

Nutrition Awareness of Middle School Students in the Early Adolescence Period

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ABSTRACT Healthy nutrition is essential in preventing possible diseases and treating existing diseases by controlling their course. Based on this importance, adolescence is one of the periods to be considered. Adolescence is a fundamental determinant of healthy life in adulthood and old age. Healthy nutrition awareness gained in this period will raise awareness of the adolescent individual herself/himself and the people around her/him. This research aimed to determine the nutrition awareness of middle school students in early adolescence. According to the phenomenology, the research was conducted with eight volunteer students in the 8th grade in a public middle school in the Central Anatolia region in Turkey. Data were collected through semi-structured interviews with each student individually using the "Interview Form about Nutrition Awareness in Adolescence Period" prepared by the researchers. The data were analyzed by using content analysis. As a result of the research, it was determined that the nutrition awareness of middle school students in the early adolescence period was low. In this context, increasing middle school students' nutrition awareness was recommended.

Keywords Health, Nutrition, Awareness, Early Adolescence Period, Middle School Students

1. INTRODUCTION

Adequate and balanced nutrition is called to be appropriately used in the body by taking sufficient energy and nutrients required for the body's growth, renewal, and functioning (Turkey General Directorate of Public Health, nd.a). In healthy nutrition, which depends on food diversity, the energy, and nutrients needed daily must be taken into the body with the foods consumed. Foods are classified into five groups according to the nutrients they contain. These are 1) Milk and dairy products group, 2) Meat-chicken-fish-eggs-legumes-oil seeds-nuts group, 3) Bread and cereals group, 4) Vegetable group and 5) Fruits group (Turkey General Directorate of Public Health, 2019). For adequate and balanced nutrition, foods in the five basic groups should be consumed in sufficient quantities at each meal. In this context, a plate model has been developed according to food groups for a healthy life. Five food groups should be in the Healthy Eating Plate (Figure 1). This purpose is to consume at least one food from each food group at each meal. At every meal, there should be water next to the food on the plate. In addition, including olive oil in daily nutrition is very important as a complement to a healthy lifestyle (Turkey General Directorate of Public Health, nd.a).

Healthy nutrition is essential in preventing possible diseases and treating existing diseases by controlling their course. Based on this importance, adolescence is one of the periods to be considered. Adolescence is a fundamental determinant of healthy life in adulthood and old age. It is

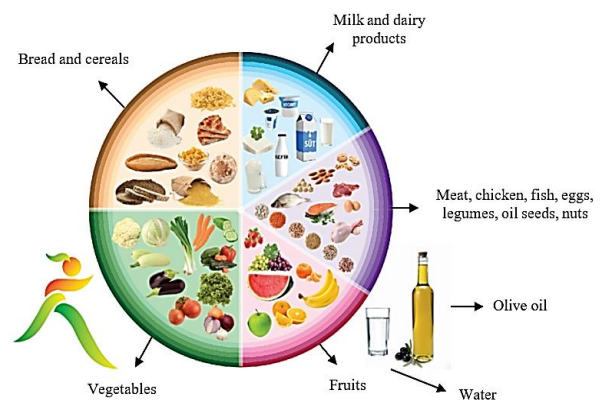


Figure 1 Healthy eating plate (Turkey General Directorate of Public Health, nd.a)

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thought that healthy nutrition awareness gained in this period will contribute to raising awareness of the adolescent individual herself/himself and the people around her/him.

Adolescence is quite an influential period in shaping nutrition habits that will affect later periods in life. The course of possible diseases that individuals are genetically predisposed to depending on their nutrition habits can be shaped in this period. Due to the negative nutrition habits acquired in this period, adolescents may experience various health problems in their future lives. Therefore, education is essential in preventing health problems that may derive from nutrition. Due to this importance, it is aimed to raise awareness of healthy and balanced nutrition and the benefits of healthy nutrition in students from a young age in the unit of Our Foods, which is in the subject area of Living Things and Life in the 4th grade within the scope of the science course curriculum. In this context, the importance of balanced nutrition for human health is emphasized, and the relationship between obesity and nutrition habits is given. In addition, concepts such as packaged foods and expiration dates are expressed by drawing attention to the importance of water for living things (Turkey Ministry of National Education [MoNE], 2018).

The adolescence period is critical because it causes changes in nutrition with its psychological, physiological, and social characteristics, and it is a transition period between childhood and adulthood (Aydenk-Köseoğlu & Çelebi-Tayfur, 2017; Turkey General Directorate of Public Health, 2019). The adolescence period covers children aged 12-18 years. In this period, it is very beneficial for individuals to gain habits and awareness about healthy nutrition and life to prevent diseases in adulthood. The riskiest period for the development of adult diseases in children is adolescence. In this period, when growth and development accelerate, the fastest growth occurs at 10-12 in girls and at the age of 11-14 in boys. In order to ensure fast growth and development, children's energy and nutrient needs should be met in a good and balanced way. In addition, for a healthy life, every adolescent should have a water bottle and control the amount of water they drink daily (Turkey General Directorate of Public Health, 2019). Water and other drinks are essential in maintaining the body's water balance. Water output through respiration, urine, perspiration, and feces is taken back into the body with drinks and foods, and the body's water balance is provided. 1.5-2 liters (8-10 glasses of water) of daily average 2-2.5 liters of liquid need should be met from water (Turkey General Directorate of Public Health, nd.a).

In order to increase food diversity during adequate and balanced nutrition, different food groups should be consumed at each meal. While fruits, vegetables, and foods containing protein are consumed every day, the consumption of foods and drinks with low food value and

high energy value should be limited. Consumption of milk and dairy products, an essential source of calcium and protein, is vital for adolescents. On the other hand, the decrease in the consumption of milk and dairy products in adolescent girls is a significant problem. Common adolescent nutrition problems are vitamin D, calcium, and iodine deficiencies, iron deficiency anemia, obesity, eating behavior disorders, and tooth decay. Disordered behaviors such as binge eating, vomiting, distorted body image, and fear of obesity are commonly seen in adolescents. In this regard, it should be ensured that adolescents stay away from distorted body image and disordered eating or exercise behavior (Turkey General Directorate of Public Health, 2019). A healthy adolescent should feed following the food pyramid in Figure 2 (Turkey General Directorate of Public Health, nd.b). In this regard, it is required to support their development in canteens, cafeterias, or during feeding hours to gain healthy nutrition habits, to increase nutrition quality, food diversity, and primarily milk and dairy products, as well as fruit and vegetable consumption (Turkey General Directorate of Public Health, 2019).

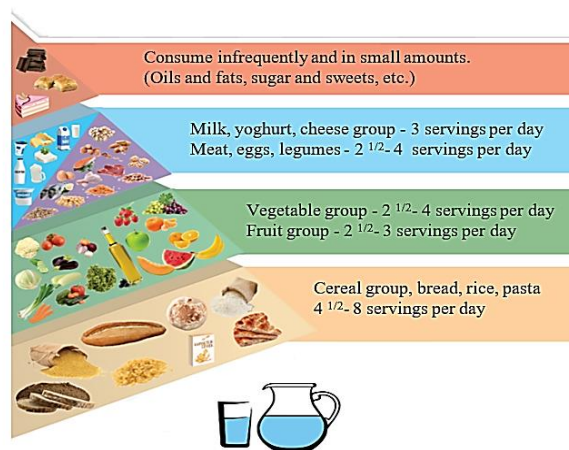


Figure 2 Food pyramid for the 12-18 age group (Turkey General Directorate of Public Health, nd.b)

Adequate and balanced nutrition is essential for adolescents as growth and development accelerate in adolescence. It is seen that eating fast or junk food is common among children and young people. The source of this type of nutrition is the fast pace of life of today's people. With this type of nutrition, half of the energy required for the body is provided by fat. Most of this fat consists of harmful saturated fats. It is known that there is a relationship between the amount of saturated fat and cholesterol level in cardiovascular diseases. Although these diseases are seen in adults, their fundamentals are formed in adolescence. Generally, vitamins A and C in fast food, calcium, and fiber-posita are insufficient; on the other hand, oil and salt consumption is high. Obsession with being thin (anorexia nervosa) and overeating (bulimia nervosa) are seen as eating disorders in adolescence, especially in girls.

