Received: 17 Oct 2024 | **Accepted:** 06 Mar 2025 **Genel Tıp Derg. Volume** 35/**Issue** 2 (April), 310-319
DOI: 10.54005/geneltip.1568895

ORIGINAL ARTICLE

Evaluation Of Nutritional Habits, Self-Respect, Body Perception, and Healthy Life Attitude in Adolescents

Adölesanlarda Beslenme Alışkanlıkları, Özsaygı, Beden Algısı ve Sağlıklı Yaşam Tutumunun Değerlendirilmesi

[1]Hilal Doğan Güney, [2]Özlem Özer Altundağ, [3]Reyhan Aydın Doğan

[1]Department of Nutrition and Dietetic, Safranbolu District Health Directorate, Karabük, Türkiye
[2]Department of Gastronomy and Culinary Arts, Faculty of Tourism, Karabuk University, Karabük, Türkiye
[3]Departments of Midwifery, Faculty of Health Sciences, Karabuk University, Karabük, Türkiye

Correspondence

Hilal Doğan Güney
Safranbolu District Health Directorate, Nutrition and Diet Polyclinic, Safranbolu, Karabuk, Türkiye

E-Mail: hilaldogan21@gmail.com

How to cite ?

Doğan Güney H, Özer Altundağ Ö, Aydın Doğan R. Evaluation Of Nutritional Habits, Self-Respect, Body Perception, and Healthy Life Attitude in Adolescents. Genel Tıp Derg. 2025;35 (2): 310-319

ABSTRACT

Aim: Adolescents' acquisition of positive eating behaviors is important for the prevention of eating disorders. This study was conducted to evaluate eating habits, self-esteem, body perception, and healthy living attitudes in adolescents.
Methods: The study was conducted with the participation of 160 adolescents (65 boys, 95 girls) between the ages of 11-14 years who were continuing their education in secondary education institutions in the Safranbolu district of Karabük province. The data were collected by using a questionnaire including sociodemographic information, anthropometric measurements, general health and nutritional habits, Body Image Scale, Attitudes Toward Healthy Eating Scale, Adolescent Healthy Lifestyle Choices Scale, and Rosenberg Self-Esteem Scales. Anthropometric data were evaluated using the WHO BMI-for-age growth curves for ages 5-19 years. The obtained data were entered into the "WHO Antro Plus" computer program and the results were obtained as z-score.
Results: 59.4% of the adolescents were girls, 40.6% were boys, mean age was 13.44±0.82 years, mean body weight was 50.54±9.28 kg, mean height was 152.20±4.51 cm, and mean BMI-for-age-Z score was 0.49±1.41. It was found that 47.5% of the adolescents considered themselves overweight, 80.63% were satisfied with their weight, 14.38% had attempted dieting in the last year, and 55% received information about nutrition from a doctor. It was found that the mean value of the VAS was good at 158.55 ± 9.27, high at 64.44 ± 2.28, moderate with 53.11 ± 3.67, and moderate with 21.74 ± 2.50 on the Rosenberg Self-Esteem Scale.
Conclusion: The results of the study emphasize the need to increase awareness of adolescents' body perception, healthy living attitudes, and nutritional behaviors. The findings provide information that can guide the development of adolescent-specific nutrition protocols and future studies.

Keywords: Adolescent, body image, body mass index, healthy eating,

ÖZ

Amaç: Adolesanların olumlu beslenme davranışları kazanması ortaya çıkabilecek yeme bozuklukları hastalıklarının önlenmesi açısından önemlidir. Bu çalışma adölesanlarda beslenme alışkanlıkları, benlik saygısı, beden algısı ve sağlıklı yaşam tutumlarının değerlendirilmesi amacıyla gerçekleştirilmiştir.
Yöntem: Araştırma 11-14 yaş arası 160 adölesanın (65 erkek, 95 kız) katılımı ile Karabük İli Safranbolu ilçesine bağlı ortaöğretim kurumlarında öğrenimlerine devam eden adolesanların katılımı ile gerçekleştirilmiştir. Katılımcıların sosyodemogafik bilgilerini, antropometrik ölçümlerini, genel sağlık ve beslenme alışkanlıklarını içeren anket soruları ile Vücut Algısı Ölçeği, Sağlıklı Beslenmeye İlişkin Tutum Ölçeği, Adolesan Sağlıklı Yaşam Biçimi Seçimleri Ölçeği, Rosenberg Benlik Saygısı Ölçeklerini içeren anket formu kullanılarak veriler toplanmıştır. Antropometrik veriler WHO 5-19 yaş için Yaşa Göre BKİ büyüme eğrileri kullanılarak değerlendirilmiştir. Elde edilen veriler "WHO Antro Plus" bilgisayar programına girilerek sonuçlar z-skor olarak elde edilmiştir.
Bulgular: Adolesanların %59,4'ü kız, %40,6'sı erkek, yaş ortalamaları 13,44±0,82 yıl, vücut ağırlığı ortalaması 50,54±9,28 kg., boy ortalaması 152,20±4,51 cm, yaşa göre BKI-Z skoru ortalaması 0,49±1,41'dır. Adolesanların %47,5'inin kendisini fazla kilolu olarak gördüğü, %80,63'ünün kilosundan memnun olduğu, %14,38'inin son bir yıl içinde diyet yapma girişiminde bulunduğu ve %55'inin beslenme ile ilgili bilgiyi doktordan aldığı saptanmıştır. Adolesanların Vücut Algısı Ölçeği ortalaması 158,55 ± 9,27 ile iyi; Sağlıklı Beslenmeye İlişkin Tutumlar Ölçeği ortalaması 64,44 ± 2,28 ile yüksek; Adolesan Sağlıklı Yaşam Biçimi Seçimleri Ölçeği ortalaması 53,11 ± 3,67 ve Rosenberg Benlik Saygısı Ölçeği ortalamasının 21,74 ± 2,50 ile orta değere sahip olduğu bulunmuştur.
Sonuç: Çalışmanın sonuçları, adolesanların beden algısı, sağlıklı yaşam tutumları ve beslenme davranışlarına yönelik farkındalığın artırılması gerektiğini vurgulamaktadır. Elde edilen bulgular, adolesanlara özgü beslenme protokollerinin geliştirilmesine ve gelecekteki çalışmalara rehberlik edebilecek bilgiler sunmaktadır.

