

# Emotional Eating Behaviours in Adolescents

Veli Deniz<sup>1</sup>, Leyla Özgen<sup>2,\*</sup>

<sup>1</sup>Department Food and Beverage Services, Ministry of National Education, Istanbul, 34054, Turkey

<sup>2</sup>Department of Social Services, Gazi University Health Sciences Faculty, Ankara, 06490, Turkey

\*Corresponding author: [lozgen@gazi.edu.tr](mailto:lozgen@gazi.edu.tr)

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**Abstract Background:** Emotional eating is caused by such factors as stress, depression, parental modelling, anger, boredom, happiness, etc. This study aims to examine the emotional eating behaviours of adolescents according to different variables. **Methods:** The population of the study consisted of adolescents aged 15 to 18 attending high schools affiliated with the Ministry of National Education in Istanbul, one of Turkey's metropolitan cities. Data were obtained from 600 students in total, with the final number of students being 431 after incomplete or incorrectly completed forms were eliminated. **Results:** Of those adolescents who engaged in physical activity, it was seen that 34.60 % engaged in very vigorous physical activity, 21.60 % in moderate physical activity, and 13.50 % in vigorous physical activity. It was seen that for the cognitive restraint subscale of the emotional scale, those with Class I Obesity BMI had a high mean score ( $\bar{x}=2.269$ ), while those with underweight BMI had a lower mean score ( $\bar{x}=1.766$ ). A statistically significant difference was found between the cognitive restraint subscale of the scale and BMI ( $P<0.01$ ). Under the uncontrolled eating subscale, it was seen that the mean score of those who did not engage in physical activity was high ( $\bar{x}=1.984$ ), while the mean score of those who did engage in physical activity was low ( $\bar{x}=1.836$ ). However, a statistically significant difference was found between the uncontrolled eating subscale of the scale and those adolescents who did not engage in physical activity ( $U=19599.000$ ,  $P<0.05$ ). **Conclusions:** This study showed that for the dieting variable, close to half the adolescents received support from nutritional experts and dieticians to lose weight and that the vast majority of them did not use slimming drugs.

**Keywords:** adolescent, cognitive restraint, eating disorder, emotional eating, physical activity, uncontrolled eating

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## 1. Introduction

Emotional eating is when a person eats not because they are hungry, but as a way of coping with negative emotions. [1]. Emotional eating occurs as a reaction to negative situations experienced by the individual. It is the tendency to eat shown to overcome negative emotions such as loneliness, anger, depression, or anxiety felt by the individual [2]. Psychosomatic Theory states that emotional eating provides only temporary respite from negative feelings [3], and since it is only temporary, it does not help the individual deal directly with the cause of these negative emotions. As a result, some individuals learn in time to practise emotional eating periodically as a way to deal with negative emotions [4]. Emotional eating behaviour may even be seen in individuals who have lost their appetite as a result of their negative feelings as a way to control their mood [5], and a steady increase in the number of people who engage in emotional eating behaviour has been reported [6].

The characteristics of emotional eating behaviour are frequently observed in people suffering from depression

[7] and according to the psychodynamic model, people who exhibit eating disorders mistakenly use eating in an attempt to fix the problems in their life [8]. Emotional eating behaviour can result in a health problem caused by the individual confusing actual hunger with emotional hunger [7,8]. Emotional eating or psychological eating behaviour is an inappropriate solution that the person resorts to for such reasons as getting away from the problems they are experiencing, avoiding distressing situations, or coping with negative feelings despite not actually being hungry. Although the distress diminishes for a while with the feeling of pleasure, the feeling of regret and guilt afterward actually shows that the individual's problem-solving skills are lacking [2,9,10].

It has been reported that individuals who exhibit emotional eating behaviours often have a strong need for emotional proximity known as emotional hunger. Eating disorders are often characterized by a powerful need for others' validation along with feelings of anxiety or a lack of self-esteem [10]. The causes of eating disorders include an individual's inability to cope with life events, dissatisfaction with their body, perfectionism, low self-esteem, socio-cultural norms, as well as biological and genetic factors [11,12,13].