Adolescents make themselves vomit and use laxatives and diuretic drugs, and as a result, their health deteriorates. Adolescents have an emaciated appearance, and in such cases, the adolescent should receive psychiatric treatment (Turkey General Directorate of Public Health, nd.c).

Considering adolescence as a risk-taking period that may have severe consequences for adult health, it is necessary to determine adolescents' healthy lifestyle behaviors and physical activity levels. In this respect, being directed to adolescents will provide the opportunity to maximize the health of both them and their children in the future (Çoşkun & Karagöz, 2021). In this context, studies on the subject in the literature have been examined and presented in sub-titles.

1.1 The Effect of Nutrition on Body Mass Index (BMI) and Obesity

Regarding the effect of nutrition on BMI, Kubik, Lytle, and Story (2005) determined that food practices that allowed students to snack throughout the day frequently and consume foods and drinks which were high in calories but low in nutrition value were standard the school-wide. These practices were inversely proportional to students' body mass indexes. Regarding obesity, which occurs when the BMI value is much higher than the normal value, Çoşkun and Karagöz (2021) examined the BMI values of adolescents studying between the 8th and 12th grades. They determined that 79.5% were normal weight, 6.6% were overweight, and 4.2% were obese. It was detected that the behaviors of adolescents who exhibit healthy nutrition behaviors and do regular physical activity are more appropriate in terms of a healthy lifestyle. Özmen, Çetinkaya, Ergin, Şen, and Dündar-Erbay (2007) determined that high school students did not have regular exercise habits. In this context, they stated that there was a need to support a healthy lifestyle that includes eating habits and regular exercise in adolescents.

In the study conducted by Yılmaz and Kocataş (2019), it was understood that being obese individual(s) in the family and skipping meals among middle school students increased the probability of being obese. It was detected that a significant part of the students consumed fast food, sugar-added/fizzy drinks and shopped in the school canteen. Besides, Sylvetsky et al. (2013) found that although most young people accepted obesity as a problem, they failed to associate their behavior with the development of obesity. Moreover, they thought being overweight was due to external causes such as slow metabolism or genetics rather than changeable lifestyle behaviors such as diet and physical activity. Wasfy et al. (2008) determined that some students had sufficient knowledge about obesity and its adverse effects, and some had positive attitudes toward obesity and its treatment. More than half of the students agreed that obesity is a disease and should be treated. Although the majority of the students perceived themselves as overweight or obese and had a positive

attitude towards the treatment of obesity, they did not do any practice for weight loss. It was found that the most common barriers to weight loss were lack of knowledge, time, and interest.

Today, in addition to taking precautions against increasing overweight and obesity, the importance of planning effective education programs for adolescents to have healthy nutrition awareness has been understood (Meşe-Yavuz & Koca-Özer, 2019). Obesity is effective on chronic diseases such as hypertension, cardiovascular diseases, diabetes, etc., and the fundamentals of obesity, which are challenging to treat in adulthood, are formed in adolescence. Furthermore, adolescents' lifestyles and eating habits influence negative aspects such as obesity and eating disorders.

1.2 Nutrition Habits and Risky Behaviors

When the studies on nutrition habits and risky behaviors were examined, Demirezen and Coşansu (2005) determined that adolescents in the 11-17 age group were at risk regarding nutrition habits, and risky behaviors were more common in male students. As the reason for this, they showed that male students ate types of food such as fatty, sugary, and fast food and additionally drank coffee, tea, and cola more often than female students. In the study conducted by Türk, Gürsoy, and Ergin (2007), it was determined that high school first-year students often included unhealthy foods in their diets, although they had sufficient knowledge about foods. Moreover, it was determined that some students mostly preferred healthy foods in terms of taste. In addition, it was understood that girls perceived themselves as more overweight than boys, and girls were on a diet.

Şanlıer, Konaklıoğlu, and Güçer (2009) found that female students' nutrition habits, behaviors, and nutrition knowledge scores were higher than males. When evaluated according to body mass index, it was determined that the difference between nutrition behavior, habit, and knowledge scores with thin, average, and obese individuals was not significant. According to these results, it was understood that body mass index did not have a statistically significant effect on nutrition knowledge, habit, and behavior scores. In the study by Özmen et al. (2007), it was determined that skipping meals was a common nutrition habit among high school students; many adolescents did not eat three regular meals per day, some ate junk food, and some were very afraid of getting fat. It was determined that a small number of students (girls more than boys) were on a diet. As a result, it was understood that it was necessary to support a healthy lifestyle which includes eating habits and regular exercise in adolescents. Rodrigues et al. (2017) examined the relationship between eating habits and diet quality in adolescents. As a result of the study, it was determined that the order of the frequency of meals was lunch, dinner, and breakfast; students going to school at noon had breakfast more often than students going to

school in the morning. In this scope, it was stated that regular eating habits could help to improve diet quality.

One of the most common negative nutrition habits in adolescence is skipping meals. Children's most frequently skipped meal is breakfast, the most important meal of the day (Turkey General Directorate of Public Health, 2019). Similarly, Yılmaz and Kocataş (2019) determined that almost half of the middle school students skipped meals, and the most skipped meal was breakfast. Meşe-Yavuz and Koca-Özer (2019) pointed out that adolescents skipped meals, and the most skipped meal was lunch, and in this respect, they had risky nutrition habits. Adolescents said they skipped meals because they did not want to eat. Türk et al. (2007) concluded that a significant part of the high school first-year students (mostly female students) skipped meals, also in order of the most frequently skipped meals were breakfast and lunch. As the reasons for skipping meals, female students stated a lack of appetite, while male students stated time constraints. As a result of the study conducted by Øverby and Hoigaard (2012) determined that adolescents who regularly ate breakfast and consumed moderate amounts of fruit and fish were less likely to experience behavioral problems at school. It was understood that adolescents' ideal eating patterns and not skipping meals effectively reduced behavioral problems at school.

1.3 Nutrition Attitudes and Behaviors

When the studies on nutrition attitudes and behaviors were examined, Uzdil, Özenoğlu, and Ünal (2017) determined that body measurements and sociodemographic characteristics of high school students did not affect their eating attitudes. However, it was detected that the students could not meet most of the recommended foods for their age-specific consumption. It was determined that more than half of the students rarely ate fish, chicken, and red meat; this food group, which is recommended daily, consumed 1-2 days a week. Even though nearly half of the students consumed vegetables and fruits every day, it was determined that vegetables and fruits, which should be consumed in five portions daily, were consumed at low levels.

Bayındır-Gümüş and Yardımcı (2020) evaluated the primary meal consumption status and eating attitudes of adolescents in the early (12-14 years) and middle (15-17 years) periods. Eventually, it was determined that adolescents, especially in the early period, were at risk regarding eating disorders, and nearly half of them had this risk. In addition, it was detected that reducing the number of main meals was an important factor in terms of eating behavior disorders. On the other hand, Ikorok, Eka, Ogunjimi, and Udoh (2012), in their study, revealed that family income and gender were influential on the nutrition behaviors of senior secondary school students. Therefore, it was stated that planned, consistent nutrition education

should be given to maintain and develop the students' knowledge levels and nutrition behaviors.