Anahtar Kelimeler: Adolesan, Sağlıklı Beslenme, VKİ, Vücut Algısı

Introduction

The World Health Organization defines adolescence as the period between childhood and adulthood, between the ages of 10 and 19 (1). The worldwide prevalence of obesity in children and adolescents (5-19 years) increased from 4% to 18% from 1975 to 2016 (1). In addition, the prevalence of obesity among adolescents in the USA (United States of America) increased from 13.9% in 2000 to 18.5% in 2016 (2,3). Due to the numerous medical and psychosocial complications associated with childhood obesity and its impact on future healthcare costs, it is recognized as an important public health problem (4). Several longitudinal studies highlight the strong association of childhood and adolescent obesity with persistence

Peer-Review: Double anonymized - Two External
Plagiarism Checks: Yes - intihal.net
Complaints: geneltip@selcuk.edu.tr

Selcuk University Press
Genel Tıp Dergisi | e-ISSN: 2602-3741
https://dergipark.org.tr/tr/pub/geneltip
https://yayinevi.selcuk.edu.tr/

into adulthood; Excessive adiposity in childhood, increased cardiometabolic risk in adolescents and adults, and the risk of developing cardiovascular diseases and diabetes in the future are also indicators of poor quality of life (5,6).

Adequate and balanced nutrition is essential to support and maintain health and safety in early childhood. Nutrition is one of the environmental factors with its demographic, socio-economic, behavioral, and motivational aspects that affect the development of intelligence based on genetic effects (7). With a healthy nutrition program, studies have observed that adolescents' cognitive skills, such as concentration and memory, improve, and their energy levels, mental states, and academic performances improve (5,8). In contrast, higher consumption of unhealthy foods such as fast food and sugar-sweetened beverages has been associated with behavioral problems, poor concentration, obesity, and emotional development problems (5). Since nutrition is a modifiable factor, interventions to correct malnutrition habits in adolescents are important (8). Various studies report that the attitudes acquired and internalized during this period have a great impact on adulthood and that young people should take care of their physical, psychological, and social health (9). Health promotion during this period can prevent, delay, or change chronic diseases in adulthood such as low self-concept, low self-perception, or eating problems (10).

The terms self-esteem and self-concept are interrelated. Self-esteem is a person's view of his or her potential, self-efficacy, self-worth, and self-definition (10,11). Self-concept is the perception that the subject develops about herself, that is, what she can achieve, what others believe she is, and how she plans to be (12). Both concepts contribute to the formation of the identity of adolescent individuals. It is necessary to develop good self-esteem and self-concept among adolescents. Having a low self-concept is an adolescent individual; These terms are of great importance in young people, as they predispose them to develop psychiatric pathologies such as depression, anxiety, or feelings of humiliation (11,13). Since adolescence is a period of rapid emotional, social, and physical change, body dissatisfaction may occur (14). Body dissatisfaction in adolescents can cause higher body mass index (BMI), low self-esteem, poor quality of life, eating disorders, prevalence of unhealthy weight loss strategies, sadness, suicidal ideation, low physical activity, motivation, and technology addiction (14,15). The prevalence of body dissatisfaction is higher in adolescent girls than in boys, and body dissatisfaction is seen more in overweight adolescents compared to individuals with normal body weight (16). While adolescent girls' body dissatisfaction is associated with the urge to be more fit, adolescent boys' body dissatisfaction is associated with higher muscularity urges (17). Body dissatisfaction is associated with abnormal eating behaviors, and studies show that unhealthy eating behaviors are an indicator of a higher risk of eating disorders and are associated with the development of obesity in later life (18).

Adolescence is a critical period of intense physical, psychological, and social changes. Acquiring unhealthy eating habits, increasing childhood obesity and problems such as low self-esteem and body dissatisfaction can lead to long-term physical and psychological health risks. Research shows that healthy habits acquired during childhood and adolescence play an important role in the prevention of chronic diseases in adulthood. Therefore, assessing and improving the lifestyle habits, nutritional behaviors and body perceptions of adolescents is important for improving public health. In the literature, there are awareness-based or informed approaches to change adolescents' eating behaviors (2,5, 6,16). In this context, this study aimed to evaluate eating habits, self-esteem, body perception, and healthy living attitudes in adolescents.

Material and Methods

This cross-sectional study was carried out with the participation of 160 adolescents (65 boys, 95 girls) between the ages of 11-14 living in Karabuk. The research sample consisted of adolescents who continue their education in secondary education institutions in the Safranbolu district of Karabük province. Participants' socio-demographic information (year of birth, parental education level, and occupation), anthropometric measurements, general health, nutritional habits, number of main and snack meals consumed daily, skipping meals, reasons for skipping meals, dietary motivations and Body Image Scale (BIS), Related to Healthy Eating Data were collected using a questionnaire including Attitude Scale, Adolescent Healthy Lifestyle Choices Scale, and Rosenberg Self-Esteem Scales. The questionnaire was applied face to face to the participants and it took about 15 minutes to complete the questionnaire.