It is observed that the frequency and prevalence of emotional eating behaviours are high during adolescence, particularly among young girls [14,15,16,17]. Adolescents continue to develop not only physically, but also cognitively and psychosocially. Eating habits may be due to many reasons, particularly during adolescence when the lifestyle is determined [18,19]. Increases in an adolescent's negative emotions may result in an increase in emotional eating with an accompanying increase in the intake of unhealthy food [20]. When adolescents are stressed or emotional, they tend to overeat delicious foods and lose control of their overeating reflex, which in turn causes overeating [21].

Emotional eating behaviours in adolescents generally present as uncontrolled eating, emotional eating, and cognitive restraint [22,23]. Uncontrolled eating is the tendency to lose control over eating when feeling hungry and exposed to some outside stimulus. It is said that in uncontrolled eating, the individual consumes much more food to overcome negative emotions and they choose and consume healthier foods when they have happy and positive thoughts [24].

Cognitive restraint is when the individual exercises control over what they eat to maintain their body weight and shape. Emotional eating has been defined as the state between overeating and negative moods such as loneliness, anxiety, or feeling low [25]. Steinglass et. al. [26] stated that when adolescents do not eat because they are excessively restraining themselves from eating both cognitively and behaviourally, this is defined as anorexia nervosa.

In studies of the relationship between emotional eating and overeating, it has not been clearly determined which factors trigger emotional eating. Ruderman [27] reported that obese individuals eat excessively to reduce tension when they are tense and distressed. In addition, emotional eating has been found to be associated with binge eating disorder and bulimia nervosa [19,28,29]. In adolescents, peer pressure, body image anxiety, low self-esteem, and negative emotions have been reported to increase food intake while high-calorie food consumption increases emotional eating [30].

The reason why the adolescent group, in particular, was preferred in this study is the concern that the selective and/or cognitive restraint eating behaviours of adolescents are not only a problem in adolescence but continue in adult life, so it is important to understand this situation. If adolescents can control their emotions in response to the ups and downs of such negative emotions as daily stress and depression, this will help prevent them from making unhealthy food choices throughout their life.

This study aims to examine the emotional eating behaviours of adolescents according to different variables. To this end, the study sought answers to these sub-problems: Adolescents:

- How much do they know about their state of health?
- What are their views on losing weight?
- Does gender make a difference to the subscales of the emotional eating scale?
- Does BMI make a difference to the subscales of the emotional eating scale?
- Does physical activity make a difference to the subscales of the emotional eating scale?

## 2. Method

### 2.1. Design

The survey model was used in this study. The survey model is an approach that aims to describe a past or present situation as it is. An attempt is made to define the research topic, be it an individual or an object, in its natural state and as it is [31]. Surveys determine participants' views on a topic or event, their interests, skills, or attitudes; information that may be obtained from much larger samples [32].

### 2.2. Participants

#### 2.2.1. Working Group

The study's working group consists of adolescents aged 15 to 18 attending high schools affiliated with the National Education Directorate in Istanbul in the 2018-2019 academic year.

This study was conducted using cross-sectional design on 1,441 students attending high schools in Istanbul. The population of the study consists of high-school students in Istanbul. The sample group consisted of students from two central districts in Istanbul (Gaziosmanpasa and Ataşehir). Population densities were taken into account while determining these central districts. The sample group is 1,441, i.e., the total number of students studying in two schools (Gaziosmanpaşa N= 610 and Ataşehir N= 831) in the central districts.

