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EVALUATION OF THE RELATIONSHİP BETWEEN ADHERENCE TO MEDİTERRANEAN DIET IN 14- 16 YEARS OLD ADOLESCENTS AND THEİR INTESTINAL HEALTH

14-16 YAŞ ADOLESANLARIN AKDENİZ DİYETİNE UYUMU İLE BAĞIRSAK SAĞLIĞI ARASINDAKİ İLİŞKİNİN DEĞERLENDİRİLMESİ

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ABSTRACT

Aims: This research, it was aimed to evaluate relationship between adaptation of Mediterranean Diet in adolescents and its intestinal health.

Methods: The study was included 200 students who were aged between 14-16 and studied in Antakya High School in the academic years of 2019-2020. In this study, the nutritional habits of individuals, are evaluated by 24-hour dietary record form and food frequency questionnare; intestinal health was questioned by Bristol Stool Scale questionnaires and adherence to the Mediterranean Diet was evaluated by the KIDMED index scale. The questionnaires were administered by face-to-face interview method.

Results: In this study was evaluated ; 66,3% of girls had an optimal quality; 31,5% of girls had a mild quality, 2,2% of girls had a low quality; 68,5% of men had an optimal quality, 26,9% of men had a mild quality, 4,6% of men had a low quality of Mediterranean Diet. Mediterranean Diet Quality Index (KIDMED) score results of adolescents weren't found to be significantly different by gender of adolescents ($p>0.05$). According to Bristol Score of adolescents 1,1 % of girls had slow colonic transit time, 95,7% of girls had normal colonic transit time, 3,3% of girls had rapid colonic transit time; 9,3% of men had slow colonic transit time, 86,1% of men had normal colonic transit time, 4,6% of men had rapid colonic transit time. Bristol Scores of adolescents were found statistically different according to their gender ($p=0.029$; $p<0.05$).

Conclusion: As a result of this study, it was observed that high adherence to the Mediterranean Diet in adolescents had a positive effect on intestinal health.

Keywords: Adolescent, Intestinal Health, Mediterranean Diet Compliance.

ÖZET

Amaç: Bu çalışmada, 14-16 yaş arası adolesanların Akdeniz Diyetine uyumu ile bağırsak sağlığı arasındaki ilişkinin değerlendirilmesi amaçlanmıştır.

Gereç ve Yöntem: Çalışmaya, Antakya bölgesinde yaşayan 14 -16 yaş aralığında, devlet okuluna giden 200 adölesan dâhil edilmiştir. Araştırmada, adolesanların beslenme alışkanlıkları, 24 saatlik geriye dönük besin tüketim kaydı ve besin tüketim sıklığı ile, bağırsak sağlığı Bristol Dışkı skalası ve Akdeniz Diyetine uyumu "Akdeniz Diyeti Kalite İndeksi" (KIDMED indeksi) formu kullanılarak değerlendirilmiştir.

Bulgular: Çalışmaya katılan kızların % 66,3'ünün Akdeniz diyetine en uygun diyet kalitesinde; % 31,5'inin orta düzeyde, %2,2'sinin en düşük diyet kalitesinde; erkeklerin % 68,5'inin en uygun diyet kalitesinde, %26,9'unun orta düzeyde, %4,6'sının en düşük diyet kalitesinde uyum sağladığı saptanmıştır. KIDMED skorlama ile elde edilen diyet kalite düzeyleri cinsiyetlere göre istatistiksel olarak anlamlı farklılık göstermemektedir ($p>0.05$). Kızların %1,1'inde yavaş kolonik taşıma, % 95,7'sinde normal kolonik taşıma, % 3,3'ünde hızlı kolonik taşıma görülürken; erkeklerin % 9,3'ünde yavaş kolonik taşıma, % 86,1'inde normal kolonik taşıma, % 4,6'sında hızlı kolonik taşıma görülmektedir. Adolesanların cinsiyetine göre Bristol skorları arasında istatistiksel olarak farklılık saptanmıştır ($p=0.029$; $p<0.05$).

Sonuç: Bu çalışma sonucunda, adölesanlarda Akdeniz Diyetine uyumun, bağırsak sağlığını olumlu yönde etkilediği görülmüştür.