Ethical aspect of the study

Ethics committee approval was obtained from the Social and Human Sciences Research Ethics Committee of xxx University (Decision number 5 and date: 23.02.2022), and necessary permissions were obtained from the Provincial Directorate of National Education to conduct the study. The voluntary participation of each adolescent and his family was ensured. The study was conducted under the principles of the Declaration of Helsinki.

Anthropometric Measurements

The BMI values of the participants were calculated by dividing the body weight by the square of the height (in meters). Anthropometric data were evaluated using the World Health Organization's (WHO) 2007 BMI growth curves for ages 5-19 years. The obtained data were entered into the "WHO Antro Plus" computer program and the results were obtained as Z-scores. According to this; in overweight detection: >+1 SD (over 85th percentile) (BMI 25 kg/m2 equivalent for 19 years old), and in obesity detection: >+2 SD (over 97th percentile) (BMI 30 kg/m2 equivalent for 19 years old)), <-2 SD for weak and ≤+1 SD - ≥-2 SD for normal were used (19).

Body Image Scale (BIS)

The BIS used to obtain research data was developed by Secord and Jourard (1953). The scale was translated into Turkish by Hovardaoğlu in 1986, and the Cronbach Alpha coefficient was found to be r=0.91 (Hovardaoğlu, 1992). The scale consists of 40 items. The scale determines the person's satisfaction with 40 different body parts or functions. Scores from 1 to 5 are given for each item, and the total score to be obtained from the scale, which has response options such as "I don't like it at all," "I don't like it," "I'm undecided," "I like it" and "I like it very much," varies between 40 and 200 points (20). In our study, the Cronbach Alpha value for the Body Image Scale was determined as 0.76.

Attitudes Towards Healthy Eating Scale (ATHE)

Tekkurşun Demir and Cicioğlu developed the scale, and the same researchers performed validity and reliability analyses. It includes a total of 21 questions, consisting of Knowledge About Nutrition, Emotion About Nutrition, Positive Nutrition, and Malnutrition, which are the sub-sections of the Attitudes Towards Healthy Eating Scale. The lowest score that can be obtained from the scale is 21, and the highest score is 105. It is explained that the participants from ATHE have an attitude towards healthy eating with 21 points shallow, 23-42 points low, 43 63 points medium, 64 84 points high, and 85-105 points ideally high. The ratings for the positive items on the scale are "Strongly Disagree," "Disagree," "I am undecided," "Agree," and "Strongly Agree" (21). In our study, the total score of the Attitudes Towards Healthy Eating Scale was determined as Cronbach's alpha value of 0.77. The Cronbach's alpha values of the sub-dimensions of the scale were as follows; Knowledge About Nutrition sub-dimension 0.69; Emotion About Nutrition sub-dimension 0.68; Positive Nutritions sub-dimension 0.66; Malnutritions sub-dimension 0.65.

Adolescent Healthy Lifestyle Choices Scale (AHLCS)

The scale was developed by Bernadette Melynk in 2006. This scale measures the tendency of adolescents to make healthy lifestyle choices such as choosing healthy food, participating in physical activity, reducing stress, and avoiding sedentary activities such as watching television (22). The scale consists of 16 items in total. The scale requires a 5-point Likert-type response for each item. "Strongly disagree" was evaluated as 1, "Disagree" 2, "Neither agree nor disagree" 3, "Agree" 4, and "Strongly agree" 5 points. Accordingly, adolescents get the lowest score of 16 and the highest score of 80 on the scale. (23). In our study, the Cronbach's Alpha value of the Adolescent Healthy Lifestyle Choices Scale was determined as 0.70.

Rosenberg Self-Esteem Scale

It is a self-report scale that evaluates self-perception, developed by Rosenberg in 1965. The self-esteem scale consists of 63 items and 12 sub-categories. There is also a short form of the Rosenberg self-esteem scale consisting of 10 items. The short form was used in the research. Çuhandaroğlu carried out the Turkish validity and reliability study of the scale. It is a 4-point Likert scale. Scoring ranges from 10 to 40 (Very true= 4, Very false=1). 1.,2.,4.,6. and item 7 is correct 3.,5.,8.,9. and item 10 are reverse scored. A score of 10-20 indicates low self-esteem, a score of 20-30 medium, and a score of 30-40 indicates high self-esteem (24,25). In our study, the Cronbach Alpha value of the Rosenberg Self-Esteem Scale was determined as 0.68.

Statistical Analysis

Statistical analysis of the research was evaluated using a computer-aided analysis program. SPSS 20.0 data analysis program was used to analyze the research

data (correlation, frequency). Since the Skewness and Kurtosis values of the data remained within the +2.0/-2.0 limit range, it was observed that the data showed a normal distribution (George, 2011). The socio-demographic characteristics of the participants and the mean scores of the scales used are given as mean, standard deviation, and percentage distribution. The relationship between the scales and BMI and Z Score was analyzed with One-way ANOVA. Tamhane and Tukey's Posthoc analysis determined a significant difference. The factors affecting the Adolescent Healthy Lifestyle Choices Scale were explained by linear regression. The relationship between the scales and socio-demographic variables was analyzed by Pearson correlation. The study findings were analyzed at a 95% confidence interval and $p<0.05$ significance level.

Results

The mean age of the participants was 13.44±0.82 years; the mean body weight was 50.54±9.28 kg. The mean height was 152.20± 4.51 cm, and the mean BMI - Z score for age was 0.49±1.41 was found to be. 59.38% of the participants are girls, and 40.63% are boys. 47.50% of individuals consider themselves overweight, 80.63% are satisfied with their weight, 14.38% attempted to diet in the last year, and 55.00% receive information about nutrition from a doctor. They were detected (Table 1).

