transition from childhood to adulthood (9). Knowledge and skill development, learning to manage emotions and relationships, and the time to enjoy the qualities and traits that will be important to take on adult roles and adolescence (8). Age is typically 12 to 18 years of age, although it is a suitable way to identify adolescence; this roughly corresponds to the time elapsed from the beginning of the pubertal (8,9). Adolescence begins at puberty and ends in early adulthood and it is divided into three periods: early adolescence (10-14 years of age), late adolescence (15-19 years of age), and young adulthood (20-24 years of age) (10). World Health Organization (WHO) said that people under the age of 18 are defined as child, although adolescence starts at an early age in many regions, it has been detected between the ages of 12-13 in high income areas and the definition of people between ages of 10 and 19 years as adolescence, people between the ages of 15-24 as youth and people between the ages of 10-24 as young (11).

Both individual characteristics (gender) and external factors (malnutrition, abusive environment) affect these changes (8). This period often occurs with puberty, a biological phenomenon, including the development of secondary sex characteristics and modulation of muscle and fat (9).

2.2. Nutrition in Adolescent Period

Macro nutrients such as carbohydrate, protein and fat are essential for the development of puberty (10). Healthy eating during adolescence is crucial during this time affect an individual's nutritional and dietary requirement (12). Eating patterns and behaviors are influenced by many factors, which are peer influences, parental modeling, food availability, food preferences, cost, convenience, personal and cultural beliefs, mass media, and body image (13). Adolescents want to make their own decisions by thinking

that they are independent individuals and at the same time they are very much affected by their peers (12)

2.3. Adequate and Balanced Nutrition in Adolescents

A balanced and varied diet provides sufficient calories and nutrition to supply the needs of adolescents (13). Especially in adolescence period, the amino acids necessary for muscle development, the need for vitamin D and calcium is also important. It is necessary to make sure that the energy and nutrients taken meet the needs of adolescents because if the energy taken is more than the energy consumed, this causes the onset of obesity in adolescents.

For balanced nutrition, it is said that 50% of the recommended diet is complex carbohydrates, proteins should be decided per height in boys and girls differently, but no amount is recommended in fat and polyunsaturated fats, linoleic (n-6) and α-linolenic (n-3) can be suggested (10).

2.4. Energy

Energy needs are calculated for adolescents to maintain a healthy life and to be in full well-being (14). Basal metabolic rate is the most important component used to calculate the energy requirement. Due to differences in the timing of the explosion in adolescence period, both weight and height are highly variable. Changes in weight and height make little difference in boys and girls. Energy requirements for different activity models are calculated quantitatively. For example, physical activity, sleeping, going to school, light, moderate and heavy work, etc. The calculations are made for boys and girls as follows. For boys, BMR = 17.5 W+651 kcal/day (2.72 MJ/day) and for girls BMR = 12.2 W+746 kcal/day (3.12 MJ/day) (15). The body's energy sources are macro and micro nutrients. Macronutrients, carbohydrates, proteins and fats; micronutrients are vitamins and minerals (16).

2.5. Macronutrients

The three main macro nutrients for adequate and balanced nutrition are carbohydrate, protein and fat. A balanced diet is way whose 50%, 30% and 20% of the total calorie are consisted of carbohydrate, fat and proteins; respectively. In particular, adequate and balanced nutrition is of great importance for the productivity, cognitive development, performance improvement, survival and protection of adolescents in this period (17).

2.5.1. Carbohydrates

The main function of carbohydrates is to provide energy to the body, in this context it provides energy to the brain cells, especially those working on carbohydrates which is important for adolescence period (18). Fifty to sixty percent of daily energy intake should come from carbohydrates (17) The Recommended Dietary Allowence (RDA) for carbohydrate is set at 130 gr/day (18). Carbohydrates are divided into two as simple and complex. In adolescence, complex carbohydrates with high fiber content should be consumed instead of simple carbohydrates, also known as sugar. However, adolescents usually consume less complex carbohydrates and fibers, they consume and like much more basic carbohydrates (17). Simple carbohydrates increase blood sugar rapidly, complex carbohydrates have low glycemic index and high blood sugar stability (18). If adolescences consume like this way, it prevents sudden increases in blood glucose and reduce risk of chronic diseases such as obesity, diabetes, heart, cardiovascular diseases and colon cancer because of the fiber in complex carbohydrates (17).

2.5.2. Proteins

Proteins are the building blocks of the body and also serve as a precursor to enzymes, hormones, vitamins and nucleic acids. The RDA for both boys and girls are 0.80 gr/kg/day for nitrogen balance (19). Also, Özdemir et al. mention that, daily protein intake requirement for adolescents according to the World Health Organization are

0.8 g/kg/day for girls and 1.0 g/kg/day for boys. Inadequate protein intake leads to retardation of linear growth and reproductive organs, and decreased lean muscle mass. Because of that, %12-15 of the daily required energy intake that come from proteins must be the goal. Protein sources are divided into vegetable and animal origin proteins are of higher quality than vegetable sources. Animal sources come from 70-80% of dairy products while the rest comes from meat, chicken and fish, on the other hand vegetable sources are dry legumes, oil seeds and soy beans. Therefore, adequate protein intake promotes linear increase in muscle mass and muscle development (17).

2.5.3. Fats

Fats are one of the body's major sources of energy and also provide the absorption of fat-soluble vitamins and carotenoids (18). Some fatty acids cannot be produced in the body and the body needs these fatty acids for growth, heart and skin health (17). Adequate Intake (AI) and the RDA also did not provide information on the amount of fat intake due to insufficient information for the prevention of chronic diseases (18). But Özdemir et al. mention fatty acids are should be 30% of daily energy intake. 7-10% should consist of saturated fatty acids, 7-8% polyunsaturated fatty acids and 10-15% monounsaturated fatty acids. In adolescents, 36% of the energy should come from fats and 13% should be from saturated fatty acids because they are in the developmental period, ıf fatty acids intake are inadequate absorption of protein and fat-soluble vitamins decreases (17).

2.6. Micronutrients

Micronutrients play important role in adolescent nutrition (20). Adequate intake of micronutrients are required for utilization of macro nutrients, prevention of infectious diseases, metabolic and physiological functions. Micronutrients are generally composed of 13 vitamins and 16 minerals, responsible for many functions that are beneficial to adolescences body (21). Vitamins are divided into water and fat soluble. fat soluble vitamins A, D, E and K vitamins, water soluble are B and C vitamins.

Minerals are calcium, chromium, copper, fluoride, iodine, iron, magnesium, manganese, molybdenum, phosphorus, potassium, selenium, sodium and zinc.

2.6.1. Vitamins

Vitamin A is a fat-soluble vitamin and is important for growth and development, good vision, immunity and reproduction. Inadequate intake of bone development and reproductive disorders, it plays a role the body's immunity and in the lack of infectious diseases can increase (22). Vitamin A is found almost exclusively in animal products such as human milk. For example, glandular meats, liver and fish liver oils (especially), egg yolks and dairy products can be given (23).Vitamin D is one of the fat-soluble vitamins. It is important in bone development because it plays a role in calcium metabolism. İnsufficiency of D vitamins, especially in adolescence may cause rickets (22). Vitamin E is also in the fat-soluble vitamins group. It plays a role in α-tocopherol metabolism, helps increase lean body mass and growth in adolescents. Sources of vitamin E are sunflower oil, olive oil and soybean oil. Animal fats, vegetables and meats 10%; fruits, nuts, dairy products and cereals 4%; eggs and fish contain 2% vitamin E (23). Vitamin K is the last of the fat-soluble vitamins. plays a role in coagulation and bone development. The first source of vitamin K is dark green leafy vegetables, the second source of vegetable-derived oils. For example; such as peanuts, corn and sunflower oil (23).

B vitamins from water-soluble vitamins Vitamin B1 is also known as thiamine. It plays a role in carbohydrate metabolism and co-enzyme metabolism of branched chain amino acids. Vitamin B1 deficiency causes Beri-beri, polyneuritis, and Wernicke-Korsakoff syndrome. Another name for vitamin B2 is Riboflavin. Coenzymes in the body show numerous functions plays a role in oxidation and reduction reactions. Vitamin B2 deficiency causes Growth, cheilosis, angular stomatitis, and dermatitis. Vitamin B3 is also called Niacin. Mechanisms in the body co-substrate/co-enzyme and numerous hydrogen transfers they are dehydrogenase. Insufficient intake causes pellagra with diarrhoea, dermatitis, and dementia (23). Vitamin B6 is one of the important ones, it is involved in heme synthesis and amino acid metabolism. It is therefore closely related to growth and development (22). Since B6 deficiency affects brain functions, it causes nervous system disorder and immune

system cannot work properly. Vitamin B5 acts as a coenzyme of vitamin A and in fatty acid metabolism. In the absence of vitamin B5 fatigue, sleep disturbances, impaired coordination, and nausea. Vitamin B7 (Biotin), coenzyme functions bicarbonate dependent carboxylations are also involved. Insufficient intake causes Fatigue, depression, nausea, dermatitis, and muscular pains (23). Vitamin B9 is one of the other important water-soluble vitamins, folic acid is required for proper development of the human body. It plays a role in the production of genetic material called DNA and many other bodily functions. Sources of folate include leafy vegetables (such as spinach, broccoli and lettuce), okra, asparagus, fruits (such as banana, melon and lemon), beans, yeast, mushrooms, meat (e.g. liver, kidney), orange juice and tomato juice (24). B9 vitamin deficiency is the most important disease in neural tube defect (23). Vitamin B12 is known as cobalamin in the literature. Many microorganisms are able to synthesize B12, thus entering the food chain of humans. Mostly synthesized and stored in the liver. It is found in products such as milk, meat and eggs obtained from herbivorous animals (23). Drake et al. mention that also vitamin B12 found in animal products, for example meat, poultry, fish and to a lesser extent in milk (22). B12 deficiency is mostly seen in vegetarians. In sufficient intake causes Pernicious anemia and Atrophic gastritis (23). B12 deficiency is mostly seen in vegetarian adolescents, but vitamin B12 is stored in the liver, it requires a 5-year study. Therefore, there is no clear information on the subject (22). Vitamin C, also known as ascorbic acid, is one of the vitamins that play an important role in growth and development. It is also one of the most effective antioxidants involved in the synthesis of collagen, carnitine and neurotransmitter and plays a role in strengthening the immune system.

Another important task is the conversion and absorption of non-heme iron (22). Vitamin C deficiency is most common in people who consume less fruits and vegetables. Deficiency is the scurvy in seamen in the 15th century (23).

2.6.2. Minerals

The minerals that are important for the adolescent period are calcium, iron, magnesium, potassium, sodium, zinc, iodine and selenium. First mineral is calcium, 99% of calcium is found in bones and teeth. When taken at sufficient levels leads to proper mineralization of bones, increases bone mass weight, reduces the risk of bone

fracture and osteoporosis. Milk and dairy products are the most well-known sources of trace amounts in cereals and vegetables, but their bioavailability is less than in dairy products. Iron, oxygen and electron transport/storage, energy metabolism, antioxidant functions and takes part in DNA synthesis (22). Especially in adolescents, the need for iron is very high during the rapid growth phase. There are two kinds of dietary iron: heme iron and non-heme iron. Heme iron sources are meat, poultry, and fish; non-heme iron sources are cereals, pulses, legumes, fruits, and vegetables. Iron deficiency is most common in newborns, children, adolescents and pregnant women, which has recently been significantly reduced thanks to cereal enrichment (23). Magnesium is involved in energy, protein, carbohydrate and lipid metabolism as well as taking part in many cellular events. Magnesium is found in nuts and green fiber vegetables, the most important reason being that magnesium is a part of chlorophyll (22). Also the other study said that green vegetables, nuts, legumes, peas and beans rich in magnesium. Magnesium deficiency causes neuromuscular or neurological disorders. It causes long-term diarrhea or excretion of more urine, especially in newborns (23).

Potassium is important for muscle contraction and heart function. Vegetables, fruits and dairy products are rich in potassium and therefore, the low consumption of these nutrients by adolescents brings potassium deficiency. High-sodium foods such as fast foods are consumed more than a potassium-rich foods and as a result of high blood pressure and the risk of stroke in later life is high. The amount of sodium recommended by the 2010 Dietary Guidelines for Americans for both adolescents and adults was determined to be 1,500 mg / day. As long as these amounts are not exceeded, blood pressure is low and the risk of cardiovascular and kidney diseases is reduced. Zinc plays a role in the proper functioning of immune, reproductive and neurological functions. Good sources of zinc are shellfish, beef, and other red meats and nuts and legumes are the plant sources of zinc (22). Low zinc levels both adversely affect growth and development and can lead to infectious diseases. At the same time deficiency causes disorders of metabolism. Iodine is important for the proper functioning of thyroid glands and thyroid hormones. When consumption of daily iodine levels is achieved, endemic goiter or cretinism and iodine excretion from urine are not observed. The amount and quality of iodine depends on the soil on which it grows, and seafoods are iodine-rich. Iodine deficiency causes irreversible damage to the brain and central nervous system. Selenium is responsible for protecting body

tissues from oxidative stress and infection, as well as maintaining growth and development. Insufficient selenium intake causes Keshan disease and Kaschin-beck disease. Environmental factors affect the selenium level of nutrients, for example, cereal, rice, corn and pasture grasses in China are poor in selenium, Keshan disease and Kaschin-beck disease has been observed in Chine as previously mentioned (23).