Anahtar Sözcükler: Adölesan, Akdeniz Diyeti Uyumu, Bağırsak Sağlığı.

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INTRODUCTION

The World Health Organization (WHO) is defined the 10-19 age group as adolescents. Adolescence term is identified that transition from childhood to adulthood term with accelerated of development. Healthy eating habits, which is gained during adolescence term, play an important role in preventing chronic diseases that may occur in later ages (Demirezen & Coşansu, 2005). Inadequated and imbalanced diet during adelescence term is triggered that many diseases such as obesity, diabetes, protein-energy malnutrition, cardiovascular diseases, vitamin and mineral deficiencies (Toro et al., 2006).

The Mediterranean Diet is an examplary diet, which is providing adequate and balanced nutrition (Kaşıkçı, 2010). The Mediterranean Diet is a diet that emerged with the eating habits of people, who are being lived in the Mediterranean region. The Mediterranean Diet is a diet model that are consumed fresh fruits and vegetables, legumes, cereals, nuts, peanuts are walnuts abundantly; fish, diary products and poultry in moderate level; red meat in low amount. Olive oil is the most preferred as a fat in this diet model (Cabrera et al., 2015). It was considered that Mediterranean Diet has protective effect for providing cardiovasculer diseases, obesity and diabetes. It has been reported that the Mediterranean Diet has positive effects on the prevention of obesity in adolescents (Tognon et al., 2014). In a study which is conducted by adolescents, it was concluded that adherence to the Mediterranean Diet was negatively associated with being overweight and increased body fat (Mistretta et al., 2017).

Nutritional habits have an important role in being healthy gut. The gut microbiome is main indicator of whether the diet is healthy or unhealthy due to the microbial metabolites are released in gut microbiome (Gutiérrez-Díaz, Fernández-Navarro, Sánchez, Margolles, & González, 2016). The Mediterranean Diet is a rich in fruits, vegetables, grains and legumes (Mistretta et al., 2017). It was observed that who is high adherance to Mediterranean Diet, has high fecal propionate and butyrate short chain fatty acids concentration in gut. The positive effects of the Mediterranean Diet on health are thought to be due to the positive effects it creates on the gut microbiota (Gutiérrez-Díaz et al., 2016).

This research, it was aimed to evaluate relationship between adaptation of Mediterranean Diet in adolescents and its intestinal health.

MATERIALS AND METHODS

In this study, 265 people were invited to the study end of the study 200 adolescents were included who the ages of between14-16 and living in Antakya region. Written and herbal information was provided with ‘Parent/Guardian Informed Consent Form’ given to volunteers, who are accepted to participate in this study, because of volunteers age under the 18 years old in this study.

Ethics committee approval for the conduct of the study was obtained by Acıbadem University Medical Research Evaluation Board (ATADEK) at the meeting numbered 2019/18 and on 21.11.2019 with the decision number 2019-18/25.

General Characteristics and Demographic Data

In general information, the gender, age, nutritional habits of adolescents and demographic characteristics of the adolescents’ parents were questioned. The eating habits of adolescents were evaluated by ‘’24 Hour Dietary Recall’’ and ‘’Food Frequency Questionnaire’’.

Dietary Record

The retrospective 24-hour dietary record was filled with adolescents.

In this survey, the foods consumed by the adolescents in the last 24 hours and their amounts were determined. The researcher was determined the ingredients of the meals consumed by the adolescents and the amount corresponding to one portion by using ‘Standard Recipe’ book (Merdol, 2011).

Food Frequency Questionnaire Form

In the food frequency questionnaire form was questioned which foods, how often and what quantity are consumed by adolescents. The daily consumption amounts of each food group consumed by adolescents were calculated using the "Computer Assisted Nutrition Program, Nutrition Information Systems Package Program (BEBIS). Adolescents’ dietary intake of nutrients was compared by using daily reference intake that should be according to TUBER (TUBER, 2016).