1.4 Nutrition Knowledge Level

When the studies on nutrition knowledge levels were examined, Erten (2021) revealed an inversely proportional relationship between middle adolescents' ages and grade levels and their nutrition knowledge levels. In addition, female students' nutrition knowledge levels were better than male students because female students cared more about their appearance at this age.

In the study conducted by Tayhan-Kartal, Arslan-Burnaz, Yaşar, Sağlam, and Kırıılmaz (2019), it was detected that 69.3% of high school students were good, 26.1% were sufficient, and 4.6% were insufficient in terms of nutrition knowledge levels. Although a significant difference was not found between the nutrition knowledge level, psychological eating, and unhealthy nutrition and exercise behavior score averages regarding gender, it was observed that the healthy nutrition and exercise behavior score and meal order were better in males. It was expressed that the nutrition knowledge level of the students, the housing status, and the parents' education level were adequate for their nutrition behaviors and exercise tendencies. Seçken and Morgil (2000) revealed that high school students did not have sufficient knowledge of balanced nutrition, and a significant part of the students did not have breakfast as it was supposed to.

1.5 Nutrition Education and its Effects

Parents, schools, and society must build healthy nutrition habits and ensure access to healthy food (Türk et al., 2007). Most young people said they learned about healthy and unhealthy foods from their parents or school lessons (Sylvetsky et al., 2013). Therefore, it is crucial to implement practices that will improve nutrition behaviors and increase physical activity levels in schools to prevent obesity in school-age children (Yılmaz & Kocataş, 2019). For this reason, school health programs should include initiatives to improve students' knowledge, attitude, and practices on obesity. Such programs should also cover increasing health education, healthy nutrition habits, supervised physical education and physical exercise sessions, competitions, and awards about obesity. In addition, these programs should include the active participation of teachers and parents (Wasfy et al., 2008).

Within the scope of nutrition education and its effects, Geçkil and Yıldız (2006) determined that adolescents' health behaviors were at the intermediate level. After the education on nutrition, it was observed that there was an increase in adolescents' stress management and health behaviors toward nutrition. Although education generally changed adolescents' behaviors towards nutrition positively, it did not cause a change in the thought of reading the label on packaged foods to recognize their characteristics. Alpuğuz, Erkoç, Mutluer, and Selvi (2009) examined the safe food purchasing and consuming

behaviors of high school and university students. As a result of the study, they determined that nearly half of the young people did not read the label information while purchasing packaged foods. They determined that female students read label information more than male students. They detected that the students paid attention to the expiration date, whether the package was open, and the brand while purchasing packaged foods. They pointed out that it is necessary to provide food hygiene education to high school and university students to protect public health by consuming safe foods and especially preventing food-borne diseases.

Kostanjevec, Jerman, and Koch (2011) stated that 6th-grade students' knowledge and understanding of the energy and nutritional values of foods were poor; in this case, they determined that the given nutrition education was influential in the students' gaining nutrition knowledge. Nanayakkara, Margerison, and Worsley (2018) revealed that food, health, and education experts think food literacy education is needed for senior secondary school students. Sarıdağ-Devran and Saka (2019) found that nutrition education significantly increased the nutrition knowledge level of high school students (14-17 years). However, it could not provide the desired effect on their nutrition habits. In this regard, it has been suggested that it would be more beneficial to repeat the training more frequently and spread it over the entire education-teaching period for nutrition education to be more effective and provide behavioral change.

Taşdemir (2019) revealed that after nutrition education within the scope of her study, 4th and 5th-grade students started to make healthy food choices from school canteens. It was determined that while the rate of students who bought milk, yogurt, fruit juice, and toast from the school canteen/street vendors increased after the education, the rate of students who bought wafer-chocolate, bagel-pogaca, acidic drinks, biscuit-cake, chips, chewing gum and crackers decreased in both female and male students. Furthermore, it was observed that there were changes in the desired direction in the children's BMI values in two months, and it was understood that nutrition education had a significant effect on the children.

Healthy nutrition can be achieved with adequate nutrition information, which can be achieved with proper nutrition education (Tayhan-Kartal et al., 2019). It is thought that adequate and continuous nutrition education is necessary to transform the taught knowledge into behavior, and education will help prevent diseases that may occur in the future (Şanlıer et al., 2009). Since nutrition in childhood and adolescence primarily affects psychological health and school success, as well as the physical development of individuals, training and practices about healthy nutrition in schools will be beneficial for the health of future generations (Uzdil et al., 2017). Nutrition habits in children and adolescents change depending on the

nutrition knowledge level of the individual. For this reason, nutrition education should be given early when adolescents show the fastest development and change. Schools are the most suitable environment for this education. Because adolescents who spend most of their time at school during this period are intertwined with peer relationships, a better future can be offered to adolescents with healthy nutrition habits by drawing attention to their body images while gaining independence (Erten, 2021).

The research aimed to determine the nutrition awareness of middle school students in early adolescence. In this context, answers to the following sub-questions of research were sought.

- What is the awareness of middle school students in the early adolescence period about healthy nutrition?
- What is the awareness of middle school students in the early adolescence period about water consumption?
- What is the awareness of middle school students in the early adolescence period about the number and time of main-snack meals?
- What is middle school students' awareness of healthy food (food and drink) in early adolescence?
- What is the awareness of middle school students in the early adolescence period about reading the information on food packaging?
- What is the awareness of middle school students in the early adolescence period about the relationship between nutrition and physical health?
- What is the awareness of middle school students in the early adolescence period about the relationship between nutrition and psychological health?
- What is the awareness of middle school students in the early adolescence period about the relationship between nutrition and mental activities?

2. METHOD

2.1 Research Model

In this research, phenomenology was used, one of the qualitative research methods. Phenomenology is based on phenomena we encounter in different ways in daily life, about which we know but have no deep knowledge. It is used to show what a phenomenon means from different points of view. Individuals or groups who have experienced or can reflect on the phenomenon are selected as data sources. Data are collected through interviews, and questions are asked that explore the phenomenon (Yıldırım & Şimşek, 2018, p. 69-71). In phenomenology, a phenomenon is defined in terms of the experiences of individuals or a particular group. It is tried to reach each person's lifeworld (Christensen, Johnson, & Turner, 2015, p. 408). For these reasons, studies in which phenomenology is implemented as a method, it is aimed to provide a better understanding of the phenomenon instead

of revealing generalizable results (Yıldırım & Şimşek, 2018, p. 72).

2.2 Research Group

The research group consisted of eight (seven girls, one boy) volunteer students studying in the 8th grade in a public middle school in the Central Anatolia region in Turkey. This research was conducted in the spring semester of the 2020–2021 academic year. The students in the research were selected among the students with normal body mass index (BMI) values through purposeful sampling. First, the body mass index was calculated using the child body mass index calculation tool (Turkey General Directorate of Public Health, nd.d) on the T.R. Ministry of Health, General Directorate of Public Health website. The data obtained from this calculation are given in Table 1.

purpose and scope of the interview. For students to express themselves comfortably and sincerely, it was stated that their answers to the questions would be used within the scope of a scientific study, would not be shared anywhere else, their personal information would be kept confidential, and their answers would not be evaluated with points or grades. It was stated that the interview would take nearly 15–20 minutes for each student individually. Verbal informed consent was obtained from each student to record the interview using an audio recorder.