Table 1. Socio-demographic characteristics of the participants

Features		Mean±SD	Lower-Over (Median)
Age (years)		13.44± 0.82	12-16 (14)
Weight		50.54±9.28	33.90-65.60 (52.90)
Height		152.20± 4.51	142.0-160.40 (152.85)
BMI		21.85±4.12	13.40 31.00 (22.15)
BMI-Z Score Value by Age		0.49±1.41	-3.41- 2.78 (0.84)
		n	%
Gender	Women	95	59.38
	Men	65	40.63
Defining health in general	Very good	40	25.00
	Good	47	29.38
	Middle	65	40.63
	Poor	8	5.00
Evaluate current body weight	Weak	6	3.75
	Normal	63	39.38
	Overweight	76	47.50
	Obese	15	9.38
Satisfaction with body weight	I am not satisfied	31	19.38
	I am satisfied	129	80.63
Status of attempting to lose weight in the past year	Never happened	137	85.63
	I tried several times	23	14.38
Source of information about nutrition	Nutritionist	17	10.63
	Doctor	88	55.00
	Radio and TV	22	13.75
	Newspaper	11	6.88
	Other	22	13.75
Self-sufficient and balanced nutritional status	Yes	133	83.13
	No	27	16.88
Frequency of eating main meals per day	2 main meals	27	16.88
	3 main meals	133	83.13
Frequency of eating snacks per day	None	35	21.88
	1 snack	5	3.13
	2 snacks	75	46.88
	3-4 snacks	45	28.13
Meal skipping status	I Skip Meals	13	8.1
	I Don't Skip Meals	147	91.9
Which meal is usually skipped?	I Don't Skip Meals	147	91.88
	Morning	5	3.13
	Noon	6	3.75
	Evening	2	1.25
Reason for skipping meals	I Don't Skip Meals	147	91.88
	Lack of time - get up late	3	1.88
	Not wanting - without appetite	9	5.63
	Other	1	0.63
BMI-Z Score Classification by Age	Weak	10	6.3
	Normal	78	48.8
	Overweight	54	33.8
	Obese	18	11.3

When we examine the current weight evaluation status of the participants according to their BMI distribution, 50.00% of the underweight adolescents are evaluated as usual, 40.00% as overweight, and 10.00% as obese. Of the adolescents with normal BMI distribution, 6.41% evaluate their current weight as underweight, 37.18% as normal, 47.44% as overweight, and 8.97% as obese. Of the adolescents in the overweight BMI distribution, 14.29% rated their current weight as underweight, 57.13% as normal, 14.29% as overweight, and 14.29% as obese. When the BMI distributions by gender are examined, 7.36% of female adolescents are underweight, 48.42% are normal, 35.80% are

overweight, and 8.42% are obese. On the other hand, 4.62% of male adolescents are underweight, 49.23% are normal, 30.77% are overweight, and 15.38% are obese (Table 2).

The factors affecting the participants' scale of Adolescent Healthy Lifestyle Choices were analyzed by linear regression, and the regression model was found to be statistically significant (F= 225.00; p=0.00).

Table 2. Distribution of BMI-Z scores by gender and how the participants see their current weight

		BMI Z-Score Distribution by Age								
		Weak		Normal		Overweight		Obese		Total
		n	%	n	%	n	%	n	%	n
Evaluate your current weight.	Weak	-	-	5	6.41	-	-	1	14.29	6
	Normal	5	50.00	29	37.18	25	38.46	4	57.13	63
	Overweight	4	40.00	37	47.44	34	52.31	1	14.29	76
	Obese	1	10.00	7	8.97	6	9.23	1	14.29	15
	Total	10	100	78	100	65	100	7	100	160
Gender	Women	7	7.36	46	48.42	34	35.80	8	8.42	95
	Men	3	4.62	32	49.23	20	30.77	10	15.38	65

The mean Body Image Scale of the participants was 158.55±9.27; the average of the Attitudes Towards Healthy Eating Scale was 64.44±2.28; the mean score of the Knowledge About Nutrition sub-dimension was 20.59±1.83; that of the Emotion Towards Nutrition sub-dimension was 19.33±1.79; that of the Positive Nutritions sub-dimension was 13.19±1.83; the mean score of the Malnutrition sub-dimension was 12.7±1.57; the mean score of the Adolescent Healthy Lifestyle Choices Scale was 53.11±3.67, and the average of the Rosenberg Self-Esteem Scale was found to be 21.74±2.50 (Table 3).

Table 3 Evaluation of the Participants according to the Scales

Features	**Cronbach Alpha Values**	**Mean±SD**	**Median (Lower-Upper)**
BIS	0.76	158.55 ± 9.27	159.5 (135 - 177)
ATHE	0.77	64.44 ± 2.28	65 (57 - 71)
Knowledge About Nutrition(KAN)	0.69	20.59 ± 1.83	21 (15 - 25)
Emotion Towards Nutrition (ETN)	0.68	19.33 ± 1.79	19 (15 - 23)
Positive Eating habits (PEH)	0.66	13.19 ± 1.83	13 (10 - 20)
Bad Eating Habit (BEH)	0.65	12.7 ± 1.57	13 (8 - 18)
Adolescent Healthy Lifestyle Choices Scale	0.70	53.11 ± 3.67	53 (43 - 60)
Rosenberg Self-Esteem Scale	0.68	21.74 ± 2.50	22 (17 - 27)
Distribution of the participants according to the sub-dimensions of the scales			
		n	%
Rosenberg Self-Esteem Scale	Low Self-Esteem	55	34.4
	Medium Self-Esteem	105	65.6
ATHE	Medium	50	31.3
	High	110	68.8

Since the Emotion Towards Nutrition sub-dimension score did not show a significant relationship in the model, it was not included in the study. In the study, a significant correlation was found between Body Image Scale, Attitudes Towards Healthy Eating Scale, Knowledge About Nutrition, Positive Nutrition, and Malnutrition scale scores (Table 3). A 1-unit increase in the BIS score increased the Adolescent Healthy Lifestyle Choices Scale score by 0.04 times, a 1-unit increase in ATHE decreased by 0.69 times, a 1-unit increase in the KAN sub-dimension score increased 1.63 times, Positive Nutritions It was observed that a 1-unit increase in the sub-dimension score increased it 1.74 times, and a 1-unit increase in the Bad Eating Habits sub-dimension score decreased 0.59 times. Age, BMI, and Rosenberg Self-Esteem Scale scores were found to not affect (Table 4).