2.7. Health problems related with nutrition

Adolescents are generally defined as healthy people, their well-being is closely related to how they look at themselves (25). In another study, it was also stated that most of the diseases that adolescents may encounter in later life will be non-communicable diseases. Examples of these diseases include smoking, substance use, obesity, lack of physical activity, and malnutrition habits (26). As it is known, firstly obesity and lesser known health problems are seen undernutrition and malnutrition in adolescence period (27). A different study was also classified as undernutrition, micronutrient deficiency, obesity, inadequate and malnutrition (26). Adequate and balanced nutrition depends on 2 factors. The first is known knowledge about socioeconomic factors, cultural conditions, food choices and nutrients, and the second is the ability to digest, absorb and use nutrients. While it is often said that poor socioeconomic status affects nutritional status, some studies say that cultural differences also cause health problems (20,27). Overnutrition and malnutrition are often simultaneous problems in the adolescent population (26).

Undernutrition is common in rural areas and in countries with poor socioeconomic status. Undernutrition is to determine if the menarche status of girls. When the nutritional level is insufficient, the menarche period starts late (20,26). Growth and development are seen later in malnourished groups (26). Malnutrition brings adolescent boys and girls closer to disease and death (28).

The most common micronutrient deficiencies are iron deficiency anemia, vitamin A deficiency, iodine, calcium and zinc deficiency. Especially in iron deficiency, growth and development are delayed, working capacity decreases and cognitive functions decrease. These factors are very important for school success in adolescent children (26). Schroeder et al. supports this discourse (20). For vitamin A, Serum retinol levels were observed to be high in adolescents consuming milk and dark green leafy

vegetables. Serum retinol and retinol binding protein are important for sexual development in adolescents. Iodine deficiency leads to impaired cognitive and neuromotor functions. The amount of calcium to be taken determines the risk of developing osteoporosis in adulthood. In general, the amount of calcium taken from diet is inadequate, especially in high-income countries. Zinc, together with calcium, prevents bone loss and supports development (27).

The prevalence of obesity and overweight is increasing and affects adulthood starting in mid-adolescence (26). Weight gain occurs with a positive energy balance, when the energy consumed is less than the energy consumed (20). The fact that sedentary life is effective in this situation has reduced the physical activity of video games, tablets, phones and televisions, especially during adolescence period, resulting in less energy consumed than received (20,26). In addition to sedentary life, choosing less healthy food triggers obesity and nooverweight (26). Adolescent obesity also affects adulthood, but how long they are overweight in adolescence determines their future status(20). Bundy et al. mention that future studies should be conducted using peer and social network interactions to prevent obesity (26).

2.8. Nutrition Intervention for Adolescents

In adolescents, different methods are used to increase the level of knowledge and to change behavior in some studies. Examples of these studies are video games, video visuals, web-based trainings and peer trainings used in this study (29–31).

Beale et al. in their study, a video game was developed for young adolescents with cancer to make the course of the disease easier and learn the treatment processes. An existing game was given to the control group, and the new game to the intervention group, both games were found to have significant results, but the result of the new game was more significant (31).

Rao et al. in their study in adolescent girls in India, traditional text and video images were compared to increase the level of nutritional knowledge. The two methods were successful but no difference was found between the two methods (30).

Ayar et al. in their study, they compiled web-based training in adolescents with Type 1 diabetes. As a result of reviews, it was determined that these trainings decreased HbA1c levels and positive results were obtained in knowledge levels (29).

Marchetti et al. in their study, several different methods were used, one of which is the application developed for dental health, similar to the study developed in video game in Beale's et al. study. In this application, video and verbal data are compared. Interestingly, the application was found to be more successful than video and verbal method, whereas in the other study, the video was found to be more successful than verbal education (32).

2.8.1. Peer-led Method

Peer-led method and peer education provides information and resources to health and education supporters (2). Peer trainers are the people who try to change the behavior of the group they are responsible for and their approaches on the subject in a positive way, and for this they need to undergo a certain training (33). Today, the popularity of peer interactions are increasing and has a strong social impact on each other (2). Bastami et al. in their study, adolescents were not only self-selection or behavior, but also influenced by the peers in the environment stated that (34). Peer studies are used to protect and inform adolescents (4). The narrators assigned in peer education can be defined as "natural aids", and they are involved in solving health problems and completing the right information. As peer educators can better identify with their communities, they are more successful in removing concerns and barriers to health-related problems (35). In the peer education model, information from a friend of the same age is more effective than that of an adult, while at the same time "peer pressure" is used for positive structuring in peer-to-peer work (4). The studies showed that peer education increased knowledge and self-confidence compared to other models; behavior and attitude change. For example, in studies conducted to prevent drug addiction, peer education was found to be more effective (4,36). Also Dargie et al. peer work on adolescents, consumption, diversification, and found that promising in terms of awareness about the food consumed (2). Abdi et al. in their study 25.1% of adolescents in the 11-14 age group in Iran stated that they do not have healthy behaviors and in addition, they found that peer education is more effective than traditional education given by teachers. It is stated that this method is successful in behavior and attitude especially in health problems (33). Azizi et al. they also said that peer education is more successful than other education (37). Abdi et al. as stated in his study, peer education method is used in health-related issues and many studies also mentioned more of these issues; prevention of cigarette smoking, alcohol and

drug abuse, sexually transmitted diseases (STDs), human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) and education on sexual behaviors (37–40). Azizi et al. ın addition to the topics, they reported that public health education was used, and nutrition education, which is a branch of this subject, was used to increase the knowledge of nutrition in adolescents (37).

3. MATERIAL AND METHOD

3.1. Participants

The study was conducted in November 2019. The sample of this study consisted of determined to be at risk 10th grade students which selected from "Assessment of Body Mass Index and Related Lifestyle Factors Among 14-17 Years Old Turkish Adolescents" which was 1561 students participated (41). A randomly selected school from the previous research 72 students included in this study for the interventions (Figure 3.1.). In order to carry out the study, permissions were obtained from the Governorship of Istanbul, the Ministry of National Education and the authorized director of the school to be studied (Appendix 2). In addition, in order to carry out the study, a petition was submitted to the relevant authority of the school and accepted (Appendix 3).

Informed consent (Appendix 1) form was obtained from the parents of the students who participated in the study and their signatures that they voluntarily participated in the study. Students who did not want to participate were excluded from the study.

3.2. Data Collection

The school was visited twice, and on the first visit, the informed consent forms were handed back to the deputy principal for retrieval, and on the second visit training was provided. Adolescent Information Nutrition Level (Adölesan Beslenme Bilgi Düzeyi - ABBID) questionnaire was applied to the students. The validity and reliability of the questionnaire was conducted in 2016 by Öz et al. and permission was obtained from Fatih Öz, the owner of the survey, for the use of this survey (42, 43). ABBID questionnaire had three subgroups adequate and balanced nutrition, essential nutrients and malnutrition related diseases. Adequate and balanced nutrition had 9 question, essential nutrition had 21 questions and malnutrition related diseases had 8 questions. The questionnaire consisted of 38 right and wrong questions and was printed as duplex. It is designed to have 1 point for each correct answer and reverse coding for the wrong answer (Appendix 6, 7). In this questionnaire, the maximum score was 38 and the minimum score was 0.

3.3. Intervention

Three different classes from the 10th grade participated. E, F and A, respectively. Firstly, class E was called to the conference hall and informed consent forms were collected, there were students who did not want to participate in the study than students were called from class F to complete the number. 72 students were randomly divided into 2 different groups, 36 students for traditional education method education and 36 students for peer-led method. For the peer method, 36 students were divided into two 18 as narrators and 18 as audience (Figure 3.1). Firstly, 36 students were given traditional education method training. The first 36 were first asked to fill out an ABBID questionnaire and then read the traditional text from the written text (Appendix 8) without using any visual material. Then the same questionnaires were distributed again and asked to be filled. Subsequent classes were left from Class F and 14 from A class and 36 students were collected from the second group and informed consent forms were collected and peer led model was applied to the second group. 18 students were taken to the conference hall, 18 were kept in the canteen. In this way, the data confusion between the narrator group and the listener group was eliminated. Students from both fields were filled in the ABBID survey and meeting. Then, the handouts of "Nutrition in high school age" handbooks (Appendix 9) prepared for 18 students selected as narrators in the conference hall were given oral education. After the training, the ABBID questionnaire was redistributed and asked to be completed. Finally, the audience in the canteen was taken to the conference hall and paired with the students, and 18 students who had already been educated were asked to tell the other 18 students what they understood. After the lecture was completed, the ABBID questionnaire was redistributed and filled in. Narrators put "A" in the questionnaire and the audience put "D" in to the questionnaire for identifying. As a result, in traditional education 2 questionnaires which are pre and post; in the peer model, 2 questionnaires were collected pre and 3 post questionnaires were collected in 2 different groups.

3.4. Statistics

Data were entered into SPSS 2.0 program and tabulated. Frequency, percentage (%) and standard deviation (SD) scores were calculated to determine the results.

The normality control of all numerical data was performed by Kolmogorov test and the distributions were not normal. For this reason, non-parametric tests were used in the significance analyzes. Descriptive statistics were presented using mean and standard deviation for normally distributed variables and median (and minimum-maximum) for the non-normally distributed variables. P value is accepted as $p<0,005$ statistical significance. For comparison of two non-normally distributed independent groups Mann Whitney U test was used and for comparison of two non-normally distributed dependent groups Wilcoxon Signed test was used.

3.5 Ethical

In order to carry out this study, petitions were obtained from the governorship of Istanbul which was dated 30.04.2019, the Ministry of National Education (Appendix 2), the ethics committee of Marmara University Faculty of Health Sciences (Appendix 4) and the school where the education which was dated 17.10.2019 will be held (Appendix 3). In addition, permission was obtained from Fatih Öz, the ABBID questionnaire owner, via e-mail for the questionnaire used in the study (Appendix 5).

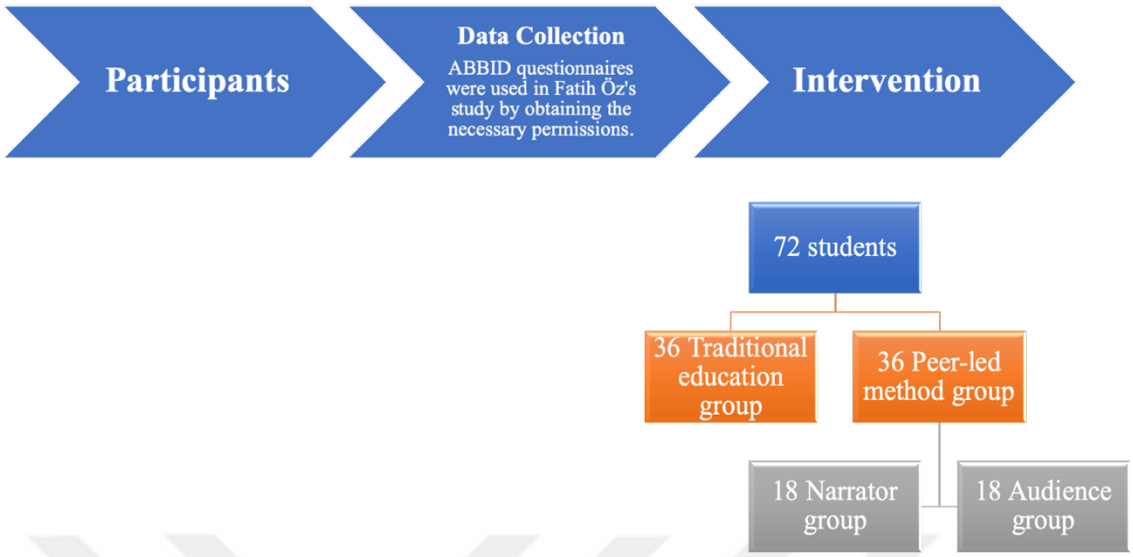

Figure 3.1. Selection of Participants Model

4. RESULTS

Total of 72 students gender discrimination in this study was 50 (69.4%) and 22 (30.6%) for girls and boys, respectively (Table 4.1.1). In the study, there were two different groups as peer-led method and traditional education method. The distribution of 36 students in the peer-led method was 23 (69.3%) and 13 (36.1%) in girls and boys (Table 4.1.2), and the same order were 27 (75%) and 9 (25%) in the traditional group girls and boys respectively (Table 4.1.3). The peer-led method was divided into two groups as narrator and audience. In the narrator group of 18, girls and boys were found to be 11 (61.1%) and 7 (38.9%), and in the audience group of 18, girls and boys were 12 (66.7%) and 6 (33.3%), respectively (Table 4.1.4). Pre and post test results were compared by gender. There were 3 subgroups in the pre and post tests, and the significance results were compared according to gender. As mentioned before, there was three subgroups in ABBID questionnaire which are respectively, adequate and balanced nutrition, essential nutrients and malnutrition related diseases. When pre and post test results are compared adequate and balanced nutrition, essential nutrients and malnutrition related diseases in girls $p=0.000$, $p=0.000$ and $p=0.001$, respectively and in boys, $p=0.002$, $p=0.383$ and $p=0.449$ respectively ($p<0.05$) (Table 4.1.5). When the results were compared according to gender, statistically significant difference was found in three sub-groups in girls, while only significant result adequate and balanced nutrition was found in boys. In this study pre test questionnaire total score mean and standard deviation results of the peer-led method were 23.97 ± 3.88 and the post test questionnaire total score were 28.86 ± 4.120 respectively. Then results of mean and standard deviation for traditional group in pre and post test questionnaire total scores 22.27 ± 3.99 and 25.44 ± 4.71 respectively (Table 4.1.6). The narrator group pre test questionnaire total score mean and standard deviation results were 23.44 ± 3.60 and the post test questionnaire total score were 29.50 ± 4.16 respectively. Then results of mean and standard deviation for audience group in pre and post test questionnaire total scores 24.50 ± 4.19 and 28.22 ± 4.09 respectively (Table 4.1.7). The mean rank results between the peer-led method and traditional groups were found to be adequate and balanced nutrition, essential nutrients, malnutrition related diseases and total score for the pre-test 40.25 ± 32.75, 39.38 ± 33.63, 38.68 ± 34.32, 40.00 ± 33.00, respectively. The mean rank results for the post test 43.04 ± 29.96, 44.11 ± 28.89, 39.46 ± 33.54 and 43.67 ± 29.33 respectively. According to the average rank results between the two groups, that was found that in pre test $p = 0.014$ in the adequate and balanced