The interview was conducted in a quiet and calm environment. The interview was not interrupted by another person. No open image or sound source was kept near the student. The questions were read to each student one by one, and after making sure that the student had anything to

Table 1 Body mass indexes (BMI) of students

	Grade	Gender	Date of birth	Life stage	Weight (kg)	Height (cm)	BMI/Decision
S ₁	8	Female	12.10.2007	Early Adolescence	48	157	19.47/Normal
S ₂	8	Female	02.02.2008	Early Adolescence	48	163	18.07/Normal
S ₃	8	Female	21.12.2007	Early Adolescence	48	162	18.29/Normal
S ₄	8	Female	07.06.2008	Early Adolescence	52	166	18.87/Normal
S ₅	8	Male	12.06.2007	Early Adolescence	46	160	17.97/Normal
S ₆	8	Female	16.11.2007	Early Adolescence	47	160	18.36/Normal
S ₇	8	Female	30.11.2007	Early Adolescence	50	158	20.03/Normal
S ₈	8	Female	19.10.2007	Early Adolescence	55	161	21.22/Normal

In Table 1, it is seen that all of the students (f:8) included in the study are between the ages of 10–14, which is considered an early adolescence period (United Nations Children's Fund [UNICEF], 2011; World Health Organization [WHO], 2014) and their BMI values are normal.

2.3 Data Collection Tool

Data were collected through semi-structured interviews with each student individually using the "Interview Form about Nutrition Awareness in Adolescence Period" prepared by the researchers. While preparing the questions in the form, national and international literature and the acquisitions related to nutrition in the science curriculum were considered.

In the semi-structured interview, the place of the questions in the pre-prepared interview form can be changed depending on the situation. New questions can be asked to provide deepening by considering the answers from individuals. In this way, the researcher can have the opportunity to act appropriately to the situation during the interview (Bal, 2016, p. 163).

2.4 Data Collection Process

While collecting the data, attention was paid to ensuring that the environment was suitable for the interview. Interviews were conducted individually with the students. Before the interview, each student was informed about the

add to the answer, the next question was passed. The questions were asked sequentially, paying attention to the question number. The students were not guided in any way regarding their answers. While the student was answering the questions, no verbal expressions such as yes-no and true-false were used, making the student feel that her/his answer was right or wrong. The student gave short answers to the questions and was asked to make more detailed explanations. After completing all the questions, the student was thanked for participating in the interview, and the audio recording was concluded. The audio recording files were recorded in a folder on the computer by giving each student's names as S₁, S₂, ..., and S₈.

2.5 Data Analysis

In the analysis of the data, the audio recordings were listened to by the researchers, the audio files were transcribed for each student, and the data were transferred to separate Word files in their raw form. For eight students, word files were named S₁, S₂, ..., and S₈. In order to ensure validity and reliability, the obtained data were analyzed separately by two researchers from science education. Later, the researchers brought together and compared the codes and categories that emerged from the content analysis and arranged them. The reliability between the two independent coders was calculated by using the formula Agreement=[Number of Agreements/(Number of

Disagreements+Number of Agreements)x100] (Miles & Huberman, 1994) and found as 78.4%. The frequency values of the codes and categories were determined, and tables were prepared and interpreted. In order to describe the data in more detail, direct quotations from the students' answers were presented together with the given number to the student (S₁, S₂, ..., and S₈).

3. RESULTS

3.1 Demographic Characteristics of Middle School Students

The presence of a disease condition that requires students to pay attention while feeding was investigated. It was detected that six students (S₃, S₄, S₅, S₆, S₇, S₈) did not have any diseases that required paying attention while feeding. However, two students (S₁: protein leak in her kidneys (healing with treatment), S₂: allergy (continuing)) had a history of a disease that requires paying attention while feeding. In addition, the demographic characteristics of the student's parents were investigated. In terms of educational status, it was seen that the students' mothers graduated from elementary school (f:5; S₂, S₃, S₄, S₆, S₇), graduated from middle school (f:3; S₁, S₅, S₈); fathers were uneducated (f:2; S₃, S₈), graduated from elementary school

(f:3; S₁, S₄, S₇), graduated from middle school (f:1; S₆), graduated from high school (f:2; S₂, S₅). In terms of jobs, it was seen that the students' mothers were housewives (f:7; S₁, S₂, S₃, S₄, S₅, S₇, S₈), farmers (f:1; S₆); fathers were factory workers (f:2; S₂, S₃), construction worker (f:1; S₄), farmer (f:1; S₆), crane mechanic (f:1; S₈), school janitor (f:1; S₇), accountant (f:1; S₅), self-employment (f:1; S₁).

3.2 Results on Middle School Students' Awareness of Healthy Nutrition

The students' answers about the definition of nutrition and the reasons for needing nutrition are given in Table 2.

In Table 2, it is seen that the students' answers about the definition of nutrition were gathered into four categories as aim, way of nutrition, qualification of food, and food intake. The students mainly emphasized need (f:4) in the aim category. Some examples of students' answers are given below.

S₁: "I think nutrition is not junk food, but regularly eating healthy things."

S₃: "I think nutrition is something that you can feel happy unless you exceed the limit. Eating in a healthy way that does not harm you without exceeding the limit."

S₇: "Nutrition, foods that are in human nature, it is necessary, provide our life and allow food to enter our body."

Table 2 Students' answers about the definition of nutrition and the reasons for needing nutrition

Category	Sub-category	Code	Student number	f
Definition of nutrition	Aim	Need	S ₂ , S ₅ , S ₆ , S ₇	4
		Feeling of satiety	S ₃ , S ₄	2
		Health	S ₅ , S ₆	2
		Life	S ₇	1
		Feeling of happiness	S ₃	1
	Way of nutrition	Regular	S ₁ , S ₈	2
		Without harming the body-without exceeding the limit	S ₃	1
		Balanced-healthy	S ₃	1
	Qualification of food	Healthy	S ₁	1
		No junk food	S ₁	1
Providing food to the body		S ₇	1	
Food intake	Food consumption	S ₄	1	
Reasons for needing nutrition	Biological needs	Living	S ₅ , S ₆ , S ₇	3
		Feeling of hunger	S ₄ , S ₇ , S ₈	3
		Creating a feeling of satiety	S ₂ , S ₃	2
		Energy	S ₅ , S ₈	2
		Gaining strength	S ₂	1
		Development	S ₁	1
		Healthy start to the day	S ₃	1
		To move	S ₈	1
		Not getting sick because of thin	S ₂	1
	Psychological needs	To have a good day	S ₃	1
Not feeling bad (vicious) when not fed		S ₃	1	
Boredom		S ₄	1	
General needs		S ₇ , S ₈	2	

Table 3 Students' answers about water consumption related to the feeling of thirst and the amount of water that they drink in a day

Category	Code	Student number	f
Yes - Waiting for the feeling of thirst (f:2)	It is wrong to wait for the feeling of thirst	S ₃	1
	1.5 L of water should be drunk daily	S ₃	1
	No reason	S ₄	1
No - Not waiting for the feeling of thirst (f:6)	Drinking too much water due to kidney disease	S ₁	1
	Drinking water sometimes for health even though feeling not thirsty	S ₅	1
	Drinking plenty of water for health is also outside of necessity	S ₆	1
	The body needs water even if there is no feeling of thirst	S ₇	1
	When s/he wants	S ₈	1
	No reason	S ₂	1
The amount of water that the student drinks in a day	The amount of water that the student should drink in a day according to her/his weight	Student number	f
0.2-0.3 L	35 mL x 48 kg = 1680 mL = 1.680 L	S ₃	1
0.8-1 L	35 mL x 50 kg = 1750 mL = 1.750 L	S ₇	1
0.8-1.2 L	35 mL x 46 kg = 1610 mL = 1.610 L	S ₅	1
1-1.5 L	35 mL x 47 kg = 1645 mL = 1.645 L	S ₆	1
Average 1.5 L	35 mL x 52 kg = 1820 mL = 1.820 L	S ₄	1
Nearly 2 L or 2 L	35 mL x 55 kg = 1925 mL = 1.925 L	S ₈	1
2 L	35 mL x 48 kg = 1680 mL = 1.680 L	S ₁	1
3-3.2 L	35 mL x 48 kg = 1680 mL = 1.680 L	S ₂	1

All students (f:8) stated that they needed nutrition in a day. It is seen that the students' answers about the reasons for needing nutrition were gathered into three categories biological, psychological, and general needs. Students mainly emphasized the living (f:3) and feeling of hunger (f:3) in the biological needs category (In Table 2). Some examples of students' answers are given below.