Mediterranean Diet Quality Index

Mediterranean Diet Quality Index has 16 questions. KIDMED index has included 12 question that are positive, 4 questions that are negative questions. If adolescents are answered ‘’yes’’ the positive questions; they will be taken +1 points. If aolescents are answered ‘’yes’’ the negative questions; they will be taken -1 points. By summing the scores ranging from 0-12 were obtained at the and of the evaluation.

The results of scores obtained are divided into three categories. If the result is >8, optimal adherence to the Mediterranean Diet; a score of 4-7 is moderate adherence to he Mediterranean Diet and ≤3 is low adherence to Mediterranean Diet (Cabrera et al., 2015).

Bristol Stool Scale

The shape and consistency of stool was determined and marked by adolescents with Bristol Stool Scale and evaluated by the researcher. Type 1 stool is indicative of constipation; type 7 stool is indicative of dierrhea. Type 1 stool is the longest intestinal transit time; type 7 stool is the shortest intestinal transit time. Type 3 and Type 4 stool types are indicative of healthy gut (Savıcı & Karaca, 2019).

Statistical Evaluation of Data

NCSS (Number Cruncher Statistical System) 2007 (Kaysville, Utah, USA) program was used for statistical analysis. Descriptive statistical methods (mean, standard deviation, median, first quartile, third quartile, frequency, percentage, minimum, maximum) were used while evaluating the study data. The conformity of quantitative data to the normal distribution was tested with the Shapiro-Wilk test and graphical examinations. One-way analysis of varience and binary evaluations with Bonferroni correction were used for comparisions between groups of more than two normally distributed quantitative variables. Kruskal-Wallis test ve Dunn-Bonferroni test were used for comparisions between groups of more than two quantitative variables that did not show normal distribution. Repeated measures analysis of variance was used for within group comparisions of normally distributed quantitative variables, and Bonferroni corrected pairwise evaluations were used for pairwise comparisions. Pearson chi-square test and Fisher-Freeman-Halton exact test were used to compare qualitative data. Statistical significance was accepted as $p<0.05$.

RESULTS

This study was occured with 200 adolescents that were living in Antakya region and attending public high school in 2019-2020 years. The ages of adolescents that were participating in this study were ranged from 14 to 16; with mean age of 14,65±0,66.

There was no found statistically significant difference between the total scores of adolescents’ adherence to Mediterranean Diet according to the education levels of the adolescents’ parents ($p>0.05$) (Table 1).

Table 1. Adolescents' Adherence to the Mediterranean Diet Score According to the Education Level of Their Parents

		Optimal Diet Quality		Medium Diet Quality		Very Low Diet Quality		p
		n	%	n	%	n	%	
Fathers’ Education Level	Primary school	35	25,9	17	29,3	1	14,2	[a]0.897
	Middle School	47	34,8	20	34,5	2	28,6	
	High School	23	17,0	7	12,1	2	28,6	
	University	30	22,3	14	24,1	2	28,6	
Mothers’ Education Level	Primary school	54	40,0	27	46,6	1	14,3	[a]0.463
	Middle School	35	25,9	15	25,9	2	28,6	
	High School	26	19,3	8	13,8	1	14,3	
	University	20	14,8	8	13,8	3	42,9	

[a] Pearson Chi-Square

It was determined that 67,5% of adolescents were adapted with optimal quality; 29% of adolescents were adapted with medium quality; 7% of adolescents were adapted with low quality of Mediterranean Diet. Diet quality levels was obtained by KIDMED scoring did not show a statistically significant difference according to genders (p>0.05) (Table 2).

Table 2. Distribution of Scores to Adherence the Mediterranean Diet by Gender

	Total (n=200)		**Girl (n=92)**		**Men (n=108)**		**p**
	n	**%**	**n**	**%**	**n**	**%**	
Optimal Diet Quality (KIDMED Score >8)	135	67,5	61	66,3	74	68,5	
Moderate Diet Quality (KIDMED Score 4-7)	58	29,0	29	31,5	29	26,9	[a]0,531
Very Low Diet Quality (KIDMED Skoru ≤3)	7	3,5	2	2,2	5	4,6	