#### 2.2.2. Study Sample

All participants were aged between 15 and 18. Using the G\* Power Version 3.1.9.6 program [33], the sample size from among the 1,441 (1st-year, 2nd-year, 3rd-year) high-school students that make up the population was determined according to the power of the sample. The total sample size of the study was calculated as 600, where the smallest effect size was 0.10, the alpha margin of error was 0.01, and the power was determined to be 0.99 (Faul et al.) [33]. Using convenience sampling, a sample was formed from students in the 15-18 age group (Erkuş) [31]. Using this method, a convenience sample is a sample made up of individuals (volunteers) who are in the immediate vicinity and are easy to reach, available, and want to participate in the study unless a specific region is required. Accordingly, to reach the targeted sample, data were collected from 600 students. Data were obtained from 600 students in total, with the final number of students being 431 after incomplete or incorrectly completed forms were eliminated.

### 2.3. Instruments

In the study, a questionnaire was prepared by the researchers consisting of five parts. The first part of the questionnaire was obtained using demographic information forms. The second part was health information forms. The third part was anthropometric measurements. The fourth part was the physical activity grouping questionnaire adapted to Turkish by Öztürk [34] and the fifth part was

the three-factor eating scale (TFEQ-TR21) adapted to Turkish by Karakuş Şeren et. al. [35].

### 2.3.1. Demographic Information Form

Information about the students' gender, age, parents' education status, and the number of children in the family was obtained using this form.

### 2.3.2. Health Information Form

A form consisting of 40 questions was prepared by scanning the literature and adapting the closed and open-ended questionnaires applied in studies [8,36-41]. The form asks: Do you have any health problems? What type of health problems (diabetes, obesity, hypertension, ulcer, migraine, etc.)? Does anyone use nutritional supplements? Does anyone not use nutritional supplements? Is anyone on a diet? Is anyone not on a diet? Does anyone get support to lose weight? Does anyone not get support to lose weight? and similar questions. The form was validated in two ways. The questions were initially submitted to five (5) experts in the field of health. The questions were rewritten in line with the experts' suggestions regarding brevity and understandability, then the health questionnaire was presented to 70 senior high-school students in a trial run and given the necessary final touches.

### 2.3.3. Anthropometric Measurements

Participants' height and weight were measured using standard procedures by trained research assistants and used to calculate BMI (BMI= kg/m<sup>2</sup>) [42]. Height was measured using a stadiometer (SECA, Chino CA) to the nearest 0.1 cm. Weight was measured using a medical scale to the nearest 0.1 kg (Detecto-Medic, Brooklyn NY). Body Mass Index (BMI) =Weight (kg)/Height (cm<sup>2</sup>) was calculated then grouped as follows: 1- Slightly underweight people (<17.00-18.49), 2-People of normal weight (≥ 18.50-≤ 24.99), 3- Slightly overweight people (≥25.00 - ≤29.99), 4- Class I obesity was defined as (≥30.00-≤34.99), [43].

### 2.3.4. Physical Activity

The International Physical Activity Questionnaire (UFAA) developed by Craig et al [44] was used to determine participants' physical activity [44]. The validity and reliability studies for the UFAA in Turkey were carried out by Öztürk [34]. In the evaluation of all activities, the criterion is that each activity is done for at least 10 minutes at a time. A "Metabolic Equivalent of Task (MET)" score in minutes/week is calculated by multiplying the minute, day, and MET values. Physical activity levels are grouped by Öztürk [34] as follows: Those who do light physical activity <3 MET, those who do moderate physical activity; 3-6 MET, those who engage in vigorous physical activity; 6-8 MET, those who engage in very vigorous physical activity > 8 MET

### 2.3.5. Three-Factor Eating Questionnaire (TFEQ-TR21)

The Three-Factor Eating Questionnaire was adapted to Turkish by Karakuş Şeren et. al. [35]. Validity and reliability work (TFEQ-R21) has been done. This scale consists of 21 items in total and three subscales:

uncontrolled, cognitive, and emotional eating. All of the items in this scale are 4-point Likert type with the answers being 1=Completely false, 2=Mostly false, 3=Mostly true, 4=Completely true.

#### 2.3.5.1. Uncontrolled Eating (UE)

Nine items are used to evaluate the tendency to lose control overeating when hungry and exposed to an outside stimulant.

#### 2.3.5.2. Cognitive Restraint (CRes)

Evaluates the tendency to control food intake to maintain the body's weight and shape. It consists of six items.