S₃: "To fill my stomach. I feel bad and grouchy when I'm not feeding. To start my day in a healthy way. Especially at breakfast. And I can say to have a good day."

S₇: "Because, as a result this is necessary for our body and if we don't get enough food when we are hungry, it can even lead to death after a while."

S₈: "I eat because I'm hungry. My body needs it. In order to produce energy, to be able to move throughout the day, I need nutrition."

3.3 Results on Middle School Students' Awareness of the Water Consumption

All students (f:8) stated that water is the liquid we need to take into our body during the day and used in vital activities. The students' answers about water consumption related to the feeling of thirst and the amount of water they drink in a day are given in Table 3.

In Table 3, it is seen that most students (f:6) did not wait for the feeling of thirst to drink water. However, one of the students (S₃) stated that she drank only when thirsty,

despite being aware that this was wrong behavior. Some examples of students' answers are given below.

S₃: "I usually do it this way; I drink when thirsty, but it's a bit wrong to do it like this. Probably we need to drink one and a half liters of water a day."

S₅: "Not only when I'm thirsty, but also, I occasionally drink water to be healthy. Even though I'm not thirsty."

S₇: "No, when I am not thirsty. Maybe we may not feel thirsty, but water may be necessary for our body."

Table 4 The students' main meal times and snack meal numbers and times in a day

Main meal	Main meal times	Student number	f
Breakfast	8.00-9.00	S ₁ , S ₂ , S ₄ , S ₇ , S ₈	5
	9.00 and 10.00 / 10.30 and 11.00	S ₃	1
	10.00 and 11.00	S ₅ , S ₆	2
Lunch	12.00-13.00	S ₁ , S ₂ , S ₃ , S ₄ , S ₇	5
	13.00-14.00	S ₅ , S ₆	2
	Not eating	S ₈	1
Dinner	17.00-18.00	S ₅	1
	18.00-19.00	S ₁ , S ₆	2
	19.00-20.00	S ₂ , S ₃ , S ₄ , S ₇ , S ₈	5
Snack meal number	Snack meal times	Student number	f
4	Between morning-noon	S ₃	1
	Noon		
2-3	Between noon-evening (afternoon)	S ₂	1
	After dinner		
Minimum 2	Noon	S ₅	1
Maximum 2	Noon	S ₆	1
	After dinner		
Sometimes 1-2	On school days - as soon as I come back from school	S ₇	1
	Other days - near evening		
1	Between noon-evening (afternoon)	S ₁ , S ₄	2
0		S ₈	1

The water balance in the body is of great importance for life. The amount of water an individual needs daily can be calculated with the equation 35 mL x body weight (kg) (Turkey General Directorate of Public Health, 2019). It is

seen that five students (S₃, S₄, S₅, S₆, S₇) drank less water than they should drink daily, one student (S₈) drank about the ideal, and two students (S₁, S₂) drank more water than they should (In Table 3).

Table 5 Students' answers about examples of unhealthy foods and their reasons

Category	Code	Chips (f:8)	Chocolate (f:4)	Candy (f:3)	Jellies (f:3)	Hamburger (f:3)	Pizza (f:2)	Fast food products (f:1)	Bread (f:1)	Junk food (f:1)	Fatty foods (f:1)	Fried foods (f:1)	Onion rings (f:1)	Ice cream (f:1)	Fruit juice ice pops (f:1)
The content of the food item	Containing too much oil (f:4)	S ₄ , S ₇ , S ₈				S ₃ , S ₇ , S ₈	S ₇ , S ₈	S ₇	S ₈						
	Containing too much sugar (f:2)	S ₁	S ₁ , S ₄	S ₁						S ₁					
	Containing food additives (f:2)	S ₁ , S ₂	S ₁ , S ₂	S ₁ , S ₂	S ₂					S ₁					S ₂
	Containing chemical substances (f:1)	S ₆		S ₆	S ₆										
	Containing too much salt (f:1)	S ₇				S ₇	S ₇	S ₇							
	Containing too many carbohydrates (f:1)	S ₈				S ₈	S ₈		S ₈						

Table 5 Students' answers about examples of unhealthy foods and their reasons (*Continued*)

Category	Code	Chips (f:8)	Chocolate (f:4)	Candy (f:3)	Jellies (f:3)	Hamburger (f:3)	Pizza (f:2)	Fast food products (f:1)	Bread (f:1)	Junk food (f:1)	Fatty foods (f:1)	Fried foods (f:1)	Onion rings (f:1)	Ice cream (f:1)	Fruit juice ice pops (f:1)
The effect on health	Harm to the stomach (f:1)	S ₃				S ₃					S ₃	S ₃	S ₃		
	Containing harmful substances (glucose, fructose) (f:1)	S ₅	S ₅		S ₅										
	Harm to the body (f:2)	S ₆ , S ₈		S ₆	S ₆	S ₈	S ₈		S ₈						
The production process	Unhygienic (f:1)	S ₂	S ₂	S ₂	S ₂										S ₂

3.4 Results on Middle School Students' Awareness of the Main and Snack Meals Numbers and Times in a Day

The students' main meal times and snack meal numbers and times in a day are given in Table 4.

In Table 4, more than half of the students ate breakfast between the hours 8.00-9.00 (S₁, S₂, S₄, S₇, S₈), lunch at 12.00-13.00 (S₁, S₂, S₃, S₄, S₇) and dinner at 19.00-20.00 (S₂, S₃, S₄, S₇, S₈). In addition, six students (S₁, S₂, S₃, S₄, S₅, S₆) stated that they had the main meal three times, one student (S₇) two-three times, and one student (S₈) two times during the day.

It is seen that students' snack meal numbers in a day were different, and these meals were frequently noon (f:3) and between noon-evening (afternoon) (f:3). In addition, it is noteworthy that three students (S₃, S₅, S₆) had a snack meal at lunchtime which is the main meal time (In Table 4).

3.5 Results on Middle School Students' Awareness of Healthy Food (Food and Drink)

All students (f:8) stated that all foods were unhealthy. The students' answers about examples of unhealthy foods and their reasons are given in Table 5.