nutrition, p = 0.240 in the essential nutrients, p = 0.363 in the malnutrition related diseases and p = 0.154 in the total score. In the post-test after the peer-led method, p = 0.004 in the adequate and balanced nutrition, p = 0.002 in the essential nutrients, p = 0.216 in the malnutrition related diseases and p = 0.004 in the total score ($p<0.05$) (Table 4.1.8). In the study, it was found statistically insignificant in the three sub-groups in the tests performed before the peer-led method, while in the tests performed after the peer-led method, it was found to be statistically significant for adequate and balanced nutrition and essential nutrients, but malnutrition related diseases were found statistically insignificant. The reason for the last group being statistically insignificant may be that they already know the subject before the peer-led method or that the peer-led method was insufficient for that section. In the peer-led method, positive, negative and tie ranks were 32, 1, 3 for adequate and balanced nutrition; 26, 6, 4 for essential nutrients and 19, 7, 3 for malnutrition related diseases, respectively. Statistical results for this group p=0.000 for adequate and balanced nutrition, p=0.000 for essential nutrients, p=0.030 for malnutrition related diseases ($p<0.05$). It was found statistically significant for the peer-led method. In the traditional group, positive, negative and tie ranks were 23, 3, 10 for adequate and balanced nutrition; 23, 7, 6 for essential nutrients and 17, 9, 10 for malnutrition related diseases, respectively. Statistical results for this group p=0.000 for adequate and balanced nutrition, p=0.041 for essential nutrients, p=0.049 for malnutrition related diseases ($p<0.05$) (Table 4.1.9). It was found statistically significant for the peer-led method, but the significance of the peer-led method was higher than the traditional group. As previously mentioned that, the peer-led method was divided into two groups which were narrator and audience group. For adequate and balanced nutrition subgroup, positive rank was 17 in the narrator group, 15 in the audience group, negative rank was 1 in the narrator group, 0 in the audience group and the ties were 0 in the narrator group and 3 in the audience group. Statistically significant significance was found for the adequate and balanced nutrition subgroup in both groups p=0.000 ($p<0.05$). For the subgroup of essential nutrients, it was determined as positive ranks were 13 in the group that narrator, 13 in the audience group, in negative ranks 2 in the group that narrator, 4 in the group that audience, and the ties were 3 in the narrator group, 1 for the audience group. There was significant significance in both groups. The p value of the narrators is 0.002 and the audience is 0.007 ($p<0.05$). For the subgroup of malnutrition related diseases, it was determined as positive ranks were 12 in the group that narrator, 7 in the audience group, in negative ranks 3 in the group that narrator, 4 in the group that audience, and the

ties were 3 in the narrator group, 7 for the audience group. No statistically significant difference was found for malnutrition related diseases subgroup in both groups. p=0.111 in the narrator group and p=0.167 in the audience($p>0.05$) (Table 4.1.10). It was found statistically significant for the adequate and balanced nutrition and essential nutrients, statistically insignificant for malnutrition related diseases in audience group both narrator and audience group. Although there was no statistically significant difference in malnutrition related diseases in both groups, total scores were statistically significant in both groups ($p<0.05$). Statistical results between narrator and audience group according to pre-test p=0.006 for adequate and balanced nutrition, p=0.839 for essential nutrients, p=0.864 for malnutrition related diseases and total score p=0.389 and the according to post test p=0.913 for adequate and balanced nutrition, p=0.372 for essential nutrients, p=0.628 for malnutrition related diseases and total score p=0.406 ($p<0.05$) (Table 4.1.11). There was statistically significant difference between two groups in the pre test adequate and balanced nutrition subgroup. The other two pre-test sub-groups and post-test sub-groups were not statistically significant. This means that in this study, being a narrator or listener in the peer-led method does not affect statistical significance.

When the distribution of the questions between the two groups was examined, the pre and post test questions in the peer-led method and traditional groups were found to be statistically significant in 14 questions in the peer-led method ($p<0.05$). The pre and post test question scores were found to be statistically significant in 11 questions in the traditional group ($p<0.05$). Malnutrition related diseases in the peer-led method and traditional groups are statistically insignificant reasons of the fact that first cause, they know the subject because they are in health vocational high schools and the second it may be that the education given in the title of this subject is insufficient.

4.1. Tables

4.1.1. Total Gender Distribution Table

	Frequency	Percent
Girl	50	%69.4
Boy	22	%30.6
Total	72	%100

4.1.2. Gender Distribution Table of Peer-led Method

	Frequency	Percent
Girl	23	%63.9
Boy	13	%36.1
Total	36	%100

4.1.3. Gender Distribution Table of Traditional Education Method Group

	Frequency	Percent
Girl	27	%75
Boy	9	%25
Total	36	%100

4.1.4. Gender Distribution of Narrator and Audience Groups in the Peer-led Method

Narrator Group	Frequency	Percent
Girl	11	%61.1
Boy	7	%38.9
Total	18	%100

Audience Group	Frequency	Percent
Girl	12	%66.7
Boy	6	%33.3
Total	18	%100

4.1.5. Comparison of Pre and Post Test Results According to Gender

Girls	Adequate and Balanced Nutrition	Essential Nutrients	Malnutrition related diseases	Total
Z score	**-5.661**	**-4.574**	**-3.157**	**-5.377**
P value	**.000**	**.000**	**.002**	**.000**

*Wilcoxon Signed Ranks Test

**p<0,05 is accepted as statistical significance

Boys	Adequate and Balanced Nutrition	Essential Nutrients	Malnutrition related diseases	Total
Z score	**-3.087**	**-.872**	**-.757**	**-1.947**
P value	**.002**	**.383**	**.449**	**.052**

*Wilcoxon Signed Ranks Test

**p<0,05 is accepted as statistical significance

4.1.6. Comparison of Mean Scores of Peer-led method and Traditional Education Method Group

Peer-led Method	Number	Minimum	Maximum	Mean	Standard Deviation
Pre test Adequate and Balanced Nutrition	36	4.00	8.00	6.5556	1.18187
Pre test Essential Nutrients	36	7.00	19.00	11.5556	2.86301
Pre test Malnutrition Related Diseases	36	3.00	8.00	5.8611	1.45706
Pre test Total score	36	16.00	34.00	23.9722	3.88761
Post test Adequate and Balanced Nutrition	36	6.00	9.00	8.5556	.73463
Post test Essential Nutrients	36	9.00	19.00	14.0000	2.79796
Post test Malnutrition Related Diseases	36	2.00	8.00	6.3333	1.45406
Post test Total score	36	19.00	34.00	28.8611	4.12070

Traditional Education Method	Number	Minimum	Maximum	Mean	Standard Deviation
Pre test Adequate and Balanced Nutrition	36	3.00	9.00	6.1944	1.23796
Pre test Essential Nutrients	36	1.00	15.00	10.5278	2.67780
Pre test Malnutrition Related Diseases	36	.00	8.00	5.5556	1.44310
Pre test Total score	36	8.00	27.00	22.2778	3.99722
Post test Adequate and Balanced Nutrition	36	3.00	9.00	7.6944	1.43067
Post test Essential Nutrients	36	5.00	18.00	11.7500	2.78132
Post test Malnutrition Related Diseases	36	2.00	8.00	6.0000	1.33095
Post test Total score	36	12.00	34.00	25.4444	4.71741

4.1.7. Comparison of Mean Scores of Narrator and Audience Groups

Narrator Group	Number	Minimum	Maximum	Mean	Standard Deviation
Pre test Adequate and Balanced Nutrition	18	4.00	8.00	6.0000	1.28338
Pre test Essential Nutrients	18	7.00	16.00	11.5556	3.12903
Pre test Malnutrition Related Diseases	18	4.00	8.00	5.8889	1.27827
Pre test Total score	18	17.00	31.00	23.4444	3.60102
Post test Adequate and Balanced Nutrition	18	7.00	9.00	8.6111	.60768
Post test Essential Nutrients	18	9.00	19.00	14.3889	2.97319
Post test Malnutrition Related Diseases	18	4.00	8.00	6.5000	1.29479
Post test Total score	18	21.00	34.00	29.5000	4.16215

Audience Group	Number	Minimum	Maximum	Mean	Standard Deviation
Pre test Adequate and Balanced Nutrition	18	5.00	8.00	7.1111	.75840
Pre test Essential Nutrients	18	8.00	19.00	11.5556	2.66176
Pre test Malnutrition Related Diseases	18	3.00	8.00	5.8333	1.65387
Pre test Total score	18	16.00	34.00	24.50000	4.19032
Post test Adequate and Balanced Nutrition	18	6.00	9.00	8.5000	.85749
Post test Essential Nutrients	18	9.00	18.00	13.6111	2.63771
Post test Malnutrition Related Diseases	18	2.00	8.00	6.1667	1.61791
Post test Total score	18	19.00	34.00	28.2222	4.09527

4.1.8. Pre and Post Test Total Mean Rank Comparison of Peer-led method and Traditional Education Method Group

	Peer-led Method		Traditional Education Method	
	Mean Rank	**Sum of Ranks**	**Mean Rank**	**Sum of Ranks**
Pre test Adequate and Balanced Nutrition	40.25	1449.00	32.75	1179.00
Pre test Essential Nutrients	39.38	1417.50	33.63	1210.50
Pre test Malnutrition Related Diseases	38.68	1392.50	34.32	1235.50
Pre test Total score	40.00	1440.00	33.00	1188.00
Post test Adequate and Balanced Nutrition	43.04	1549.50	29.96	1078.50
Post test Essential Nutrients	44.11	1588.00	28.89	1040.00
Post test Malnutrition Related Diseases	39.46	1420.50	33.54	1207.50
Post test Total score	43.67	1572.00	29.33	1056.00

	Pre test Adequate and Balanced Nutrition	**Pre test** Essential Nutrients	**Pre test** Malnutrition Related Diseases	**Pre test Total score**	**Post test** Adequate and Balanced Nutrition	**Post test** Essential Nutrients	**Post test** Malnutrition Related Diseases	**Post test Total score**
Mann-Whithney U Test	513.000	544.500	569.500	522.000	412.500	374.000	541.500	390.000
Wilcoxon W Test	1179.000	1210.500	1235.500	1188.000	1078.500	1040.000	1207.500	1056.000
Z Score	-1.582	-1.174	-.909	-1.426	-2.898	-3.113	-1.236	-2.916
P value	.114	.240	.363	.154	.004	.002	.216	.004

*Mann-Whitney Signed Ranks Test, Wilcoxon Signed Ranks Test

**p<0,05 is accepted as statistical significance

4.1.9. Positive and Negative Ranks of Pre and Post Test Comparison of Peer-led method and Traditional Education Method Group

	Negative Ranks			Positive Ranks			Ties
Peer-led Method	**Number**	**Mean Rank**	**Sum of Ranks**	**Number**	**Mean Rank**	**Sum of Ranks**	**Number**
Pre test – Post test Adequate and Balanced Nutrition	1	4.50	4.50	32	17.39	556.50	3
Pre test- Post test Essential Nutrients	6	7.67	46.00	26	18.54	482.00	4
Pre test- Post test Malnutrition Related Diseases	7	13.21	92.50	19	13.61	258.50	10
Pre test-Post test Total score	2	4.50	9.00	30	17.30	519.00	4