The relationship between the participants' Age, Weight, Height, BMI, and Z score with the scales is examined in Table 5. As a result of the analysis, a significant correlation was observed at 0.05 between the values marked with *and at the level of 0.01 with the parameters marked with **.

In the study, there was a significant relationship between the source of information about nutrition and the Rosenberg Self-Esteem Scale (F=3.32; p=0.01). It was seen that the significant difference was due to the participants who received information from the newspaper. It was observed that the Rosenberg Self-Esteem Scale score of the participants who received information from the newspaper was higher than those who received information from the other dietitian (Table 6). It was seen that the significant difference

Table 4. Examination of the factors affecting the Adolescent Healthy Lifestyle Choices using a linear regression model

Features	B0 (%95CI)	B1	SH	Test Request.	p	r1	r2
Fixed (Constant)	43.18 (34.1- 52.26)		4.59	9.40	0.00		
Age (years)	-0.15 (-0.36- 0.06)	-0.03	0.11	-1.44	0.15	-0.07	-0.12
BMI (kg/m^2)	-0.01 (-0.05- 0.04)	-0.01	0.02	-0.31	0.76	-0.09	-0.02
BIS	0.04 (0.01- 0.07)	0.11	0.01	2.95	0.00	0.56	0.23
ATHE	-0.69 (-0.82- -0.56)	-0.43	0.07	-10.44	0.00	0.33	-0.65
KAN	1.63 (1.42- 1.83)	0.81	0.10	15.67	0.00	0.56	0.79
Positive Eating habits (PEH)	1.74 (1.63- 1.85)	0.87	0.06	30.45	0.00	0.67	0.93
Bad Eating Habits (BEH)	-0.59 (-0.73- -0.45)	-0.25	0.07	-8.40	0.00	0.16	-0.56
Rosenberg Self-Esteem Scale	0.03 (-0.04- 0.1)	0.02	0.04	0.87	0.38	0.22	0.07

F= 225,00; p=0,00; R=0,96; R2: 0,92; SH:1,05

Table 5. Relationship of Age, Weight, Height, BMI, and Z score of adolescents with scales

	N=160	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Age (years)	1												
2	Body weight (kg)	0.01	1											
3	Height (cm)	0.10	0.09	1										
4	BMI	-0.03	.950**	-.220**	1									
5	Z score	-0.13	.922**	-.218**	.963**	1								
6	BIS	.164*	-.175*	-0.04	-.159*	-.169*	1							
7	ATHE	0.03	-0.09	0.10	-0.12	-0.09	.302**	1						
8	Adolescent Healthy Lifestyle Choices Scale	-0.07	-0.12	-0.05	-0.09	-0.11	.562**	.334**	1					
9	Rosenberg Self-Esteem Scale	0.06	-.156*	-0.10	-0.12	-.164*	.219**	-0.09	.221**	1				
10	KAN	0.15	-.215**	-0.03	-.198*	-.198*	.740**	.636**	.560**	.157*	1			
11	Emotion Towards Nutrition (ETN)	-0.09	-0.03	-0.10	0.01	-0.02	.428**	-0.13	.795**	.245**	.198*	1		
12	Positive Eating Habits (PEH)	-.215**	0.01	0.03	0.01	0.01	-0.03	.158*	.669**	0.05	-0.07	.420**	1	
13	Bad Eating Habits (BEH)	-0.07	-0.14	0.02	-0.14	-0.15	-0.02	-.312**	.159*	0.12	0.00	0.00	.317**	1

*significant at 0.05 level, ** significant at 0.01 level

was due to the participants who received information from the newspaper. It was observed that the Rosenberg Self-Esteem Scale score of the participants who received information from the newspaper was higher than those who received information from the other dietitian.

A statistically significant relationship was found between the BMI values of the adolescents and the scores of the Attitudes Towards Healthy Eating Scale and Knowledge About Nutrition sub-dimensions (p values 0.03; 0.01, respectively). It was determined that normal and overweight students caused the significant difference between, Attitudes Towards

Table 6. The relationship between the source of information about nutrition and the Rosenberg Self-Esteem Scale

Features N=160		**Rosenberg Self-Esteem Scale**			
		Mean±Sd	**n**	**Test Request***	**p**
Source of information about nutrition	Nutritionist	20,88 ± 2,06[a]	17	3,32	0,01
	Doctor	21,92 ± 2,53[ab]	88		
	Radio and Television	21,45 ± 2,52[ab]	22		
	Newspaper	23,82 ± 2,4[b]	11		
	Other	20,95 ± 2,13[a]	22		

a-b: There is no difference between values with the same letter. *One Way ANOVA

Healthy Nutrition and BMI values, and the significant difference between Knowledge About Nutrition sub-dimension scores and BMI values was caused by underweight and overweight students and normal and overweight students (Table 7).

It was determined that the significant difference between the Z-Score values and the Positive Nutrition sub-dimension was between obese and obese children (Table 8).