[a] Pearson Chi-Square

The daily mean energy intake of adolescents was 1577,3±289,81 kcal/day. The daily mean carbohydrate intake was 167,94±47,80 g/day; the mean of protein intake was 59,39±18,64 g/day; the mean of fat intake was 72,44±25,91 g/day. The daily mean of fiber intake of adolescents was 12,78±5,00 g/day. The daily mean of polyunsaturated fatty acid intake was 12,07±8,71 g/day. The daily mean of cholesterol intake of adolescents was 311,96±178,85 mg/day. The daily mean of monounsaturated fatty acid intake was 24,85±10,38 g/day. The daily mean of saturated fatty acid intake was 30,23±11,17 g/day. The daily mean of EPA intake was 0,05±0,20 g/day; DHA was 0,20±0,34 g/day (Table 3).

Table 3. Evaluation of Daily Dietary Macronutrient Levels of Adolescents

	Food Consumption		**Macro Nutrients Taken Above TUBER Recommendations**
	Median (Min-Maks)	**Mean±Sd**	
Energy (kcal/day)	1444,8 (1305,8-2778)	1577,3±289,81	
Protein (g/day)	57,4 (19,9-115,4)	59,39±18,64	
Protein (TE%)	15 (6-32)	15,54±4,57	★
Fat (g/day)	71,3 (12,7-152,5)	72,44±25,91	
Fat (TE%)	42 (8-72)	40,56±11,01	★
Carbohydrate (g/day)	162,7 (50,3-318,4)	167,94±47,80	
Carbohydrate (TE%)	43 (14-78)	43,93±11,30	★
Fiber (g/day)	12,3 (2,6-30)	12,78±5,00	
Cholesterol (mg/day)	319,1 (8,5-792,6)	311,96±178,85	★
Polyunsaturated fatty acid (g/day)	9,3 (1,5-44,8)	12,07±8,71	
Polyunsaturated fatty acid (%)	4,2 (1,3-7)	4,07±1,04	
Monounsaturated fatty acid (g/day)	23,4 (3,9-62,7)	24,85±10,38	
Saturated fatty acid (g/day)	31,1 (6,5-66,2)	30,23±11,17	★
EPA (g/day)	0 (0-1,7)	0,05±0,20	
DHA (g/day)	0,1 (0-2,8)	0,20±0,34	

The consumption frequency of milk, mutton and egg was found significantly higher in men than girls (p=0.015; p<0.05). The consumption frequency of legumes, fruits, vegetables and table sugar was found significantly higher in girls than men (p=0.004; p<0.01). The consumption frequencies of all other foods didn't differ statistically significantly according to genders (p>0.05).

In this study, when Bristol Score is examined of adolescents slow colonic transit time was 5,5%; normal colonic transit time was 90,5%; rapid colonic transit time was 4% of adolescents (Table 4). There was found that a statistical difference between Bristol Scores according to the gender of the adolescents (p=0.029; p<0.05).

Table 4. Evaluation of Bristol Scores According to Gender

		Total (n=200)		**Men(n=108)**		**Girl (n=92)**		**p**
		n	**%**	**n**	**%**	**n**	**%**	
Bristol Score	Slow colonic transit time	11	5,5	10	9,3	1	1,1	[b]0,029*
	Normal colonic transit time	181	90,5	93	86,1	88	95,7	
	Rapid colonic transit time	8	4,0	5	4,6	3	3,3	

[b]Fisher's Freeman Halton Test *p<0.05(1, 2) scores: slow colonic transit time
(3,4) scores: rormal colonic transit time (5-7) scores: rapid colonic transit time

There wasn't been statistically significant difference between Bristol Score and Mediterranean Diet compliance scores (p>0.05) (Table 5).

Table 5. Comparison of Bristol Score and Mediterranean Diet Compliance Score

		Mediterranean Diet Compliance Score						**p**
		Optimal Diet Quality		**Medium Diet Quality**		**Very Low Diet Quality**		
		n	**%**	**n**	**%**	**n**	**%**	
Bristol Score	Slow colonic transit time	8	5,9	3	5,2	0	0	[b]0,725
	Normal colonic transit time	123	91,1	51	87,9	7	100	
	Rapid colonic transit time	4	3,0	4	6,9	0	0	

[b]Fisher's Freeman Halton Test (1, 2) scores: slow colonic transit time
(3,4) scores: rormal colonic transit time (5-7) scores: rapid colonic transit time

DISCUSSION

Healthy eating habits is gained during adolescence term that is one of the most important factors that directly affect the whole life of individual (Yavuz & Özer, 2019). In his study was evaluated, adolescents, who was aged 14-16 years, adherence to Mediterranean diet which is rich in fruits, vegetables, grains, legumes and antioxidants, the relationship between adherence to the Mediterranean Diet and intestinal health.