Peer-led Method Statistics	**Pre test – Post test** Adequate and Balanced Nutrition	**Pre test- Post test** Essential Nutrients	**Pre test- Post test** Malnutrition Related Diseases	**Pre test-Post test Total score**
Z Score	-5.011	-4.093	-2.172	-4.782
P value	.000	.000	.030	.000

**p<0,05 is accepted as statistical significance

	Negative Ranks			Positive Ranks			Ties
Traditional Education Method	**Number**	**Mean Rank**	**Sum of Ranks**	**Number**	**Mean Rank**	**Sum of Ranks**	**Number**
Pre test – Post test Adequate and Balanced Nutrition	3	4.00	12.00	23	14.74	339.00	10
Pre test- Post test Essential Nutrients	7	19.07	133.50	23	14.41	331.50	6
Pre test- Post test Malnutrition Related Diseases	9	11.17	100.50	17	14.74	250.50	10
Pre test- Post test Total score	6	18.83	113.00	28	17.21	482.00	2

Traditional Education Method Statistics	**Pre test – Post test** Adequate and Balanced Nutrition	**Pre test- Post test** Essential Nutrients	**Pre test- Post test** Malnutrition Related Diseases	**Pre test-Post test Total score**
Z Score	-4.200	-2.043	-1.966	-3.163
P value	.000	.041	.049	.002

**p<0,05 is accepted as statistical significance

4.1.10. Comparison of Pre and Post Tests of Narrator and Audience Groups in Peer-led method

	Negative Ranks			Positive Ranks			Ties
Narrator Group	**Number**	**Mean Rank**	**Sum of Ranks**	**Number**	**Mean Rank**	**Sum of Ranks**	**Number**
Pre test – Post test Adequate and Balanced Nutrition	1	1.50	1.50	17	9.97	169.50	0
Pre test- Post test Essential Nutrients	2	2.50	5.00	13	8.85	115.00	3
Pre test- Post test Malnutrition Related Diseases	3	10.83	32.50	12	7.29	87.50	3
Pre test-Post test Total score	1	3.00	3.00	16	9.38	150.00	1

Narrator Group Statistics	**Pre test – Post test** Adequate and Balanced Nutrition	**Pre test- Post test** Essential Nutrients	**Pre test- Post test** Malnutrition Related Diseases	**Pre test-Post test Total score**
Z Score	-3.705	-3.135	-1.592	-3.495
P value	.000	.002	.111	.000

**p<0,05 is accepted as statistical significance

	Negative Ranks			Positive Ranks			Ties
Audience Group	**Number**	**Mean Rank**	**Sum of Ranks**	**Number**	**Mean Rank**	**Sum of Ranks**	**Number**
Pre test – Post test Adequate and Balanced Nutrition	0	.00	.00	15	8.00	120.00	3
Pre test- Post test Essential Nutrients	4	4.88	19.50	13	10.27	133.50	1
Pre test- Post test Malnutrition Related Diseases	4	4.50	18.00	7	6.86	48.00	7
Pre test- Post test Total score	1	2.00	2.00	14	8.43	118.00	3

Audience Group Statistics	**Pre test – Post test** Adequate and Balanced Nutrition	**Pre test- Post test** Essential Nutrients	**Pre test- Post test** Malnutrition Related Diseases	**Pre test-Post test Total score**
Z Score	-3.493	-2.712	-1.396	-3.312
P value	.000	.007	.163	.001

**p<0,05 is accepted as statistical significance

4.1.11. Comparison of Pre and Post Test Between Narrator and Audience Groups in Peer-led method

	Pre test Adequate and Balanced Nutrition	**Pre test** Essential Nutrients	**Pre test** Malnutrition Related Diseases	**Pre test Total score**	**Post test** Adequate and Balanced Nutrition	**Post test** Essential Nutrients	**Post test** Malnutrition Related Diseases	**Post test Total score**
Mann-Whithney U Test	77.500	155.000	156.500	134.000	158.500	133.000	146.500	135.000
Wilcoxon W Test	248.500	326.000	327.500	305.000	329.500	304.000	317.500	306.000
Z Score	-2.820	-.223	-.178	-.891	-.133	-.925	-.507	-.859
P value	.006	.839	.864	.389	.913	.372	.628	.406

*Mann-Whitney Signed Ranks Test, Wilcoxon Signed Ranks Test

**p<0,05 is accepted as statistical significance

5. DISCUSSION AND CONCLUSION

In this study, pre test questionnaire of ABBID total score mean and standard deviation results of the peer-led method were 23.97 ± 3.88 and the post test questionnaire total score were 28.86 ± 4.120 respectively. Öz et al found the median ABBID questionnaire score of the intervention group before the intervention was 24.00 (mean: 22.95 ± 5.45) and 26.00 after the intervention (mean: 24.11 ± 5.98) (42). Then in this study results of mean and standard deviation for traditional group in pre and post test questionnaire total scores 22.27 ± 3.99 and 25.44 ± 4.71 respectively. In the same study conducted by Öz et al. median score of ABBID before the intervention of the control group was 24.00 (mean: 23.18 ± 5.70), while it was 25.00 (mean: 23.62 ± 6.38) after the intervention (42). Compared with this study, significant difference was found in their study only in the intervention group, while in this study, a significant increase was found in the mean scores of the students in both the peer-led method and traditional education method groups.

Although it is a trainer in traditional education method, the results are statistically significant according to Öz's study (42). The traditional education method is considered to be successful because the trainer did the subject in his natural flow without studying or doing any previous study. When we examine the peer studies conducted, it can be said that in many studies, trained and elected people were found to be narrators, therefore, traditional education failed. Such as in many studies, a separate training was given to the group that is the narrator in the peer studies, and the narrators were determined in advance and long trainings were given to the narrators (44–47). In this study, all students learned to study on the day of training, and the training was carried out on randomly selected students on the same day. This situation is considered to be important in terms of the effect of the accuracy of the result of the study compared to other studies. Thus, the fact that both traditional education method and peer-led method students did not have the knowledge beforehand because they received the training on the same day increased the reliability of the study.

Similarly, students listening to the topics from their peers and speaking the same language prevented generational conflict, resulting in more successful results.

At the same time, it is thought that students may have increased the success of the study because they are in a social area they know and have done this study with their friends they know.

When pre and post test results were compared by gender girls' results were statistically more significant than boys. In three subgroup examinations according to gender, statistically significant was found for all subgroups in girls, only significant adequate and balanced nutrition subgroup was observed in boys, and no statistically significant difference was found in essential nutrients and malnutrition related diseases subgroups (Table 4.1.5). The reason for this is explained by the fact that the boys population was higher than the girls population. Although the students were randomly selected in the traditional education method and peer-led methods, the population of boys and girls spread close to each other. The distribution of 36 students in the peer-led method was 23 (69.3%) and 13 (36.1%) in girls and boys (Table 4.1.2) and the same order were 27 (75%) and 9 (25%) in the traditional group girls and boys respectively (Table 4.1.3). Likewise, the narrator and audience groups in the peer-led method are distributed almost equally.

When the peer-led method and traditional groups were compared for minimum and maximum ranks of the questionnaire, statistically more significant results were found in the traditional group. Although a rise in post total results was observed in both the pre-total minimum and the pre-total maximum scores in the narrator group, the pre-total minimum score increased to 16, 19, while no change was observed in the pre-total maximum score in audience group (Table 4.1.7). However, the peer-led method is divided into two subgroups as the narrator and audience so the results of the narrator group could not affect the overall total, because the results of the audience were similar. Although the minimum and maximum mean scores of the narrator group were significant, the scores of the audience group were similar, and there was no statistically significant difference between the minimum and maximum average scores in the peer-led method.

Although there was a significant difference between the two groups, the results of the peer education peer-led method were found to be statistically more significant than the traditional group ($p<0.05$). Similarly, Akkuş et al. indicated that, peer education is said to strengthen the friendship relations of adolescents, gain self-confidence and increase the level of knowledge (47). Also, Forneris et al. also stated that peer education increased friendship relations for adolescents and gained the ability to explain (44). The narrator

and audience groups in our study, which are the subgroups of the peer-led method, were also statistically significant. The results of the narrator group are similar to those of the audience except the adequate and the balanced nutrition. There was a statistically significant difference only in the adequate and balanced nutrition subgroup. Also Akkuş et al. stated that the narrator group was more advantageous than the from people who listen to education, this study and stated that the narrator group learned the principle of helping first and increased the desire to participate in the study, but at the same time they could use the skill they have acquired in the rest of their lives (47). Interestingly, the subgroup of malnutrition related diseases was not statistically significant in both groups. It is considered that there is no statistically significant difference between pre and post test because the text prepared for this section may be insufficient or the students have information about this section before the education. Considering the results, it was found that the answers given in the pre and post tests belonging to the subgroup of malnutrition-related diseases were almost the same, that is, since the students had knowledge about the subject before the education, no statistical significance was found before and after the education. The reason for this might be that the school where the study is conducted is a health vocational high school. Forneris et al. also stated that the quality of education is important, but even if the quality of education is low, it can make a difference even if it is not done at all(44).

Ghasemi et al. stated that, peer education; although they were found to be more effective than traditional methods such as booklets, lecture notes, and teacher explanations, they found that only the expression of health personnel was more effective than peer education (40).

The studies conducted on peer education in different parts of the world are as follows; Peer education has been used in Bahrein to regulate the general health and healthy life; three different strategies have been determined in Jordan, considering peer education will be more economical and as a result against this region, it has been stated that it is expensive as it progresses slowly by trying this education method in Lebanon; in Saudi Arabia, it is planned that peer education will improve the abilities of educators, and the level of knowledge of those who receive education will increase; in Tunisia, it is said that the history of peer education is 40 years old, it is determined that the common source is peers and careful to choose reliable and knowledgeable people while choosing educational peers (39).

Pad (Parents action on Drugs) site has reviewed and compiled articles about peer methods on substance use, and as a result, peer method has been more successful than traditional methods. They said that the reason for this was that peers' sharing of information with their peers in social settings caused more positive results. They also pointed out that more studies are needed (48).

It was determined that the adolescents who received peer education in the peer-led method had more higher scores in sub-groups of the study, adequate and balanced nutrition and essential nutrients which positive ranks were respectively, 32, 26 and the ties for these sub groups were 3 and 4. The traditional group positive ranks were sub groups of peer-led method adequate and balanced nutrition, essential nutrients and malnutrition related diseases 23, 23 and respectively and the ties for these sub groups were 10 and 6. Likewise the no statistically significant difference was found between the narrator and the audience in the peer education model for malnutrition related diseases, there was much more ties between the peer-led method of malnutrition related diseases. The ties were peer-led method and traditional group respectively, 10 and 10.

In this study, no statistically significant difference was found between the narrator and the audience in the peer education model.

In this study, although the increase was statistically significant in both education, peer education was found to be more significant compared to traditional education. No significant results were found in the subgroup of malnutrition related diseases only. It can be thought that the reason for the positive results in other subgroups (adequate and balanced nutrition and essential nutrients) is that they are an activity that students can do with their peers and they are not bored in doing the peer-led method. It is thought that malnutrition-related diseases are significant and that part of the training is insufficient or the pre and post test results are similar.

In many studies, it has been stated that peer education is beneficial in terms of improving peer relations and expression skills as well as increasing the level of knowledge (44–47). Future studies are suggested with higher number of participants and evaluating the long term effects and questioning the improved habits with the increased knowledge.

6. LIMITATIONS

The low boy population may have led to the conclusion that boys are less successful. The quality of the educational content, the section of malnutrition related diseases can be improved. The limited number of participants is another limitation of the study.

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8. APPENDICES

8.1. APPENDIX 1. INFORMED CONSENT

Araştırmanın Adı: Adölesanlara Verilen Farklı Beslenme Eğitim Modellerinin Beslenme Bilgi Düzeyine Etkisinin Karşılaştırılması

Sayın Katılımcı ve /veya Yasal Velisi,

Yukarıda adı yazılı araştırmaya katılmak üzere davet edilmiş bulunmaktasınız. Bu araştırmada yer almayı kabul etmeden önce, araştırmanın ne amaçla yapılmak istendiğini anlamanız ve bu bilgilendirme sonucunda kararınızı vermeniz gerekmektedir. Aşağıdaki bilgileri lütfen dikkatlice okuyunuz, sorularınız olursa sorunuz ve açık yanıtlar isteyiniz. Bu araştırma ile etkinliği çeşitli epidemiyolojik çalışmalarla birçok kez denenen, farklı beslenme eğitim yöntemleri kullanarak beslenme bilgi düzeyinin artırılması amaçlanmıştır. Bu araştırma, katılımcıların sağlıklı gıda seçimlerini yapmaları ve yaşam boyu sağlıklı beslenme alışkanlıklarını geliştirebilmeleri için ihtiyaç duyacakları bilgi ve becerileri kazanmalarına yardımcı olmaya da yarar sağlayacaktır. Araştırma için etik kurul ve İstanbul Valiliği ve İl Milli Eğitim Müdürülüğü'nden gerekli yasal izinler alınmıştır. Araştırmaya sizin dışınızda 215 kişi katılacaktır. Çalışmaya katılan öğrencilerden 108 tanesi kontrol grubunu oluşturmaktadır. Kontrol grubundaki öğrencilere geleneksel eğitim verilecekken, diğer gruplara video, fotoğraf vb. yöntemlerle farklı eğitim yöntemleri uygulanacaktır. Sizden bu çalışmada verilen anket formunu doldurmanız, verilen eğitime katılımınız ve eğitim sonunda yine aynı anketi yapmanız istenecektir. Bu işlemler yaklaşık 45 dakikanızı alacaktır. Bunun size ve yakınlarınıza hiçbir zararı olmayacaktır. Çalışmaya katılmakla parasal yük altına girmeyeceksiniz ve size de herhangi bir ödeme yapılmayacaktır.