Discussion

Table 7. The relationship between BMI values of adolescents and SBIT and BHB sub-dimension scores

Features n=160<		ATHE		KAN	
		Mean±Sd	n	Mean±Sd	n
BMI	Weak	64,6 ± 1,81[ab]	43	20,93 ± 1,7[a]	43
	Normal	64,83 ± 2,35[a]	76	20,82 ± 1,65[a]	76
	Overweight	63,54 ± 2,47[b]	39	19,77 ± 2,15[b]	39
	Obese	64,00 ± 1,41[ab]	2	21,00 ± 0,0[ab]	2
	Total	64,44 ± 2,28	160	20,59 ± 1,83	160
Test Request*		2,96		3,69	
p		0,03		0,01	

a-b: There is no difference between values with the same letter. *One Way ANOVA

A relationship was found between the Z-Score values of the adolescents and the Adolescent Healthy Lifestyle Choices Scale, Knowledge About Nutrition, and Positive Nutritionsub-dimension scores (p values 0.04; 0.03; 0.02, respectively). It was determined that the significant difference between the Z-Score values and the Adolescent Healthy Lifestyle Choices Scale and Knowledge About Nutrition sub-dimensions was between underweight and normal-weight children.

Adolescence is a period of maturation in biological, psychological, mental, and social aspects. During this period, body perception is influenced by various factors, including gender, age, body characteristics, self-esteem, media influence, and community views. Studies demonstrate the efficacy of awareness-based and information-oriented approaches in improving adolescents' eating behaviors. A comparison of the mean anthropometric characteristics of the study participants (mean age: 13.44 years; BMI: 21.85)

Table 8. The relationship between the Z-Score values of the adolescents and the AHLCS, KAN, and Positive Eating Habits (PEH) sub-dimension scores

Features N=160		**AHLCS**		**KAN**		**Positive Eating Habits (PEH)**	
		Mean±Sd	**n**	**Mean±Sd**	**n**	**Mean±Sd**	**n**
Z Score	Weak	55,10 ± 2,64[a]	10	21,20 ± 1,99[a]	10	13,7 ± 1,89[ab]	10
	Normal	53,26 ± 3,59[b]	78	20,99 ± 1,53[b]	78	13,1 ± 1,88[ab]	78
	Overweight	52,19 ± 3,9[ab]	54	20,19 ± 1,92[ab]	54	12,87 ± 1,53[a]	54
	Obese	54,17 ± 3,22[ab]	18	19,78 ± 2,24[ab]	18	14,28 ± 2,14[b]	18
	Total	53,11 ± 3,67	160	20,59 ± 1,83	160	13,19 ± 1,83	160
Test Request*		2,74		3,28		3,09	
p		**0,04**		**0,03**		**0,02**	

a-b: There is no difference between values with the same letter. *One Way ANOVA

with the data obtained from the Turkey Nutrition and Health Survey highlights the significant health implications of overweight and obesity rates. These findings underscore the necessity to promote healthy life attitudes during adolescence (19,26).

It was observed that the adolescents participating in the study had a normal BMI. The proportion of female participants was 59.38%, 40.63% described their general health status as moderate, 47.50% considered themselves overweight and 80.63% monitored their weight. It is noteworthy that only 14.38% of the participants reported being satisfied with their diet in the past year, and a mere 55.00% received nutrition information from a doctor. These findings underscore the critical need for targeted nutrition education and interventions during adolescence. Our results align with a previous study, which demonstrated that most adolescents have an intermediate BMI (15). However, globally, high BMI persists as one of the most pressing public health challenges. The relatively normal BMI levels observed in this study may be attributed to several factors, including concerns about appearance and efforts to maintain weight control for personal fulfillment. This finding highlights the role of societal and individual factors, such as body image awareness, in influencing adolescents' health behaviors. Beyond comparisons with previous studies, our findings have broader implications. Adolescents' moderate perception of their health status despite having a normal BMI suggests potential gaps in health literacy or a possible underestimation of their well-being. From a social perspective, this underscores the necessity for health education programs that are designed to provide information and, in addition, to cultivate confidence in understanding and managing personal health.

In terms of the health of individuals in the adolescent period, It is recommended not to skip meals, to consume regular meals, and to have an adequate and balanced diet (27,28). Our study determined that 83.1% of individuals consumed three main meals a day, and the rate of skipping meals was 8.1%. In our study, the rate of individuals who did not skip meals was high (91.9%). It was determined that the most skipped meal was lunch. When we look at the studies, it is seen that adolescents skip meals, unlike our study. 6-8 in Düzce. In a study conducted with 350 students in the third grade, 24% of boys and 21.4% of girls skipped meals, and it was reported that the most skipped meal was lunch (29). Our study also determined that adolescents who skip meals have higher BMI values than those who do not or sometimes skip meals.

Attitude toward healthy eating is one of the determinants of healthy eating behavior (27). Gönen et al., in their study with 296 sports science students, revealed a positive relationship between attitudes toward healthy eating and self-esteem (30). This study found a significant relationship between Body Image Scale, Attitudes Towards Healthy Eating Scale, Knowledge About Nutrition, Positive Nutrition, and Bad Eating Habits scale scores. Age, BMI, and Rosenberg Self-Esteem Scale values were found not to affect the Adolescent Healthy Lifestyle Choices Scale. In this context, it can be said that the attitude towards healthy eating will be effective in gaining healthy eating behavior, and healthy nutrition will increase the person's self-esteem. Again, it can be said that individuals with high self-esteem will pay attention to a healthy diet, which will contribute to their general health.