In Table 5, it is seen that students gave examples of unhealthy foods, primarily chips (f:8), chocolate (f:4), candy (f:3), jellies (f:3), and hamburger (f:3). It is seen that the

Table 6 Students' answers about examples of unhealthy drinks and their reasons

Category	Code	Cola (f:7)	Soda pop (f:4)	Instant juice (f:4)	Energy drinks (f:3)	Sodas (f:3)	Fizzy drinks (f:2)	Alcoholic drinks (f:2)	Powder drinks (f:1)	Cold teas (f:1)	Coffee (f:1)	Sugar-free cola (f:1)	Mineral water (f:1)
The content of the drink item	Containing acid (f:3)	S ₂ , S ₄ , S ₅	S ₂ , S ₄ , S ₅	S ₄ , S ₅	S ₄	S ₄		S ₅					
	Containing too much acid (f:2)	S ₈		S ₈		S ₃	S ₃			S ₃			
	Containing too much sugar (f:2)	S ₇ , S ₈		S ₈	S ₇		S ₇					S ₇	S ₇

Table 6 Students' answers about examples of unhealthy drinks and their reasons (*Continued*)

Category	Code	Cola (f:7)	Soda pop (f:4)	Instant juice (f:4)	Energy drinks (f:3)	Sodas (f:3)	Fizzy drinks (f:2)	Alcoholic drinks (f:2)	Powder drinks (f:1)	Cold teas (f:1)	Coffee (f:1)	Sugar-free cola (f:1)	Mineral water (f:1)
The content of the drink item	Containing bad substances (f:2)	S ₁ , S ₅	S ₁ , S ₅	S ₁ , S ₅		S ₁		S ₅					
	Containing gas (f:2)	S ₅ , S ₇	S ₅	S ₅	S ₇		S ₇	S ₅				S ₇	S ₇
	Containing different/harmful substances (f:2)	S ₂		S ₄	S ₂				S ₂				
	Containing parts of the insect (f:2)	S ₂											
	Containing chemical substances (f:1)	S ₆						S ₆			S ₆		
	Containing protective additives (f:1)	S ₇			S ₇		S ₇					S ₇	S ₇
	Containing food coloring (f:1)	S ₈		S ₈									
	Containing aromatic substances (f:1)	S ₈		S ₈									
	Not clean like water (f:1)	S ₈		S ₈									
The social perception	Everyone says unhealthy (f:1)	S ₁	S ₁	S ₁		S ₁							
The effect on health depends on the amount of consumption (when consumed too much)	Harm to the stomach (f:1)					S ₃	S ₃			S ₃			
	Harm to the body (f:1)	S ₆						S ₆			S ₆		
The production process	Not knowing (f:1)			S ₄									
	Possibility of not using fruit (f:1)			S ₄									

reasons for the foods that the students described as unhealthy were gathered into three categories as the content of the food item, the effect on health and the production process. The students mainly emphasized containing too much oil (f:4) in the content of the food item category. Some examples of students' answers are given below.

S₂: "Because, they add additives that we don't know about, and they don't give much importance to hygiene." - chips, chocolate, candy, jellies, fruit juice, ice pops.

S₄: "Because the chips are too oily, the cola is acidic, and the chocolate is too sweet, for that reason."

S₈: "Because these foods have too much bad fat. Too many carbohydrates. In other words, they do not benefit our body." - chips, hamburgers, pizza, bread.

All students (f:8) stated that all drinks were unhealthy. The students' answers about examples of unhealthy drinks and their reasons are given in Table 6.

In Table 6, it is seen that students gave examples of unhealthy drinks, primarily cola (f:7), soda pop (f:4), instant juice (f:4), energy drinks (f:3), and sodas (f:3). It is seen that the reasons for the drinks that the students described as unhealthy were gathered into four categories as the content of the drink item, the social perception, the effect on health

Table 7 Students' answers about the reading status of the information on the food packaging, the information which they read, and the reasons for reading

Status of reading information	The information that students read	Reasons for reading information	Student number	f
Yes (f:6 - %75)	Expiration date (f:6 - %75)	Possibility of poisoning/getting sick	S ₁ , S ₂ , S ₃ , S ₆ , S ₈	5
		Buying the ones with a long expiration date	S ₈	1
		Buying the ones with a short expiration date if she can eat them	S ₈	1
		No reason	S ₄	1
	Ingredients (f:5 - %62.5)	Possibility of adding unknown substances	S ₂ , S ₄	2
		Possibility of adding bad substances such as gelatin	S ₁	1
		Any substance that affects health	S ₃	1
		Any substance that can cause nausea	S ₃	1
		No reason	S ₆	1
	Country of manufacture (f:1 - %12.5)		S ₁	1
No (f:2 - %25)	Waste of time		S ₅	1
	Checking before it is put on the aisles in the markets		S ₇	1

depending on the amount of consumption (when consumed too much) and the production process. The students mainly emphasized containing acid (f:3) in the content of the drink item category. Some examples of students' answers are given below.

S₁: "Because everyone says that some drinks are unhealthy, they contain bad substances." - cola, soda pop, instant juice, sodas.

S₃: "It is very acidic; I think it harms our stomach. It may be harmless to drink without exceeding the limit, but I think more than one glass is very harmful." - sodas, fizzy drinks, cold teas.

S₄: "They are all acidic, and we do not know how fruit juice is made anyway. Maybe they put a lot of different substances in it. They may not even be using fruit at all." - cola, soda pop, instant juice, energy drinks, sodas.

3.6 Results on Middle School Students' Awareness of Reading the Information on the Food Packaging

The students' answers about the reading status of the information on the food packaging, the information they read, and the reasons for reading are given in Table 7.

In Table 7, five students stated that they usually (S₁, S₂, S₃, S₆, S₈) and one student rarely (S₄) read the information on the food packaging before purchasing a packaged food item, and two students (S₅, S₇) did not read. Nevertheless, the students read the information on the food packaging, the expiration date (f:6), and the ingredients (f:5); additionally, it is seen that the reasons for reading the expiration date concentrated on the possibility of poisoning/getting sick (f:5). Some examples of students' answers are given below.

Table 8 Students' answers about the relationship between nutrition and physical health

Category	Code	Student number	f
Positive effects	Healthy nutrition - healthy body	S ₅ , S ₆ , S ₇	3
	Regular and good nutrition - prevention of diseases	S ₁	1
	Consuming healthy food - have no health problems	S ₄	1
Negative effects	Malnutrition - diseases (excessive weight gain, obesity)	S ₂ , S ₄ , S ₇	3
	Bad food - deterioration of body health	S ₁ , S ₃	2
	Nutrition with junk food, cola, etc. - stomachache	S ₁	1
	Nutrition with too much oily food - increasing of fat ratio in the body	S ₄	1
	Drinking highly acidic drinks - harm to the organs	S ₄	1
	Too much weight gain - failure of some organs	S ₇	1
	Being very overweight - difficulty moving	S ₂	1
	Being very overweight - feeling tired	S ₂	1

Table 8 Students' answers about the relationship between nutrition and physical health (*Continued*)

Category	Code	Student number	f
Negative effects	Being very overweight - not having fun like his/her peers	S ₂	1
	Being very underweight - diseases	S ₂	1
	Being very underweight - loss of strength of the bone structure and fracture	S ₂	1
	Sports - healthy body	S ₃	1
	Some foods strengthen and weaken muscles	S ₈	1
	Eating muscle-strengthening foods - maintaining body health	S ₈	1
	Substances that are not beneficial to the muscles (food coloring, sugar, acid)	S ₈	1
	The foods that are eaten can harm the body when they cannot provide the necessary foods	S ₈	1

S₁: "Because if the expiration date has passed, we can get poisoned or if it contains bad substances like gelatine, so I read it."

S₂: "For example, I look at the expiration date in terms of not being poisoned. Has the expiration date passed or not? The thing that has expired can poison me. Or else, if the expiration date is too passed, it can lead to death. If ingredients I don't know are added. I wouldn't want to eat such things."

S₄: "I usually check the expiration date. If it's past, I don't buy it or I look ingredients. If there is something which I don't know and see it for the first time, I don't buy it."

3.7 Results on Middle School Students' Awareness of the Relationship between Nutrition and Physical Health

The students' answers about the relationship between nutrition and physical health are given in Table 8.

In Table 8, all students (f:8) stated that there was a relationship between nutrition and physical health. They

discussed the effects of nutrition on physical health in positive and negative categories. In the positive effects, the students generally stated that healthy nutrition - healthy body (f:3); in the adverse effects, they stated that malnutrition - diseases (excessive weight gain, obesity) (f:3). Some examples of students' answers are given below.