Bu araştırmaya katılıp katılmamakta tümüyle özgürsünüz. Gerek duyduğunuz tüm bilgileri istemeye ve doğru, açık, anlaşılır bilgi almaya hakkınız vardır. Araştırmaya katılmayı istemezseniz burada size verilen hizmet olumlu veya olumsuz şekilde etkilenmeyecektir. Gerekli gördüğü takdirde araştırmanın herhangi bir kısmında katılımcı araştırmadan çıkabilir, araştırmacı çalışmayı sonlandırabilir. Araştırmanın tüm aşamalarında kimlik bilgileriniz gizli tutulacaktır. Araştırma kapsamında elde edilen bilgiler bilimsel amaçlarla kullanılabilir gizlilik kurallarına uyulmak kaydıyla sunulabilir ve yayınlanabilir. Araştırma ile ilgili daha fazla bilgiye ihtiyaç duyarsanız araştırmacıya

gunalanelif92@gmail.com e-posta adresi veya 05050893812 numaralı telefondan ulaşabilirsiniz.

Yukarıda yer alan ve araştırmaya başlanmadan önce katılımcılara verilmesi gereken bilgileri içeren metni okudum (ya da sözlü olarak dinledim). Araştırma kapsamında elde edilen şahsıma ait bilgilerin bilimsel amaçlarla kullanılmasını, gizlilik kurallarına uyulmak kaydıyla sunulmasını ve yayınlanmasını, hiçbir baskı ve zorlama altında kalmaksızın, kendi özgür irademle kabul ettiğimi beyan ederim.

İmza/Tarih İmza/Tarih

Katılımcının adı soyadı Sorumlu Araştırmacının adı soyadı: Katılımcının Yasal Velisinin

Adı soyadı

8.2. APPENDIX 2. PERMISSION OF GOVERNORSHIP OF ISTANBUL, THE MINISTRY OF NATIONAL EDUCATION

T.C.
İSTANBUL VALİLİĞİ
İl Millî Eğitim Müdürlüğü

Sayı : 59090411-20-E.8584723 30/04/2019
Konu : Anket ve Araştırma İzin Talebi.

VALİLİK MAKAMINA

İlgi: a) Yeditepe Üniversitesinin 10.02.2019 tarihli ve 13 sayılı yazısı.
b) MEB. Yen. ve Eğ. Tk. Gn. Md. 22.08.2017 tarih ve 12607291/ 2017/25 No'lu Gen.
c) Milli Eğitim Müdürlüğü Araştırma ve Anket Komisyonunun 29.04.2019 tarihli tutanağı.

Yeditepe Üniversitesi Sağlık Bilimleri Fakültesinde öğretim üyesi olarak görev yapan Binnur OKAN BAKIR'ın **"Adölesanlara Verilen Farklı Beslenme Eğitim Modellerinin Beslenme Bilgi Düzeyine Etkisinin Karşılaştırılması"** konulu araştırma çalışması kapsamında, ilimiz Üsküdar ilçesinde bulunan liselerde öğrenim gören öğrencilere; anket uygulama istemi hakkındaki ilgi (a) yazı ve ekleri Müdürlüğümüzce incelenmiştir.

Araştırmacının söz konusu talebi; bilimsel amaç dışında kullanılmaması, **uygulama sırasında bir örneği müdürlüğümüzde muhafaza edilen mühürlü ve imzalı veri toplama araçlarının kurumlarımıza araştırmacı tarafından ulaştırılarak uygulanılması, katılımcıların gönüllülük esasına göre seçilmesi, araştırma sonuç raporunun müdürlüğümüzden izin alınmadan kamuoyuyla paylaşılmaması koşuluyla, okul idarelerinin denetim, gözetim ve sorumluluğunda, eğitim-öğretimi aksatmayacak şekilde ilgi (b) Bakanlık emri esasları dâhilinde uygulanması, sonuçtan Müdürlüğümüze rapor halinde (CD formatında) bilgi verilmesi kaydıyla** Müdürlüğümüzce uygun görülmektedir.

Makamlarınızca da uygun görülmesi halinde olurlarınıza arz ederim.

Levent YAZICI
İl Milli Eğitim Müdürü

Ek:
1- Genelge.
2- Komisyon Tutanağı.

OLUR
30/04/2019

Ahmet Hamdi USTA
Vali a.
Vali Yardımcısı

Milli Eğitim Müdürlüğü Binbirdirek M. İmran Öktem Cad.
No:1 Eski Adliye Binası Sultanahmet Fatih/İstanbul
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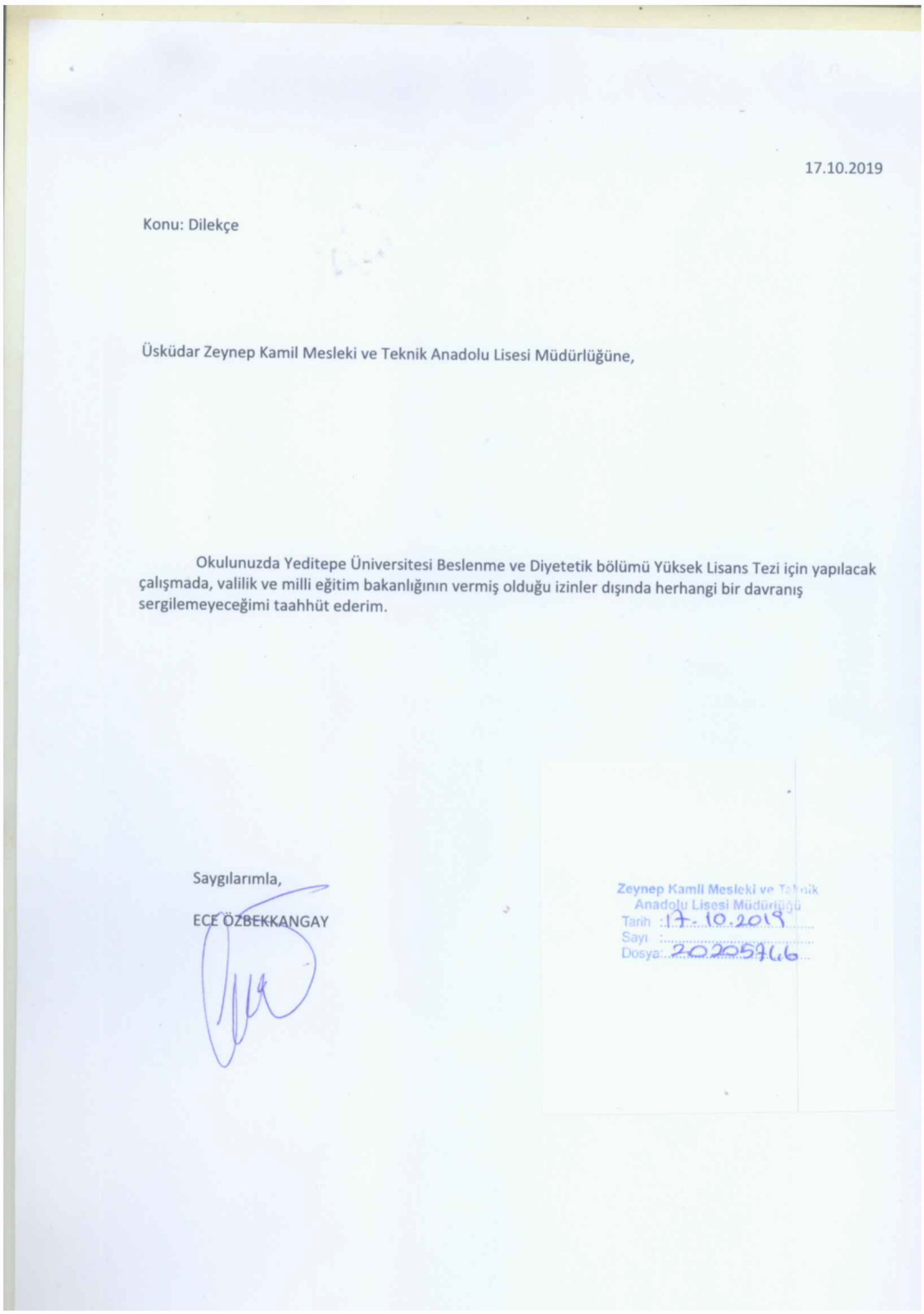
A. BALTA VHKİ
Tel: (0 212) 455 04 00-239

8.3. APPENDIX 3. PERMISSIONS AND PETITIONS OF ÜSKÜDAR ZEYNEP KAMIL VOCATIONAL AND TECHNICAL HIGH SCHOOL



17.10.2019

Konu: Dilekçe

Üsküdar Zeynep Kamil Mesleki ve Teknik Anadolu Lisesi Müdürlüğüne,

Okulunuzda Yeditepe Üniversitesi Beslenme ve Diyetetik bölümü Yüksek Lisans Tezi için yapılacak çalışmada, valilik ve milli eğitim bakanlığının vermiş olduğu izinler dışında herhangi bir davranış sergilemeyeceğimi taahhüt ederim.

Saygılarımla,

ECE ÖZBEKKANGAY

Zeynep Kamil Mesleki ve Teknik Anadolu Lisesi Müdürlüğü
Tarih : 17.10.2019
Sayı :
Dosya: 20205746

17.10.2019

Konu: Eğitim İçeriğinin Açıklanması

Üsküdar Zeynep Kamil Mesleki ve Teknik Anadolu Lisesi Müdürlüğüne,

Okulunuzda yapılacak olan çalışmada farklı iki eğitim modeli kullanılacak olup, rastgele seçilen 36 öğrenciye Didaktik eğitim modeli, 36 kişiye ise Akran eğitim modeli uygulanacaktır. Akran modeli ile beslenme eğitiminde geleneksel/didaktik eğitimin içeriğine bağlı kalınarak eksik veya fazla cümle kurmadan öğrencilere aktarılacak metin kartları hazırlanacaktır. Öğrenciler Akran eğitim modelinde rastgele 18'er kişilik 2 gruba ayırılacaktır. Hazırlanan metin kartları öncelikle eğitimi verecek kişi tarafından öğrencilere okunacak daha sonra ikiye ayrılan öğrenci gruplarından birine hazırlanan metin kartlarından dağıtılarak diğer gruptaki öğrencilere okumaları istenecektir. Bu şekilde öğrenciler akranları ile iletişim kurarak beslenme ile ilgili bilgileri birbirlerine aktarırken öğreniyor olacaklardır. Aynı zamanda geleneksel/didaktik eğitim ile akran eğitimi arasında içerik farkı oluşturmadan tek değişkenin yöntem olduğu eğitim metodu uygulanarak öğrencilerin içerikten bağımsız olarak beslenme bilgi düzeylerindeki artışları karşılaştırılacaktır. 10. Sınıflara yapılacak bu çalışmam ile ilgili İstanbul İl Milli Eğitim Müdürlüğüne 30.04.2019 tarih sayılı E 8584723 sayılı valilik oluru doğrultusunda gerekli çalışmaları yapabilmem hususunda saygılarla arz ederim.