The mean Body Image Scale of the participants was 158.55±9.27; The mean of the Attitudes Towards Healthy Eating scale was 64.44±2.28; the Knowledge About Nutrition sub-dimension mean was 20.59±1.83; the Emotion Towards Nutrition sub-dimension mean 19.33±1.79; Positive Nutritions sub-dimension mean 13.19±1.83; Bad Eating Habit sub-dimension mean 12.7±1.57; The mean of Adolescent Healthy Lifestyle Choices Scale was 53.11±3.67, and the mean of the Rosenberg Self-Esteem Scale was found to be 21.74±2.50 (Table 3). When this scale is considered separately according to gender, it is seen that there is no significant difference between male and female students ($p>0.05$). In the study conducted by Özmet on healthy lifestyle behaviors in overweight and obese adolescents in 2018, the mean Adolescent Healthy Lifestyle Choices Scale was reported as 52,764 ± 9,459 (27). This result is similar to the result of our study. In our study, the mean Attitudes Towards Healthy Eating Scale of adolescents was 64.67 ± 2.17 for girls and 64.10 ± 2.41 for boys. A study conducted on university students in 2022 stated that the mean of Attitudes Towards Healthy Eating Scale was 68.35 ± 10.98 for female students and 69.06 ± 11.05 for male students (31). These values are like our study.

A statistically significant correlation was found between the BMI values of adolescents and the Attitudes Towards Healthy Eating Scale and Knowledge About Nutrition sub-dimension scores. It was determined that normal and overweight students caused a significant

difference between Attitudes Towards Healthy Nutrition scales and BMI values. The significant difference between Knowledge About Nutrition sub-dimension scores and BMI values was caused by underweight and overweight students and normal and overweight students (Table 7). Adolescents with normal BMI values were found to have higher mean Attitudes Towards Healthy Nutrition Scale scores than overweight adolescents. This shows that normal body weight adolescents are more sensitive to healthy nutrition than overweight adolescents. In the study conducted by Bıdıl in 2020, the average score of healthy eating according to the gender of the individuals was examined, and no significant difference was found between the scores of the sub-dimensions Knowledge About Nutrition, Emotion for Nutrition, Positive Nutrition, and Bad Nutrition (32). In this study, no significant difference was observed according to gender.

In the study carried out by Erdoğan et al. in 2023, it was determined that there was a significant difference between the body weight variable of the participants and the Bad Nutrition sub-dimension mean score of the Attitudes Towards Healthy Eating Scale and, while there was no statistically significant difference between the mean scores of all sub-dimensions of Attitudes Towards Healthy Eating Scale and according to gender (31). In our study, while there was no significant difference between the mean scores of the sub-dimensions of the Attitudes Towards Healthy Eating Scale and according to gender, a significant relationship was also found between the Z-Score values and the scores of the Adolescent Healthy Lifestyle Choices Scale, Knowledge About Nutrition, and Positive Nutritions sub-dimensions. It was determined that the significant difference between the Z-Score values and the Adolescent Healthy Lifestyle Choices Scale and Knowledge About Nutrition sub-dimensions was between underweight and normal-weight children. The mean scores of the Healthy Lifestyle Choices Scale in normal-weight adolescents are higher than those of lean adolescents. In addition, when the mean Knowledge About Nutrition sub-dimension values of adolescents are compared, the value of thin adolescents is considerably higher than that of obese adolescents (Table 8). This shows that thin adolescents try to have more information about nutritional information than obese ones.

Conclusion

Nutrition is at the forefront of the criteria that have essential effects on protecting and improving health in adolescence, as in every age period. When the results are evaluated, it can be said that adolescents are sufficient in creating or applying a healthy eating model but insufficient in body perception. In this case, it can trigger psychological eating disorders with the misconception of body perception and the accompanying psychological change, which is more common in adolescence. Obesity, common in today's adolescents, can pave the way for eating disorders such as anorexia nervosa, bulimia nervosa, and binge eating. In this regard, it is essential to carry out studies to increase the awareness of adolescents' body perceptions in schools or public service ads to raise healthy generations. This study will shed light and guide future studies in this context.

Conflict of interest

This research does not contain any conflict of interest with any institution or organization.

Financial support

This research did not receive any financial support from any institution or institution.

Acknowledgment

We thank all participants.

References

1.World Health Organization (2021) Obesity and Overweight. https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight (accessed on 1 April 2022).

2.Fryar CD, Carroll MD, Ogden CL (2018) Prevalence of overweight, obesity, and severe obesity among children and adolescents aged 2–19 years: the United States, 1963–1965 through 2015–2016. NCHS Health E-Stats https://stacks.cdc.gov/view/cdc/58669 (accessed on 1 April 2022).

3.Skinner AC, Perrin EM, Skelton JA (2016) Prevalence of obesity and severe obesity in US children, 1999–2014. Obesity 24: 1116–1123.

4.Daniels SR, Hassink SG (2015) The Role of the Pediatrician in Primary Prevention of Obesity. Pediatrics 136: 275–292.

5.Chung ST, Onuzuruike AU, Magge SN (2018) Cardiometabolic risk in obese children. Ann N Y Acad Sci 1411: 166–183.

6.Verwied-Jorky S, Schiess S, Luque V, Grote V, Scaglioni S, Vecchi F, Martin F, Stolarczyk A, Koletzko B (2011) European Childhood Obesity Project Methodology for longitudinal assessment of nutrient intake and dietary habits in early childhood in a transnational multicenter study. J Pediatr Gastroenterol Nutr 52: 96–102.

7.Moreno LA, Bel-Serrat S, Santaliestra-Pasías AM, Rodríguez G (2013) Obesity prevention in children. World Rev Nutr Diet 106: 119–126.

8.Valerio G, Maffeis C, Saggese G, Ambruzzi MA, Balsamo A, Bellone S, Bergamini M, Bernasconi S, Bona G, Calcaterra V (2018) Diagnosis, treatment and prevention of pediatric obesity: A consensus position statement of the Italian Society for Pediatric Endocrinology and Diabetology and the Italian Society of Pediatrics. Ital J Pediatr 44: 1-21.