S₂: "We may be obese. If we don't pay attention. This means that if we are overweight, we can't do some things. Later, we can't walk much, our walking will be shorter, and we can't do sports. Moreover, we can't run and have fun like the other kids. Because we get tired when we are too overweight. Actually, being very thin is a bad thing. Having an emaciated appearance is a bad thing. Because there are diseases of losing weight. If we are too thin, our wrists may be thin, and they may immediately break."

S₃: "Body health, doing sports makes the body healthier, but if we eat bad and unhealthy foods while doing sports, it impairs the health of our body in the same way."

Table 9 Students' answers about the relationship between nutrition and psychological health

Category	Sub-category	Code	Student number	f
Yes (f:4 - %50)	Positive effects	Eating what she loves - feeling happy	S ₁	1
		Feeling of satiety - positive psychological health	S ₅	1
		Feeling of satiety - generally in good morale	S ₅	1
		Feeling of satiety - feeling energetic	S ₅	1
		Healthy nutrition - preventing feeling guilty	S ₈	1
		Not be forcibly eating unpleasant foods while dieting	S ₈	1
	Negative effects	S/he thinks that s/he is overweight and does death diets	S ₇	1
		Psychological health drifting away from reality - health problems	S ₇	1
		Lack of pleasure and taste from force-eaten food	S ₈	1
		Harmful nutrition - excessive weight gain	S ₈	1
Partially (f:2 - %25)	Positive effects	Excessive weight gain - deterioration of psychology	S ₈	1
		Healthy nutrition - healthy body and feeling good	S ₆	1
	Negative effects	People wanting to eat other things/food craving	S ₄	1
		Eating the same thing continuously - deterioration of psychology	S ₄	1

Table 9 Students' answers about the relationship between nutrition and psychological health (*Continued*)

Category	Sub-category	Code	Student number	f
Undecided (f:2 - %25)	Negative effects	With the effect of the environment, the person sees herself/himself as overweight and thinks about starting to lose weight (An individual whom healthy nutrition makes her/his weight control and does not experience psychological distress)	S ₂	1
		Overeating in depression - feeling regret	S ₃	1

Table 10 Students' answers about the relationship between nutrition and mental activities

Category	Sub-category	Code	Student number	f
Yes (f:3 - %37.5)	Positive effects	Better functioning of the brain when eating walnuts	S ₁	1
		Functioning of the mind depends on the being hungry-full	S ₁	1
		Thinking about what others say about your nutrition style (healthy-unhealthy)	S ₂	1
		Eating depends on the happy-sad (confused with psychological status)	S ₃	1
Undecided (f:1 - %12.5)	Negative effects	Some foods come to the brain through the blood and damage the brain	S ₈	1
No (f:4 - %50)		Nutrition and mental activities are different from each other	S ₆ , S ₇	2
		Dreaming of eating it when she craves something	S ₄	1
		Losing enthusiasm after buying food or drink	S ₄	1
		No reason	S ₅	1

S₇: "Now, if our nutrition is bad, our body health is also affected by it. And it causes many diseases. Therefore, the better we feed, the better our body health will be. To be honest, we can be obese. Because of excessive weight gain. Afterwards, some organs in our body can't withstand such weight and may fail."

3.8 Results on Middle School Students' Awareness of the Relationship between Nutrition and Psychological Health

The students' answers about the relationship between nutrition and psychological health are given in Table 9.

In Table 9, four students (S₁, S₅, S₇, S₈) stated that there was a relationship between nutrition and psychological health, and two students (S₄, S₆) stated that there was a partial relationship. Two students (S₂, S₃) were undecided on this issue. Some examples of students' answers are given below.

S₂: "For example, person becomes very overweight, so you are not actually overweight, but you see yourself as overweight. After that, someone else influences your thoughts just because you're overweight. This time, you think of losing weight. Why did s/he say me overweight? Am I really too overweight? After that, you will feel in psychological distress, so if you put it in your mind and your family also asked you not to do it... I don't care about anyone. I adjust my own weight."

S₃: "In depression, too much food can be eaten. After that, when our psychological health improves, there is regret."

S₄: "I think there is. Because people get bored of eating the same thing all the time. Her/his psychology deteriorates. For example, s/he craves and wants something. Even if you don't eat too much, you want it."

S₇: "I watched it in a video. If our psychological health, for example, when we look in front of the mirror, we see ourselves as fat even though we are not, we are doing death diets and this negatively affects our nutrition and health. Therefore, our body health is important in this respect. If our psychological health is far from reality, it can lead to health problems."

3.9 Results on Middle School Students' Awareness of the Relationship between Nutrition and Mental Activities

The students' answers about the relationship between nutrition and mental activities are given in Table 10.

In Table 10, three students (S₁, S₂, S₃) stated that there was a relationship between nutrition and mental activities, and four students (S₄, S₅, S₆, S₇) stated that there was no relationship. One student (S₈) was undecided on this issue. As the reason why there was no relationship between nutrition and mental activities, S₆ and S₇ stated that nutrition and mental activities were different things; on the other hand, S₄ stated that she dreamed of eating something

when she craved it, and she lost enthusiasm after buying food or drink as a reason, it was determined that S₅ did not give a reason for this situation. Some examples of students' answers are given below.

S₁: *“For example, they say that our brain works better when we eat walnuts. That is why I think it's good to eat walnuts and those kinds of things. We can also look at it this way, when I'm hungry, my mind doesn't work that much, but my mind works better when I'm full.”*

S₈: *“For example, some of the things which we eat may harm our brain. Because something dirty is flowing from the blood, something harmful is flowing into her brain, how can it benefit her? Of course, it does not... So, there is a relationship. It is in a bad way.”*

4. DISCUSSION

As a result of the research, it was determined that the nutrition awareness of middle school students in the early adolescence period was low. In the literature, it was detected that high school students' knowledge about balanced nutrition was insufficient (Seçken & Morgil, 2000). On the contrary, it was revealed that there was an inversely proportional relationship between the ages and grade levels, and nutrition knowledge level of students in the middle-adolescent period (Erten, 2021); 69.3% of high school students were good, 26.1% were sufficient, 4.6% were insufficient in terms of nutrition knowledge levels (Tayhan-Kartal et al., 2019).

The research determined that two students (S₁ and S₂) had a history of disease that required attention while feeding. So much so that, even if the disease is treated, the individual should pay attention to her/his nutrition so that the disease s/he has experienced does not recur throughout her/his life. Similarly, an individual without a history of the disease should pay attention to her/his nutrition to keep up with her/his general health status.

The students defined nutrition by focusing on need concepts, creating a feeling of satiety, health, and regularity.

By considering them biologically, the students stated the reasons for needing nutrition by focusing on living, feeling hungry, and creating a feeling of satiety and energy. While students aged 13-14 can express their reasons for needing nutrition, in the study conducted by Kostanjevec et al. (2011), it was stated that abstract thinking skill was necessary in order to understand the role of foods in human nutrition or the energy value of foods; however, it was determined that this skill was seen as complex by 6th-grade students due to the level of cognitive development.

Although a significant part of the students did not wait for the feeling of thirst to drink water, it was determined that the amount of water they drank daily was below the required value.