ECE ÖZBEKKANGAY

EKLER:

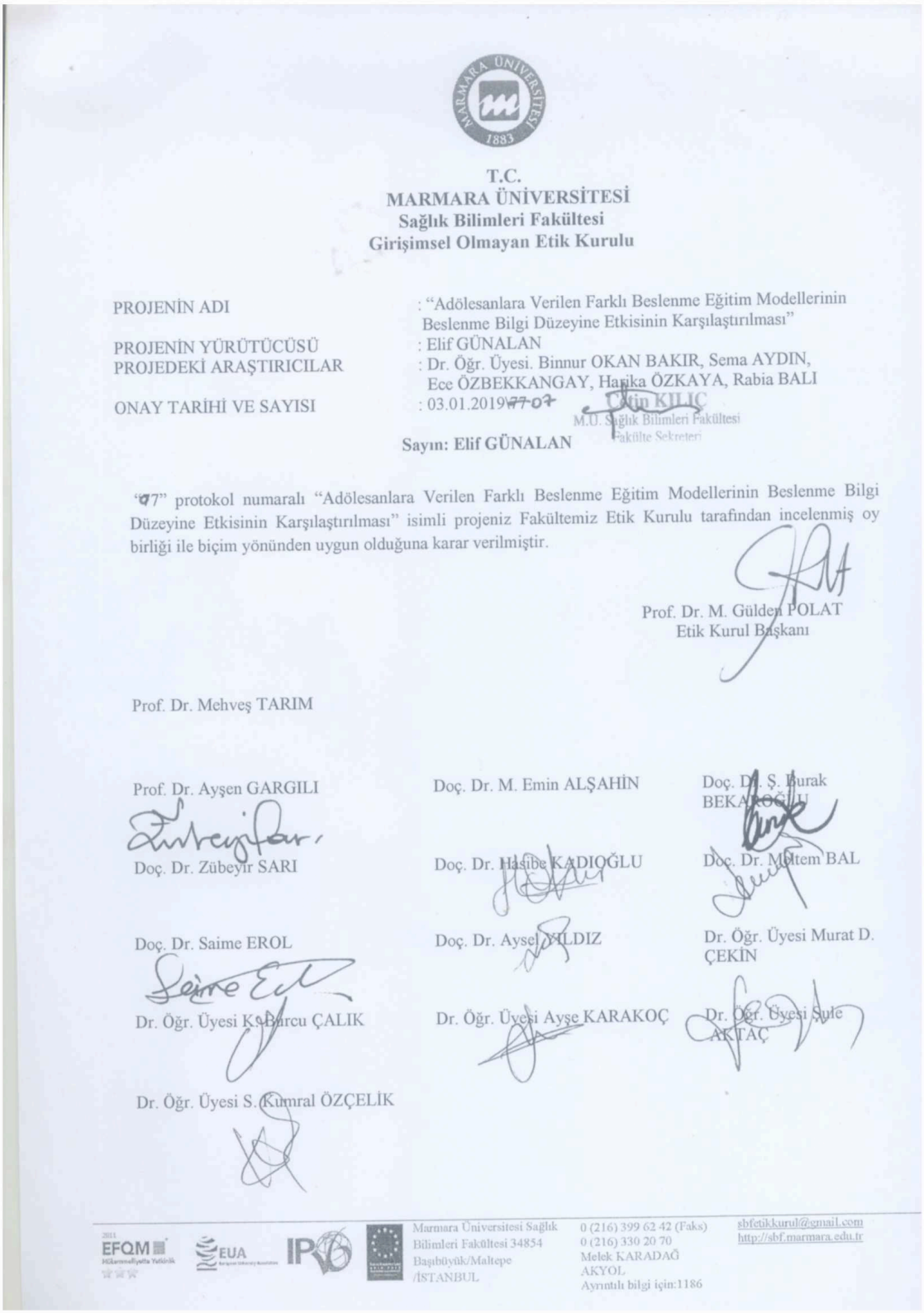
1. Farklı davranış sergilenmeyeceğine dair yazılan dilekçe
2. Valilik oluru dilekçesi
3. Adölesan Beslenme Bilgi Düzeyi Anketi
4.Etik kurul onayı
5.Fatih Öz ABBID ölçek onay yazısı

M.Yr. Sedat YENİ'e

17.10.2019

Nursen BAYKAN
Zeynep Kamil Mesleki ve Teknik Anadolu Lisesi Müdürü

8.4. APPENDIX 4. ETHICS COMMITTEE OF MARMARA UNIVERSITY FACULTY OF HEALTH SCIENCES



T.C.
MARMARA ÜNİVERSİTESİ
Sağlık Bilimleri Fakültesi
Girişimsel Olmayan Etik Kurulu

PROJENİN ADI : "Adölesanlara Verilen Farklı Beslenme Eğitim Modellerinin Beslenme Bilgi Düzeyine Etkisinin Karşılaştırılması"

PROJENİN YÜRÜTÜCÜSÜ : Elif GÜNALAN
PROJEDEKİ ARAŞTIRICILAR : Dr. Öğr. Üyesi. Binnur OKAN BAKIR, Sema AYDIN, Ece ÖZBEKKANGAY, Hatika ÖZKAYA, Rabia BALI

ONAY TARİHİ VE SAYISI : 03.01.2019/07

Çetin KILIÇ
M.Ü. Sağlık Bilimleri Fakültesi
Fakülte Sekreteri

Sayın: Elif GÜNALAN

"07" protokol numaralı "Adölesanlara Verilen Farklı Beslenme Eğitim Modellerinin Beslenme Bilgi Düzeyine Etkisinin Karşılaştırılması" isimli projeniz Fakültemiz Etik Kurulu tarafından incelenmiş oy birliği ile biçim yönünden uygun olduğuna karar verilmiştir.

Prof. Dr. M. Gülden POLAT
Etik Kurul Başkanı

Prof. Dr. Mehveş TARIM

Prof. Dr. Ayşen GARGILI

Doç. Dr. M. Emin ALŞAHİN

Doç. Dr. Ş. Burak BEKAROĞLU

Doç. Dr. Zübeyir SARI

Doç. Dr. Hasibe KADIOĞLU

Doç. Dr. Mültem BAL

Doç. Dr. Saime EROL

Doç. Dr. Aysel YILDIZ

Dr. Öğr. Üyesi Murat D. ÇEKİN

Dr. Öğr. Üyesi K. Burcu ÇALIK

Dr. Öğr. Üyesi Ayşe KARAKOÇ

Dr. Öğr. Üyesi Sule AKTAÇ

Dr. Öğr. Üyesi S. Kumral ÖZÇELİK

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sbfetikkurul@gmail.com
http://sbf.marmara.edu.tr

8.5. APPENDIX 5. PERMISSION OF ABBID QUESTIONNAIRE FROM FATIH ÖZ

ortaya çıkabilen sağlık sorunlarıdır.			
37. Az miktarda meyve tüketimi enfeksiyon hastalıklarına yakalanmayı kolaylaştırır.			
38. Yeterli ve dengeli beslenmeyen bireylerde kansızlık görülme riski artar.			

FORM 8

ABBID Ölçeğinin Kullanılabileceğine Dair İzin

fatih öz — Tüm klasörler

Yanıtla | Sil | Arşivle | Gereksiz | Taşı | Kategorilere Ayır | ...

Re: ABBİD Ölçeği Kullanımına Dair

From: Elif Günalan <elif_mbg_gunlan@hotmail.com>
Sent: Saturday, October 13, 2018 2:17 PM
To: ozzfatih@hotmail.com
Subject: ABBİD Ölçeği Kullanımına Dair

Merhaba Fatih Hocam,

Ben Yeditepe Üniversitesi Tıp Fakültesi Fizyoloji Anabilim dalı asistanlarından Elif Günalan. 2016 yılında Progress in Nutrition dergisinde "Development of a reliable and valid adolescence nutritional knowledge questionnaire" adıyla yayınladığınız ABBİD ölçeğinin kullanımına ilişkin olarak bu maili atmak durumunda kaldım. Şöyle ki geçen yıl yaklaşık 1600 adölesanla yürüttüğümüz bir epidemiyolojik çalışma bulunmaktadır. Bu yıl ise bu çalışmanın müdahale çalışmasını planlamaktayız. Geliştirdiğiniz ve Türkçe güvenilirlik-geçerlilik çalışmasını tamamladığınız ABBİD ölçeğini çalışmamızda kullanmak istiyoruz. Ancak, literatürde ölçeğin anket formatına maalesef ulaşamadık. Ve anketin değerlendirmesine ilişkin de bazı anlayamadığımız noktalar bulunmakta. Gerek anketinizi gerekli atıflarda bulunarak kullanmayı, gerekse ölçeğin anket formunun tarafımıza mail yoluyla ulaştırılmasını arz etmekteyiz.

Saygılarımla.

Elif Günalan

Re: ABBİD Ölçeği Kullanımına Dair

F Fatih . <ozzfatih@hotmail.com>
Pzt 15.10.2018, 15:05
Siz

ABBID ölçek.docx
15 KB

İndir OneDrive'a kaydet

İyi günler Elif hanım, ölçeği çalışmanızda kullanabilirsiniz, ekte ölçeğin Türkçe formunu gönderiyorum. Anketin değerlendirilmesi noktasında her doğru cevap 1 puan olarak değerlendiriliyor o şekilde hesaplanıyor. Anlamadığınız hususlarda sorabilirsiniz. Kolay gelsin.

Saygılarımla,
Fatih ÖZ

8.6. APPENDIX 6. ABBID QUESTIONNAIRE

FORM 7

Adölesan Beslenme Bilgi Düzeyi Anketi

Okul Kodu: Tarih

Sınıf Kodu:

Öğrenci Kodu:

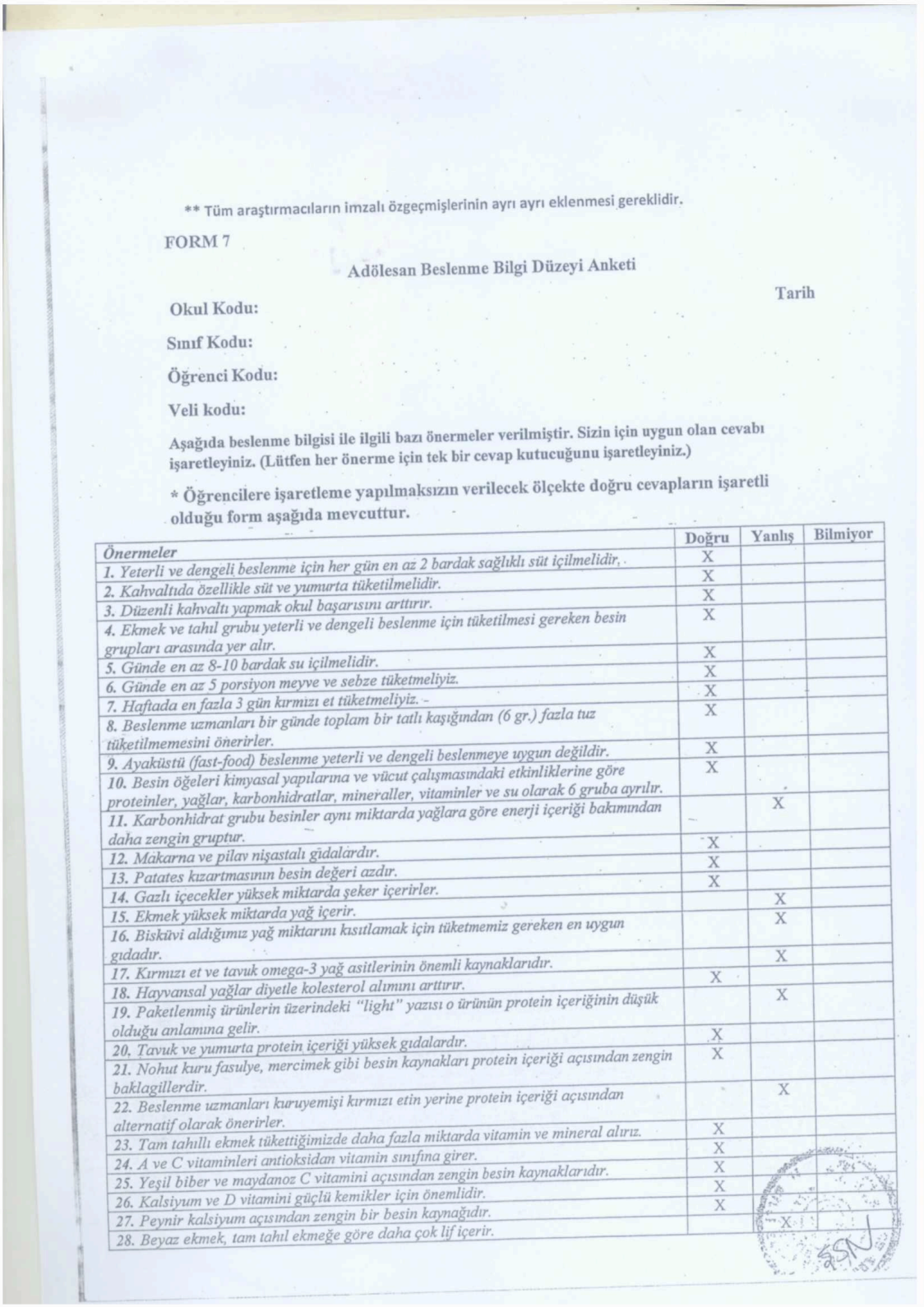
Veli kodu:

Aşağıda beslenme bilgisi ile ilgili bazı önermeler verilmiştir. Sizin için uygun olan cevabı işaretleyiniz. (Lütfen her önerme için tek bir cevap kutucuğunu işaretleyiniz.)