9.Carrillo HA, Ramírez-Vélez R (2019) Adherence to the Mediterranean diet in a sample of Colombian schoolchildren: An evaluation of the psychometric properties of the KIDMED questionnaire. Nutr Hosp 37: 73–79.

10.Fhon JRS, Caire MA, Júnior JAVM, Rodrigues RA (2017) Estilo de vida asociado a autoestima y variables demográficas en estudiantes de enfermería. Rev Científica Cienc Salud 9: 72–78.

11.Ospino GAC, Barbosa CP, Suescún J, Oviedo HC, Herazo E, Arias AC (2017) Validez y dimensionalidad de la escala de autoestima de Rosenberg en estudiantes universitarios. Pensam Psicológico 15: 29–39

12.Casas AG, García PLR, Guillamón AR, García-Cantó E, Pérez-Soto JJ, Marcos LT, López PT (2015) Relación entre el estatus de peso corporal y el autoconcepto en escolares. Nutr Hosp 31: 730–736.

13.Daniela CA, Fernanda MM (2016) Más allá de la cultura: Validación de un modelo multidimensional de autoconcepto en adolescentes argentinos. Escr. De Psicol. -Psychol Writ 9: 33–41.

14.Anez E, Fornieles-Deu A, Fauquet-Ars J, López-Guimerà G, Puntí-Vidal J, Sánchez-Carracedo D (2018) Body Image Dissatisfaction, physical activity and screen- time in Spanish adolescents. J Health Psychol 23: 36–47.

15.Duchesne A, Dion J, Lalande D, Bégin C, Émond C, Lalande G, McDuff P (2017) Body dissatisfaction and psychological distress in adolescents: Is self-esteem a mediator? J Health Psychol 22: 1563–1569.

16.Voelker DK, Reel JJ, Greenleaf C (2015) Weight status and body image perceptions in adolescents: Current perspectives. Adolesc Health Med Ther 6: 149–158.

17.Texeira MD, Pereira AT, Marques MV, Saraiva JM, de Macedo AF (2016) Eating behaviors, body image, perfectionism, and self-esteem in a sample of Portuguese girls. Rev Bras Psiquiatr 38: 135–140.

18.Lampard AM, Maclehose RF, Eisenberg ME, Larson NI, Davison KK, Neumark-Sztainer D (2015) Adolescents who engage exclusively in healthy weight control behaviors: Who are they? Int J Behav Nutr Phys Act 13: 1–10

19.World Health Organization. Adolescent Health (2021) https://www.who.int/health-topics/adolescent-health#tab=tab_1 (accessed on 1 April 2022).

20.Kundakçı AH (2005) Üniversite öğrencilerinin yeme tutumları, benlik algısı, vücut algısı ve stres belirtileri açısından karşılaştırılması. Yayımlanmamış Yüksek Lisans Tezi, Ankara Üniversitesi Sosyal Bilimler Enstitüsü, Ankara.

21.Kaya Ö, Cicicoğlu Hİ, Demir GT (2018) The attitudes of university students towards sports: attitude and metaphorical perception. European Journal of Physical Education and Sport Science 5(1): 115-133. http://dx.doi.org/10.5281/zenodo.1593401

22.Melynk BM, Jacobson D, Kelly S, O'Haver J, Small L, Mays MZ (2009) Improving Mental Health, Healthy Lifestyle Choices, and Physical Health of Hispanic Adolescents: A Randomized Controlled Pilot Study. Journal of School Health 79(12): 575-584.

23.Sümen A, Öncel S (2017) Türkiye'de lise öğrencilerinin sağlıklı yaşam biçimi davranışlarını etkileyen faktörler: Sistematik derleme. Eur J Ther 23(2): 49-94.

24.Çuhadaroğlu F (1986) Adolesanlarda Benlik Saygısı. Yayımlanmamış Yüksek Lisans Tezi. Hacettepe Üniversitesi Sosyal Bilimler Enstitüsü, Ankara.

25.Rosenberg M (1965) Society and the Adolescent Self-Image. Princeton University Press.

26.Ibili E, Billinghurst M (2019) The relationship between self-esteem and Social Network Loneliness: A study of trainee school counselors. Malaysian Online Journal of Educational Technology 7(3):39-56.

27.Özmet TD (2018) Determination of Healthy Lifestyle Behaviors in Overweight and Obese Adolescents and Factors Affecting Healthy Lifestyle Choices for the Future. Master's Thesis. Istanbul University, Institute of Health Sciences, Department of Public Health, Istanbul.

28.Yılmaz G, Şengür E, Turasan İ (2022) Investigation of healthy eating attitude scores of university students during Covid 19 period. National Journal of Sport Sciences 6(1): 1-10.

29.Serter Yiğit Y. (2006) A research on nutritional knowledge levels, habits, and obesity status of students attending 6th, 7th, and 8th grades of İsmet Paşa Primary School in Düzce Province. Master's Thesis. Gazi University, Faculty of Educational Sciences, Ankara.

30.Gönen M, Ceyhan MA (2022) The Relationship Between Attitudes Toward Healthy Nutrition and Self-Esteem of Students of the Faculty of Sports Sciences. Sciences (Ijoess) 13(48): 625-637.

31.Erdoğan R, Mikail TEL, Yıldırak A, Nazlıcan N, Çelik O, Nazlı V, Nazlı M (2023) Comparison of Healthy Eating Habits of High School and Secondary School Students. Journal of Sports, Health and Education Research 2(1): 9-21.

32.Bıdıl S (2020) Investigation of Badminton Athletes' Attitude Levels Regarding Healthy Nutrition. Unpublished Master's Thesis, Gazi University, Institute of Health Sciences, Department of Physical Education and Sports, Ankara.