It was determined that 75% of the students had three main meals during the day, 62.5% had breakfast and lunch, and 87.5% had dinner at the appropriate time. It was detected that 87.5% of the students had snack meals, snack

meal numbers varied between zero-four, and snack meals were usually between noon and evening (afternoon). Remarkably, 37.5% of the students had a snack meal at noon, and one never had a snack meal. In support of the results obtained from the research, it is vital to pay attention to the main and snack meals in adequate and balanced nutrition. For this reason, nutrition hours should be organized as a fun activity in all schools to ensure that children have sufficient and balanced nutrition, inculcating the habit of breakfast, preventing skipping meals, and transforming nutrition knowledge into behavior. In addition, the selection of foods and drinks sold in school canteens, which are most shopped by students at school, taking into account the developmental characteristics of students and their high nutritional value, can help students consume the right foods. In this way, it can be ensured that students gain the proper nutrition habits. In order to correct bad nutrition habits and increase the knowledge level, nutrition education should be given to children and young people at every stage of formal and non-formal education, starting from preschool education, which should be continuous (Taşdemir, 2019).

All of the students stated that all drinks were not healthy. Students gave examples of unhealthy drinks such as cola, soda pop, instant fruit juice, energy drinks, acidic, fizzy, alcoholic, powdered drinks, and cold teas. The students drew more attention to the content of drink substances and described some drinks as unhealthy because they contain acid, gas, and harmful substances, and the amount of acid and sugar was high. Similarly, all students stated that all foods were not healthy. Students gave examples of unhealthy foods such as chips, chocolate, candy, jellies, hamburger, pizza, fast food products, bread, junk food, fatty foods, fried foods, onion rings, ice cream, and fruit juice ice pops. Students drew more attention to the content of food items and described some foods as unhealthy due to the high amount of fat, sugar, and food additives. In addition to these examples obtained in this research, Türk et al. (2007) found that the most consumed unhealthy foods by high school first-year students were instant cake/biscuit, ketchup/mayonnaise, fried food, salami, sausage, chips, hamburger/hotdog/toast; students stated that the most nutritious foods among unhealthy foods were bakery desserts, cream cheese, and wrap; they most frequently expressed that non-nutritious foods were kokorec/cold cuts, chips, instant soups, and ketchup/mayonnaise.

75% of the students said they read the information on the package before purchasing a food item, while 25% said they had never read it. 62.5% of the students said they read the expiration date due to the possibility of poisoning/being sick. On the other hand, 25% stated that they did not read the information on the package because it was a waste of time, and a packaged food item was checked before it was put on the aisles in the markets.

Alpuğuz et al. (2009) found that nearly half of high school and university students did not read the label information when purchasing packaged foods. They determined that female students read label information more than male students. They detected that the students paid attention to the expiration date, whether the package was open, and the brand when purchasing packaged foods. Geçkil and Yıldız (2006) revealed that after education on nutrition, adolescents' thinking of reading the label of packaged foods to recognize their characteristics did not change.

All of the students stated that there was a relationship between nutrition and physical health. Therefore, a significant part of the students focused on the individual's state of being overweight and underweight when not feeding healthily by emphasizing the adverse effects of this relationship.

50% of the students stated that there was a relationship between nutrition and psychological health, 25% of them stated that there was partially a relationship, and 25% of them were undecided on this issue. The students stated that the relationship between nutrition and psychological health, in addition to feeling good when satiety, psychological health could be negatively affected as a result of perceiving oneself as overweight. In addition, undecided students cited the effects of environmental factors on the individual's body image and the effect of depression on eating and regret. However, an individual who eats healthy makes her/his weight control, has a positive body image, and does not experience any psychological problems. In the study conducted by Öztürkler and Güngör (2020), it was revealed that adolescents with normal eating attitudes had low depression findings; nutrition knowledge, behavior, and habits were better. In addition, it was understood that the symptoms of depression increased in obese individuals. It was determined that students with high nutrition knowledge had a normal eating attitude; there was a relationship between depression and bad eating. It has been determined by Aslan and Koç (2018) that a significant part of middle school students have a high level of body image. In addition, it was detected that as the students' body image scores increased, their social anxiety levels decreased; body image levels of male students were higher than female students; body image perception of students with high socioeconomic status was higher than students with low socioeconomic status. De Vet et al. (2013) found that environmental and psychological factors influenced adolescents' eating behavior. On the other hand, Øverby and Høigaard (2012) found that adolescents who consumed high levels of unhealthy food items (sugar-sweetened soft drinks, desserts, chocolate, salty snacks, pizza, and hot dogs) were more likely to experience behavioral problems at school.

37.5% of the students stated that there was a relationship between nutrition and mental activities; one of these students drew attention to the effects of nutrition on

the functioning of the brain and mind. Contrary to this result, 50% of the students stated that there was no relationship between nutrition and mental activities; 25% stated that nutrition and mental activities differed. 12.5% of the students were undecided about this relationship, and they mentioned that unhealthy nutrition could damage the brain. Supporting this result, it was stated in the literature that malnutrition negatively affects countries that strive to improve their education systems. So much so that malnutrition has adverse effects on cognitive development, and in order to prevent this situation, effective education on healthy nutrition should be given to the public. A good indicator of the effect of adequate and balanced nutrition on learning is the breakfast meal. For this reason, primarily, children should be taught the habit of having breakfast, and breakfast programs should be implemented in schools. For primary education to be successful, the effects of nutrition on brain development and cognitive functions should be considered (Demircioğlu & Yabancı, 2003).

5. CONCLUSION

To sum up, it was determined that the nutrition awareness of middle school students in the early adolescence period was low. It was observed that there were some deficiencies in the nutrition habits of the students. More than half of the students were aware of eating three meals a day and snacks, eating breakfast between the hours 8.00-9.00, lunch at 12.00-13.00, and dinner at 19.00-20.00, and they had the main meal three times during the day. The time interval for dinner is late. It was seen that students' snack meal numbers in a day were different, and these meals were frequently noon and between noon-evening (afternoon). However, three students had a snack meal at lunchtime, the main meal time.

Furthermore, it was understood that a significant part of the students did not wait for the feeling of thirst to drink water, and they did not consume the ideal amount of water they should drink according to their weight. In this context, it was understood that the nutrition attitudes and behaviors of the students were affected. Such that more than half of the students read the information on the package before purchasing a packaged food item, especially the expiration date, due to the possibility of poisoning/being sick. However, that situation shows that they did not have enough awareness about reading other information that may affect their health by giving priority. In terms of risky behaviors, it was understood that students' awareness of unhealthy foods and drinks was insufficient. Even though all the students stated that all foods and drinks were unhealthy, they gave a limited number of examples. Students gave examples of unhealthy foods, primarily chips, chocolate, candy, jellies, hamburgers, and unhealthy drinks, mostly cola, soda pop, instant juice, energy drinks, and sodas. They mainly emphasized that it contains too much oil in the content of food items and contains acid in

the drink item. It was understood that students' nutritional knowledge level was weak. They expressed the nutrition definition in a limited number of words. However, all students knew the relationship between nutrition and physical health.

Regarding the effect of nutrition on body mass index (BMI) and obesity, students with normal BMI values participated in this research. They stated that healthy nutrition leads to a healthy body, and malnutrition leads to diseases (excessive weight gain, obesity). On the other hand, half of the students were unaware of the relationship between nutrition and psychological health, and more than half were unaware of the relationship between nutrition and mental activities. In line with these results, more than school nutrition education is required.

6. RECOMMENDATION

Within the scope of the research, the following recommendations can be made.

- In out-of-school learning, trips could be organized to food drink production and food packaging factories, hospital dietitians, and nutrition and dietetics programs within universities, if any.
- In order to enable students to learn from other people's experiences, the lives of people who are faced with adverse situations due to unhealthy nutrition could be presented as a case study in the classroom environment.
- Awareness-raising activities could be organized in which students and parents participate together. In addition, dietitians from hospitals and lecturers from nutrition and dietetics programs could be invited to these events as expert speakers.

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