Önermeler	Doğru	Yanlış	Bilmiyor
1. Yeterli ve dengeli beslenme için her gün en az 2 bardak sağlıklı süt içilmelidir.			
2. Kahvaltıda özellikle süt ve yumurta tüketilmelidir.			
3. Düzenli kahvaltı yapmak okul başarısını arttırır.			
4. Ekmek ve tahıl grubu yeterli ve dengeli beslenme için tüketilmesi gereken besin grupları arasında yer alır.			
5. Günde en az 8-10 bardak su içilmelidir.			
6. Günde en az 5 porsiyon meyve ve sebze tüketmeliyiz.			
7. Haftada en fazla 3 gün kırmızı et tüketmeliyiz.			
8. Beslenme uzmanları bir günde toplam bir tatlı kaşığından (6 gr.) fazla tuz tüketilmemesini önerirler.			
9. Ayaküstü (fast-food) beslenme yeterli ve dengeli beslenmeye uygun değildir.			
10. Besin öğeleri kimyasal yapılarına ve vücut çalışmasındaki etkinliklerine göre proteinler, yağlar, karbonhidratlar, mineraller, vitaminler ve su olarak 6 gruba ayrılır.			
11. Karbonhidrat grubu besinler aynı miktarda yağlara göre enerji içeriği bakımından daha zengin gruptur.			
12. Makarna ve pilav nişastalı gıdalardır.			
13. Patates kızartmasının besin değeri azdır.			
14. Gazlı içecekler yüksek miktarda şeker içerirler.			
15. Ekmek yüksek miktarda yağ içerir.			
16. Bisküvi aldığımız yağ miktarını kısıtlamak için tüketmemiz gereken en uygun gıdadır.			
17. Kırmızı et ve tavuk omega-3 yağ asitlerinin önemli kaynaklarıdır.			
18. Hayvansal yağlar diyetle kolesterol alımını arttırır.			
19. Paketlenmiş ürünlerin üzerindeki "light" yazısı o ürünün protein içeriğinin düşük olduğu anlamına gelir.			
20. Tavuk ve yumurta protein içeriği yüksek gıdalardır.			
21. Nohut kuru fasulye, mercimek gibi besin kaynakları protein içeriği açısından zengin baklagillerdir.			
22. Beslenme uzmanları kuruyemişi kırmızı etin yerine protein içeriği açısından alternatif olarak önerirler.			
23. Tam tahıllı ekmek tükettiğimizde daha fazla miktarda vitamin ve mineral alırız.			
24. A ve C vitaminleri antioksidan vitamin sınıfına girer.			
25. Yeşil biber ve maydanoz C vitamini açısından zengin besin kaynaklarıdır.			
26. Kalsiyum ve D vitamini güçlü kemikler için önemlidir.			
27. Peynir kalsiyum açısından zengin bir besin kaynağıdır.			
28. Beyaz ekmek, tam tahıl ekmeğe göre daha çok lif içerir.			
29. Kayısı yüksek lif içeren bir meyve değildir.			
30. Kırmızı et tuz içeriği yüksek bir gıdadır.			
31. Aşırı kilolu olan bireyler, normal kilolu olan bireylere göre daha fazla sağlık problemi yaşarlar.			
32. Balık tüketmek kalp hastalıklarına yakalanma riskini arttırır.			
33. Obezite (şişmanlık), aşırı yağ tüketimine bağlı olarak gelişebilir.			
34. Daha fazla meyve ve sebze gibi yüksek posa içeren gıdaları tüketmek kansere yakalanma riskini azaltır.			
35. Daha az tuz tüketmenin kalp hastalıklarını önlemede etkisi yoktur.			
36. Şeker, hipertansiyon ve kalp hastalığı şeker ve tuzun aşırı olarak tüketimine bağlı olarak			

ortaya çıkabilen sağlık sorunlarıdır.			
37. Az miktarda meyve tüketimi enfeksiyon hastalıklarına yakalanmayı kolaylaştırır.			
38. Yeterli ve dengeli beslenmeyen bireylerde kansızlık görülme riski artar.			

8.7. APPENDIX 7. ABBID QUESTIONNAIRE ANSWER KEY



** Tüm araştırmacıların imzalı özgeçmişlerinin ayrı ayrı eklenmesi gereklidir.

FORM 7

Adölesan Beslenme Bilgi Düzeyi Anketi

Tarih

Okul Kodu:

Sınıf Kodu:

Öğrenci Kodu:

Veli kodu:

Aşağıda beslenme bilgisi ile ilgili bazı önermeler verilmiştir. Sizin için uygun olan cevabı işaretleyiniz. (Lütfen her önerme için tek bir cevap kutucuğunu işaretleyiniz.)

*** Öğrencilere işaretleme yapılmaksızın verilecek ölçekte doğru cevapların işaretli olduğu form aşağıda mevcuttur.**

Önermeler	Doğru	Yanlış	Bilmiyor
1. Yeterli ve dengeli beslenme için her gün en az 2 bardak sağlıklı süt içilmelidir.	X		
2. Kahvaltıda özellikle süt ve yumurta tüketilmelidir.	X		
3. Düzenli kahvaltı yapmak okul başarısını arttırır.	X		
4. Ekmek ve tahıl grubu yeterli ve dengeli beslenme için tüketilmesi gereken besin grupları arasında yer alır.	X		
5. Günde en az 8-10 bardak su içilmelidir.	X		
6. Günde en az 5 porsiyon meyve ve sebze tüketmeliyiz.	X		
7. Haftada en fazla 3 gün kırmızı et tüketmeliyiz.	X		
8. Beslenme uzmanları bir günde toplam bir tatlı kaşığından (6 gr.) fazla tuz tüketilmemesini önerirler.	X		
9. Ayaküstü (fast-food) beslenme yeterli ve dengeli beslenmeye uygun değildir.	X		
10. Besin öğeleri kimyasal yapılarına ve vücut çalışmasındaki etkinliklerine göre proteinler, yağlar, karbonhidratlar, mineraller, vitaminler ve su olarak 6 gruba ayrılır.	X		
11. Karbonhidrat grubu besinler aynı miktarda yağlara göre enerji içeriği bakımından daha zengin gruptur.		X	
12. Makarna ve pilav nişastalı gıdalardır.	X		
13. Patates kızartmasının besin değeri azdır.	X		
14. Gazlı içecekler yüksek miktarda şeker içerirler.	X		
15. Ekmek yüksek miktarda yağ içerir.		X	
16. Bisküvi aldığımız yağ miktarını kısıtlamak için tüketmemiz gereken en uygun gıdadır.		X	
17. Kırmızı et ve tavuk omega-3 yağ asitlerinin önemli kaynaklarıdır.		X	
18. Hayvansal yağlar diyetle kolesterol alımını arttırır.	X		
19. Paketlenmiş ürünlerin üzerindeki "light" yazısı o ürünün protein içeriğinin düşük olduğu anlamına gelir.		X	
20. Tavuk ve yumurta protein içeriği yüksek gıdalardır.	X		
21. Nohut kuru fasulye, mercimek gibi besin kaynakları protein içeriği açısından zengin baklagillerdir.	X		
22. Beslenme uzmanları kuruyemişi kırmızı etin yerine protein içeriği açısından alternatif olarak önerirler.		X	
23. Tam tahıllı ekmek tükettiğimizde daha fazla miktarda vitamin ve mineral alırız.	X		
24. A ve C vitaminleri antioksidan vitamin sınıfına girer.	X		
25. Yeşil biber ve maydanoz C vitamini açısından zengin besin kaynaklarıdır.	X		
26. Kalsiyum ve D vitamini güçlü kemikler için önemlidir.	X		
27. Peynir kalsiyum açısından zengin bir besin kaynağıdır.	X		
28. Beyaz ekmek, tam tahıl ekmeğe göre daha çok lif içerir.		X	

29. Kayısı yüksek lif içeren bir meyve değildir.		X	
30. Kırmızı et tuz içeriği yüksek bir gıdadır.		X	
31. Aşırı kilolu olan bireyler, normal kilolu olan bireylere göre daha fazla sağlık problemi yaşarlar.	X		
32. Balık tüketmek kalp hastalıklarına yakalanma riskini arttırır.		X	
33. Obezite (şişmanlık), aşırı yağ tüketimine bağlı olarak gelişebilir.	X		
34. Daha fazla meyve ve sebze gibi yüksek posa içeren gıdaları tüketmek kansere yakalanma riskini azaltır.	X		
35. Daha az tuz tüketmenin kalp hastalıklarını önlemede etkisi yoktur.		X	
36. Şeker, hipertansiyon ve kalp hastalığı şeker ve tuzun aşırı olarak tüketimine bağlı olarak ortaya çıkabilen sağlık sorunlarıdır.	X		
37. Az miktarda meyve tüketimi enfeksiyon hastalıklarına yakalanmayı kolaylaştırır.	X		
38. Yeterli ve dengeli beslenmeyen bireylerde kansızlık görülme riski artar.	X		

8.8. APPENDIX 8. TRADITIONAL TEXT

LİSE ÇAĞINDA SAĞLIKLI BESLENME

YETERLİ VE DENGELİ BESLENME

Beslenme ; insanın büyümesi, gelişmesi, sağlıklı ve üretken olarak uzun süre yaşaması ve yaşam kalitesini arttırması için gerekli olan besinleri vücuduna alıp kullanmasıdır.

Anne karnından itibaren, bebeklik, çocukluk, ergenlik ve yetişkin çağından yaşlılığa kadar yaşamın tüm evrelerinde beslenme oldukça önemlidir.

- **Yeterli ve dengeli beslenme ;** vücudun büyümesi ve gelişmesi, dokuların yenilenmesi ve çalışması için gerekli olan enerji ve besin öğelerinin her birinin yeterli ve dengeli miktarlarda alınması ve vücutta uygun şekilde kullanılmasıdır.

YETERLİ VE DENGELİ BESLENME İÇİN ÖNERİLER

KAHVALTI GÜNÜN EN ÖNEMLİ ÖĞÜNÜDÜR.

Akşam yemeği ile kahvaltı arasında uzun bir açlık dönemi bulunmaktadır ve vücudumuz uyurken dahi çalışmaya devam eder. Uyku sürecinde vücudumuz besin öğelerinin tümünü kullanır. Sabah kahvaltı yapılmadığında beynimizde yeteri kadar enerji oluşmaz ve yorgunluk, baş ağrısı, dikkat eksikliği meydana gelir. Bu durum okul başarısını olumsuz olarak etkiler. Bu nedenle; tüm besin öğelerini içeren (karbonhidrat, protein, yağ) bir kahvaltı ile güne başlamak gerek gün içerisinde yeterli ve dengeli beslenmenin sağlanmasında gerekse okul başarısının artırılmasında önemli rol oynamaktadır.

YETERLİ VE DENGELİ BESLENME İÇİN ÖNERİLER

Sağlıklı besin seçimi büyüme ve gelişmeyi olumlu yönde etkilemektedir. Örneğin; kemik gelişimi için kalsiyum, bilişsel gelişim ve okul başarısı için karbonhidratlar, kas gelişimi için protein, enerji için yağ ve bu metabolik olayların gerçekleşmesi için vitamin ve minerallere gereksinim duyulmaktadır. Bu nedenle,

- **Güne süt, yumurta, peynir ve tahıl grubu içeren sağlıklı bir kahvaltı tabağı ile başlanıp,**
- **Gün içerisinde en az 2 porsiyon süt ve süt grubu tüketilmeli,**
- **Besin örüntüsünde ekmek ve tahıl grubu yeteri kadar tüketilmeli,**
- **Hayvansal proteinlerden haftada iki kez balık, 2-3 kez kırmızı et tüketilmeli,**
- **Biriken toksik metabolitleri vücuttan uzaklaştırmak için günlük 8-10 bardak su tüketilmeli,**
- **Gün içerisinde en az 5 porsiyon sebze ve meyve tüketilmeli ve**

Ayak-üstü fast-food tüketimini ve günlük tüketilen tuz miktarını 6 gr ile SINIRLANDIRMALIYIZ.

Besin ve Besin Ögeleri

Besin ; günlük beslenme örüntüsünde (diyette) yer alan yenilebilen ve yenildiğinde yaşam için gerekli besin ögelerini içeren bitki ve hayvan dokularıdır.

Besin ögesi: Besinler "**besin ögesi**" denilen yapı taşlarından oluşur. Besinlerin yapısında bulunan besin ögeleri kendi içinde iki büyük gruba ayrılır.

Günlük diyetle fazla miktarda alınanlara "makro besin ögeleri", vücutta işlevleri çok önemli olmasına karşın az miktarda gereksinim duyulan ve alınanlara da "mikro besin ögeleri" denilir.

Karbonhidratlar, yağlar ve proteinler makro besin ögeleridir. **Vitaminler** ve **mineraller** mikro besin ögeleridir. **Su** yaşam için elzemdir ve besin ögesi olarak kabul edilir.

Makro Besin Ögeleri

Vücut organlarının çalışabilmesi ve normal ısının sürdürülebilmesi için gerekli enerji makro besin ögelerinden sağlanmaktadır.

- Makro besin ögesi olan karbonhidratlar başlıca enerji kaynağıdır ve 1 gramı **4 kkal** enerji sağlar.
- Yağların 1 gramı **9 kkal** enerji sağlar ve makrobesin ögeleri içinde en yüksek enerjiyi veren besin ögesidir.
- Proteinler gerekmedikçe enerji amacıyla vücutta kullanılmaz, daha çok vücudun yapı taşını oluştururlar.
- Proteinlerin de 1 g'ı **4 kkal** enerji sağlamaktadır.

KARBONHİDRATLAR

Karbonhidratlar basit ve kompleks olarak ikiye ayrılır.