In a study, examining the eating habits of adolescents aged 10-18 in Kocaeli, 53% of the adolescents were girls and 47% were boys; and their mean age was 13.8 ± 2.46 years (Aksoydan & Çakır, 2011). In a cross-sectional study, examining the adherence to the Mediterranean Diet of adolescents with a mean age of 14.83±1.10 years in Spain, they were 49.9% of boys and 50.1% of girls (Galan-Lopez, Sánchez-Oliver, Ries, & González-Jurado, 2019). Of the 200 adolescents who were participating in this study, 54.0% (n=108) were boys and 46.0% (n=92) were girls; The mean age is 14.65±0.66 years.

In a study conducted in Samsun, when the sociodemographic characteristics of the students' parents were examined, there was no found significant relationship between the education level and occupation of the mothers and the students' eating attitudes (p>0.05) (Uzdil, Özenoğlu, & Gökçe, 2017). In a study examining the eating attitudes of high school students, there was no found significant relationship between the education level of the parents and the healthy eating attitudes of the students. (p>0.05) (Uskun & Şabaplı, 2013). In this study, when the total scores of adolescents' adherence to the Mediterranean Diet were examined according to the education levels of the parents; there was no found statistically significant difference (p>0.05).

Şahingöz et al. study, was observed to adherence of adolescents to Mediterranean Diet according to the KIDMED index scores, 59.2% of the adolescents comply with a moderate quality and 22.9% with an optimal quality to diet. KIDMED score did not differ statistically significantly between boys and girls (t=0.907, p>0.05) (Sahingoz & Sanlier, 2011). Mariscal et al. study, when the classification of adolescents according to the KIDMED index it was observed that 46.9% of the adolescents were of optimal quality, 51.1% of them were of medium quality of adherence the diet. There was no found statistically significant difference in the quality of adherence to diet between girls and boys (P = 0.806) (Mariscal-Arcas et al., 2009). In this study, when the Mediterranean Diet quality was examined according to the KIDMED score, it was found that 67.5% of the adolescents with optimal diet quality, 29% of adolescents with the medium diet quality, and 7% of adolescents with low diet quality level. In this study, the KIDMED score didn't differ significantly by gender. (p>0.05).

Bas et al. study, the average daily energy intake of adolescents was stated as 1876,16 ± 608 kcal/day. (Baş et al., 2005). Gümüş ve ark., study, the average daily energy intake of adolescents was stated as 1551.0±539.88 kcal/day (Gümüş, Bulduk, & Akdevelioğlu, 2011). In this study, the average daily energy intake of adolescents 1577,3±289,81'kcal/day. Bas et al. study, the mean carbohydrate intake of adolescents was 51,7±6.9 TE % (total energy); mean protein intake was 13,4±2.7 TE%; the mean fat intake was 34,8 ± 6.4 TE % (Baş et al., 2005). In this study, 43,39±11.30% of the total energy came from carbohydrates; 15,54±4.57% proteins; fats 40,56±11.01%. In this study, average daily fiber intake of adolescents was 12,78±5.00 g/day; it could not meet the TÜBER recommendations (Rehberi, 2016). Gumus et al. study, the cholesterol intake of adolescents was found to be 123,8±97.33 mg/day (Gümüş et al., 2011). In this study, the average daily cholesterol intake of adolescents was 311,96±178.85 mg/day. Bas et al. study, the saturated fatty acid intake of adolescents was found to be 11,0±8.3 g/day (Baş et al., 2005). In this study the saturated fatty acid intake of adolescents was 30,23±11,17 g/day. Bas et al. study, the monounsaturated fatty acid intake of adolescents was found to be 12,9±8.4 g/day; polyunsaturated fatty acid intake was 6,1±4.4 g/day (Baş et al., 2005). In this study the monounsaturated fatty acid intake of adolescents was found average 24,85±10.38 g/day; polyunsaturated fatty acid intake was 12,07±8,71 g/day. In this study, the average intake of EPA was 0,05±0.20 g/day; the average amount of DHA intake was 0,20±0.34 g/day. In this study, EPA+DHA intake of adolescents was below TUBER recommendations (Rehberi, 2016).

In Savici and Karaca's study, 68.2% of individuals were found to have type 3 and type 4 stools according to Bristol Stool Scale (Savıcı & Karaca, 2019). In Bakan's study was found, the most of adolescents had stool type 3 and type 4 according to Bristol Stool Scale (Bakan, 2018). In this study, when Bristol Scores were examined in all adolescents, slow colonic transit time of 5.5%, normal colonic transit time of 90.5% (type 3 or type 4) and rapid colonic transit time of 4% were observed.

Macedo et al. study, a significant relationship was found between constipation and low-fiber diet in girls (Macêdo, Albuquerque, Tahan, & Morais, 2020). In Savici and Karaca's study, there was no found statistically significant correlation between daily intake of water-soluble and insoluble fiber and total fiber content, with Bristol scores (p>0.05) (Savıcı & Karaca, 2019). Guimaraes et al. study, dietary fiber intake, colonic transit time and stool frequency of adolescents were investigated. Fiber consumption was found to be lower in individuals with normal colonic transit time, but it was not statistically significant (p>0.05) (Guimaraes, Goulart, & Penna, 2001). In this study, a statistical difference was found between Bristol Scores according to the gender of the adolescents (p=0.029;p<0.05). The high rate of normal colonic transit time in girls is thought to be related to the high consumption of legumes, vegetables and fruits in girls.

CONCLUSION

As a result, it is very important to explain the importance of the Mediterranean Diet model and to regulate the eating behavior in the early period of adolescents with healthy eating habits and to protect their intestinal health.

Author Contributions

Plan, design: GAÇ; Material, methods and data collection: VLY; Data analysis and comments: GAÇ,VYL; Writing and corrections: GAÇ,VLY.

Conflict of interest

The authors declare that they have no conflict of interest

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REFERENCES

Aksoydan, E., & Çakır, N. (2011). Adölesanların beslenme alışkanlıkları, fiziksel aktivite düzeyleri ve vücut kitle indekslerinin değerlendirilmesi. Gülhane Tıp Dergisi, 53(4), 268-269.

Bakan, G. (2018). 15-18 Yaş Arası Adölesanlarda Diyet Lifi Tüketimi Durumunun Dışkılama Alışkanlıkları Üzerine Etkisi (Yüksek Lisans Tezi). Tc. Bahçeşehir Üniversitesi, İstanbul. (537985)

Baş, M., Altan, T., Dinçer, D., Aran, E., Kaya, H. G., & Yüksek, O. (2005). Determination of dietary habits as a risk factor of cardiovascular heart disease in Turkish adolescents. Eur J Nutr, 44(3), 174-182. doi:10.1007/s00394-004-0509-8

Cabrera, S. G., Fernández, N. H., Hernández, C. R., Nissensohn, M., Román-Viñas, B., & Serra-Majem, L. (2015). KIDMED Test; Prevelance of Low Adherence to the Mediterranean Diet in Children and Young; A Systematic Review. Nutricion hospitalaria, 32(6), 2390-2399. doi:https://doi.org/10.3305/nh.2015.32.6.9828

Demirezen, E., & Coşansu, G. (2005). Adölesan Çağı Öğrencilerde Beslenme Alışkanlıklarının Değerlendirilmesi. Sürekli Tıp Eğitimi Dergisi, 14(8), 174-178.

Galan-Lopez, P., Sánchez-Oliver, A. J., Ries, F., & González-Jurado, J. A. (2019). Mediterranean Diet, Physical Fitness and Body Composition in Sevillian Adolescents: A Healthy Lifestyle. Nutrients, 11(9). doi:10.3390/nu11092009

Guimaraes, E., Goulart, E., & Penna, F. (2001). Dietary fiber intake, stool frequency and colonic transit time in chronic functional constipation in children. Brazilian Journal of Medical and Biological Research, 34, 1147-1153.