Basit karbonhidratlar besine tatlı tadını verir. Basit karbonhidratlar **doğal olarak** meyvelerde ve sütte; **eklenmiş şeker olarak** gazlı içeceklerde, soğuk çay içeceklerinde, meyveli içeceklerde, şekerleme ve tatlılarda yüksek miktarda bulunur.

Kompleks karbonhidratlar ise nişasta ve diyet posasını içerir. Nişasta birçok bitkisel besinde bulunur. Makarna, pilav, bulgur vb. tahıllar, kuru fasulye, mercimek, nohut vb. kurubaklagiller ve patates, havuç gibi kök sebzeler nişasta içermektedir. Ancak, bu ürünlerin kızartma, kavurma vb. gibi sağlıksız pişirme yöntemleriyle pişirilmesi düşük kaliteli olmalarına ve besin değerinin düşmesine neden olmaktadır.

KARBONHİDRATLAR

Kompleks karbonhidratlardan sebze ve meyveler, tam tahıllı ürünler ve kurubaklagiller içerdikleri yüksek lif oranıyla sağlıklı bir diyette olmazsa olmazdır.

Pasta, börek, hamur işi, bisküvi, kurabiye gibi basit karbonhidrat içeren ürünler aynı zamanda yüksek yağ içermektedir.

Ekmekler karbonhidrat ve protein içerirken yağ içermemektedir.

Tam tahıllı ekmek vitamin, mineral ve lif bakımından zengin olup beyaz undan yapılan ekmek ise hem besin öğeleri hem de lif bakımından fakirdir.

PROTEİNLER

Proteinler, vücudumuzun yapıtaşlarını oluşturur ve hayvansal ve bitkisel kaynaklı olarak ikiye ayrılmaktadır.

Günlük diyette **enerjinin %10-20'sinin** proteinlerden gelmesi önerilir.

Hayvansal proteinler et, tavuk, balık, yumurta, süt ve süt ürünlerinden oluşurken; bitkisel proteinler ise kuru fasulye, mercimek, nohut gibi kurubaklagilleri içerir.

Bu besin öğelerinin özellikle ergenlik döneminde vücuda gerekli ve yeterli miktarda alınması sağlıklı büyüme ve gelişmenin sağlanması için oldukça önemlidir.

YAĞLAR

Yağlar makro besin grubunun bir üyesi olup çeşitli yağ asitleri içerirler. Kuruyemiş, et ve et ürünleri vb. gıdalarda bulunan yağlar içerdikleri yüksek enerji, lezzet ve yiyeceklere gevreklik verme özelliği oldukça sık tercih edilmektedir. Vücutta bulunan depo yağlar ise organizmanın ısı dengesini sağlar, organlara destek olur, gerektiğinde enerjiye çevrilmektedir.

Yağlar bitkisel ve hayvansal kaynaklı olmak üzere iki çeşittir:

Bitkisel yağlar; zeytinyağı, ayçiçek, fındık, mısırözü, pamuk ve susam yağlarıdır.

Hayvansal yağlar oda ısısında katı yapıda olan iç yağı, kuyruk yağı, tereyağ ve margarindir ve kolesterol içerirler.

Katı yağlar doymuş yağ asitlerini daha çok içerirler.

YAĞLAR

Günlük diyette, tüketilen yağdan gelecek enerjinin %20-35 arasında olması önerilmektedir.

Bu oranın yağ türleri arasındaki dağılımı bir birim katı yağ, bir birim herhangi bir bitkisel sıvı yağ ve bir buçuk veya iki birim (1.5 veya 2 birim) zeytinyağı olur 1; 1; 1.5/2.

Katı yağ alımı ise kolesterol düzeyini artırmamak için en az düzeyde tutulmalıdır (enerjini <%10).

Bisküvi, kraker, gofret gibi paketli ürünlerdeki yağ miktarı oldukça fazla olup, diyet ürünlerde ise «light» ibaresiyle yağ kısıtlaması yapıldığı ifade edilir.

Ayrıca, içeriğindeki omega-3 yağ asitlerinin sağlığı koruyucu etkisi sayesinde balık tüketimi de önerilmektedir.

VİTAMİN VE MİNERALLER

Vitaminler: Mikro besin ögeleri grubuna giren vitaminler çok az miktarda alınmalarına karşın etkileri çok önemli olan besin ögeleridir. Vitaminler kendi aralarında; yağda (A, D, E ve K) ve suda (B grubu ve C) çözünen (eriyen) vitaminler olarak iki grupta incelenmektedir. Vücutta enerji metabolizmasında, kan yapımında ve bağışıklık sisteminde yer alanların bazıları B grubu vitaminler ile C vitaminidir. D vitamini kemik oluşumu için gereklidir. A, E ve C vitaminleri vücut hücrelerinin hasarını önler, normal işlevlerinin sürdürülmesi ve zararlı bazı maddelerin etkilerinin azaltılmasında (antioksidan olarak) yardımcıdır. Folik asit, B6, B12 ve C vitaminleri ise kan yapımında görev alırlar.

Mineraller: Yetişkin insan vücudunun ortalama %6'sı mineralden oluşur. Kalsiyum, fosfor, magnezyum gibi mineraller kemik, iskelet ve diş yapısında yer alır. Demir, kobalt gibi mineraller kan yapımında, çinko ise bağışıklık sistemi için önemlidir.

VİTAMİN VE MİNERAL KAYNAKLARI

A vitamini	Karaciğer, süt, tereyağı, peynir, zenginleştirilmiş margarin
D vitamini	Güneş ışığı, zenginleştirilmiş besinler ve margarin, tereyağı, yumurta sarısı
E vitamini	Bitkisel yağlar, tam tahıllar, fındık, badem, ceviz vb. sert kabuklu yemişler, yeşil yapraklı sebzeler
K vitamini	Koyu yeşil yapraklı sebzeler
B6 Vitamini	Yumurta, tavuk, balık, tam tahıl, sert kabuklu yemişler (fındık vb.), karaciğer, böbrek
Folat	Yeşil yapraklı sebzeler, maya, portakal, tam tahıllar, kurubaklagiller, karaciğer
B12 Vitamini	Tüm hayvansal besinler, zenginleştirilmiş besinler
C vitamini	Turunçgiller, maydanoz, yeşil biber, çilek, domates, patates, lahana, yeşil yapraklı sebzeler

Kalsiyum	**Süt ve süt ürünleri, yeşil yapraklı sebzeler,**
Fosfor	Hayvansal besinler (süt, yumurta, et), tahıllar,
Magnezyum	Tahıllar, kurubaklagiller, sert kabuklu yemişler, yeşil sebzeler, süt
Demir	Kırmızı et ve ürünleri, tavuk, zenginleştirilmiş tahıl ürünleri, koyu yeşil yapraklı sebzeler, kuru meyveler
Çinko	Tam tahıllar, et, yumurta, karaciğer, deniz ürünleri
İyot	İyotlu tuz, deniz ürünleri

TUZ

Diyetle alınan minerallerden bir ise tuzdur. Ancak, aşırı tuz (sodyum) tüketimi; kardiyovasküler hastalıklar, böbrek hastalıkları, hipertansiyon, inme, osteoporoz ve bazı kanser türlerinin oluşmasına neden olabilmektedir. Günlük tuz tüketimi 6 g'ı aşmamalıdır. Tüketilen tuz ise iyotlu olmalıdır.

Aşırı Tuz İçeren Besinler

- Hazır soslar (soya, ketçap, barbekü, tartar, salsa, hardal, makarna vb soslar)
- Atıştırmalık ürünler (cips, tahıl bazlı bar, meyve bazlı bar, patlamış mısır gibi)
- Tuzlanmış kuruyemişler (fındık, fıstık, ceviz, badem, leblebi, kavurga, kabak ve ayçiçeği çekirdeği, her türlü çekirdek içi vb.) Turşu ve salamura besinler (siyah ve yeşil zeytin, sebze turşuları), balık konserveleri, tuzlanmış ve/veya salamura edilmiş et ve balık ürünleri
- Aromalı/aromasız, doğal/doğal olmayan gazlı/gazsız mineralli içecekler.
- Geleneksel olarak evlerde hazırlanan turşu, salça, tarhana, yaprak salamurası vb. besinler.

SU

Su ve diğer içecekler vücut su dengesinin korunmasında önemlidir. Yaşam için elzem öge olarak tanımlanan su temiz kaynaklardan sağlanmalıdır. Başta su olmak üzere içecekler ve yiyeceklerde bulunan görünür/ görünmez su, "sıvı" olarak tanımlanır ve bireyin günlük gereksinimi, içtiği su, içecekler ve tükettiği yiyeceklerdeki içindeki su ile karşılanır. Gazlı, gazsız - karbonatlı, şeker ilaveli içecekler ile çay ve kahve yerine çoğunlukla su tercih edilmelidir.

Biriken toksik metabolitleri vücuttan uzaklaştırmak için günlük 8-10 bardak su tüketilmelidir.

Beslenme İlişkili Sağlık Problemleri

İnsan gereğinden çok yemek yerse, enerji ve besin ögelerini gerektiğinden çok alır. Özellikle diyetle alınan sebze-meyvenin yeterisz olması, aşırı şekerli-tuzlu- yağlı besin tüketimi ve glisemik yükü yüksek gıdaların tercih edilmesi kullanılandan fazla alınan enerji alımına sebep olur ve vücutta yağ olarak birikeceğinden sağlık için zararlıdır. Bu durum beraberinde **şişmanlık (obezite)** olmak üzere **diyabet**, **hipertansiyon**, **kalp damar hastalıkları, kanser** gibi sağlık sorunlarının oluşumuna neden olur ve "**AŞIRI VE DENGESİZ BESLENME**" olarak tanımlanır.

Enerji ve besin ögeleri vücudun gereksinim duyduğu düzeyde alınamadığında, vücut dokuları yapılamadığı ve yaşamsal faaliyetler sürdürülemediği için "**YETERSİZ BESLENME**" durumu oluşur. Ayrıca, kişi yeterince yemesine karşın, uygun besin seçimi yapamadığında ve/veya yanlış pişirme yöntemi uygulandığında besin ögelerinin bazılarını vücuduna alamayabilir. Besin ögeleri yetersiz alındığında, vücut çalışmasındaki işlevi yerine getirilmediğinden yine sağlık bozulabilir. Bu duruma da "**DENGESİZ BESLENME**" denir. Yetersiz ve dengesiz beslenme ise **kansızlık, aşırı zayıflık, bilişsel problemlere** neden olmaktadır.

Sağlıklı Bir Yaşam İçin Sağlıklı Besin Tercihi Yapmalıyız.

Obezite, koroner kalp hastalığı ve diyabet gibi kronik hastalık tanısı taşıyan bireyler özellikle yarım yağlı süt ve süt ürünlerini tercih etmelidir.

Balık ve deniz ürünlerine ek olarak bitkisel yağlar ve çeşitli bitkilerde de bulunan omega-3 yağ asitleri diyette yer alması kalp hastalıklarına yakalanma riskini azaltmaktadır. Ayrıca, hipertansiyon ve kalp hastalıklarının önlenmesinde tuz tüketiminin sınırlandırılması da önem arz etmektedir.

Düzenli ve yeterli taze sebze ve meyve tüketiminin artırılması kalp hastalıkları, enfeksiyon hastalıkları, inme ve bazı kanser türleri gibi kronik hastalıklara karşı koruyucudur. Özellikle sebzeler düşük enerji içerikleri nedeniyle de vücut ağırlığı artışının önlenmesinde rol alırlar.

8.9. APPENDIX 9. HANDBOOK

8.10. APPENDIX 10. CURRICULUM VITAE

Personal Informations

Name	ECE	**Surname**	ÖZBEKKANGAY
Place of Birth	KADIKÖY	**Date of Birth**	29.10.1994
Nationality	TURKEY	**TR ID Number**	18527297292
E-mail	eceoozbek@gmail.com	**Phone number**	05373347087

Education

Degree	Department	The name of the Institution Graduated From	Graduation year
Doctorate			
Master	Nutrition and Dietetics	**Yeditepe University**	2020
University	Nutrition and Dietetics	**Yeditepe University**	2017
High school	-	**İstek Özel Acıbadem Anadolu Lisesi**	2013

Languages	**Grades (#)**
English	75

All the grades must be listed if there is more than one (KPDS, ÜDS, TOEFL; EELTS vs),

Work Experience (Sort from present to past)

Position	Institute	**Duration (Year - Year)**
Supervisor and Dietitian	Balance Line Pilates Studio	2018-currently
Dietitian	Perihan Çiçek Polikliniği	2017-2018

Computer Skills

Program	**Level**
Excel	Good
Word	Good
Powerpoint	Excellent

***Excellent , good, average or basic**

Scientific works

The articles published in the journals indexed by SCI, SSCI, AHCI

Articles published in other journals

Proceedings presented in international scientific meetings and published in proceedings book.

Journals in the proceedings book of the refereed conference / symposium

Others (Projects / Certificates / Rewards)

Üsküdar Bölgesi Adölesanlarında Obezite Durumunun Belirlenme Çalışması