Gutiérrez-Díaz, I., Fernández-Navarro, T., Sánchez, B., Margolles, A., & González, S. (2016). Mediterranean diet and faecal microbiota: a transversal study. Food & function, 7(5), 2347-2356.

Gümüş, H., Bulduk, S., & Akdevelioğlu, Y. (2011). Yetiştirme yurtlarında kalan adolesanların beslenme ve fiziksel aktivite durumlarının vücut kompozisyonları ile ilişkisinin saptanması. Uluslararası İnsan Bilimleri Dergisi, 8(1), 785-808.

Kaşıkçı, S. (2010). Edirne ili merkez ilköğretim okullarında okuyan 6., 7. ve 8. sınıf öğrencilerinin beslenme alışkanlıkları üzerine bir araştırma. Namık Kemal Üniversitesi,

Macêdo, M. I. P., Albuquerque, M. d. F. M., Tahan, S., & Morais, M. B. d. (2020). Is there any association between overweight, physical activity, fat and fiber intake with functional constipation in adolescents? Scandinavian journal of gastroenterology, 55(4), 414-420.

Mariscal-Arcas, M., Rivas, A., Velasco, J., Ortega, M., Caballero, A. M., & Olea-Serrano, F. (2009). Evaluation of the Mediterranean Diet Quality Index (KIDMED) in children and adolescents in Southern Spain. Public Health Nutr, 12(9), 1408-1412. doi:10.1017/s1368980008004126

Merdol, T. (2011). Standart yemek tarifeleri (Dördüncü Baskı). In: Ankara: Hatipoğlu Yayınları.

Mistretta, A., Marventano, S., Antoci, M., Cagnetti, A., Giogianni, G., Nolfo, F., . . . Marranzano, M. (2017). Mediterranean diet adherence and body composition among Southern Italian adolescents. Obesity research & clinical practice, 11(2), 215-226.

Rehberi, T. B. (2016). In TÜBER 2015. Ankara: TC. Sağlık Bakanlığı Yayın No: 1031.

Sahingoz, S. A., & Sanlier, N. (2011). Compliance with Mediterranean Diet Quality Index (KIDMED) and nutrition knowledge levels in adolescents. A case study from Turkey. Appetite, 57(1), 272-277. doi:10.1016/j.appet.2011.05.307

Savıcı, M., & Karaca, E. (2019). The effect of different amounts of soluble-insoluble fibre consumption on colonic transit time in adults. Medical Records, 1(1), 5-14.

Tognon, G., Hebestreit, A., Lanfer, A., Moreno, L., Pala, V., Siani, A., . . . Molnár, D. (2014). Mediterranean diet, overweight and body composition in children from eight European countries: cross-sectional and prospective results from the IDEFICS study. Nutrition, Metabolism and Cardiovascular Diseases, 24(2), 205-213.

Toro, J., Gomez-Peresmitré, G., Sentis, J., Vallés, A., Casulà, V., Castro, J., . . . Rodriguez, R. (2006). Eating disorders and body image in Spanish and Mexican female adolescents. Social psychiatry and psychiatric epidemiology, 41(7), 556-565.

Uskun, E., & Şabaplı, A. (2013). Lise Öğrencilerinin Beden Algıları ile Yeme Tutumları Arasındaki İlişki. TAF Preventive Medicine Bulletin, 12(5).

Uzdil, Z., Özenoğlu, A., & Gökçe, Ü. (2017). Lise öğrencilerinde yeme tutumlarının beslenme alışkanlıkları, antropometrik ve demografik özellikleri ile ilişkisi. Düzce Üniversitesi Sağlık Bilimleri Enstitüsü Dergisi, 7(1), 11-18.

Yavuz, C. M., & Özer, B. K. (2019). Adölesan dönem okul çocuklarında beslenme alışkanlıkları ve beslenme. Journal of Tourism and Gastronomy Studies, 225, 243.