#### 2.3.5.3. Emotional Eating (EE)

Measures the relationship between negative moods such as loneliness, anxiety, or feeling low and binge eating. It consists of six items. On the scale, the lowest score that can be obtained from the Uncontrolled Eating (UE) sub-factor is 9, the highest score is 36. The lowest score that can be obtained from the Cognitive Restraint (CRes) and Emotional Eating (EE) sub-factors is 6, the highest score is 24.

## 2.4. Data Collection

The study was conducted between 4 July and 30 July, 2019. All subjects gave their informed consent for inclusion before they participated in the study. The researchers interviewed the adolescents face to face on a voluntary basis. The adolescents were informed about the purpose of the study and an informed consent form was received from those adolescents willing to participate. Informed consent was obtained from parents and /or legal guardians of subjects under 18 years for voluntary participation in the survey. Afterward, the adolescents were made to fill in the data collection tools. The identity of the participants was kept anonymous, and the information collected was treated as strictly confidential. Each adolescent took about 25-30 minutes to fill in the form.

## 2.5. Data Analysis

Statistical Package Program SPSS v.16 (SPSS, Chicago, Illinois, USA) was used for statistical analysis when evaluating the findings obtained in the study. Descriptive statistics were made regarding the answers given by the adolescents to the questions in the questionnaire. Normality for this scale was tested using the Kolmogorov-Smirnov method on the mean score of the scale. Nonparametric tests (Mann-Whitney U and Kruskal-Wallis test) were used to compare variables that did not show normal distribution according to the results of the Kolmogorov-Smirnov normality test. The data analysis results were evaluated at 95% and 99% confidence intervals at \* $P < 0.05$  and \*\* $P < 0.01$  significance levels.

## 2.6. Human Subjects Approval Statement

This study was conducted before 1 January, 2020, when there was no requirement for an ethics board ruling to

collect data. Therefore, the permission received from the Ministry of National Education was used only in the data collection stage. Each participant signed a voluntary participation form and filled in the questionnaires in accordance with the Helsinki Declaration. After official consent No. 22688 dated 4 July, 2019, was obtained along with permission from the Provincial Directorate of National Education to apply the questionnaire and the scale to adolescents in their current schools, the schools' administrators and teachers were consulted to determine when the adolescents would be available. The informed consent forms were sent to parents, and the written consent of the parents was received. Consent was obtained from the adolescents who agreed to participate in the study.

### 3. Results

The demographic characteristics of the adolescents included in the study are given in Table 1.

**Table 1. Demographic distribution of adolescents**

Variables	Categories	n	%
Gender	Female	149	34.57
	Male	282	65.43
	Total	431	100.00
Age	17-18	272	63.10
	15-16	159	36.90
	Total	431	100.00
BMI	<17.0-18.4 kg/m <sup>2</sup>	72	16.70
	≥ 18.50- ≤ 24.99 kg/m <sup>2</sup>	291	67.50
	≥25 - ≤29.9 kg/m <sup>2</sup>	55	12.80
	≥30 - ≤39.9 kg/m <sup>2</sup>	13	3.00
	Total	431	100.00
Mother's education	Illiterate	13	3.02
	Literate	13	3.02
	Primary School	154	35.73
	Secondary School	145	33.64
	High School	80	18.56
	Associate degree	8	1.86
	Undergraduate	13	3.02
	Postgraduate	5	1.16
Total	431	100.00	
Father's education	Illiterate	3	0.70
	Literate	7	1.63
	Primary School	102	23.78
	Secondary School	137	31.93
	High School	133	31.00
	Associate degree	16	3.73
	Undergraduate	22	5.13
	Postgraduate	9	2.10
	Total	429	100.00
Which number child in the family	First Child	187	43.39
	Second child	140	32.48
	Third child	68	15.78
	Four or more	36	8.35
	Total	431	100.00

In Table 1 it can be seen that 65.43 % of the adolescents are boys and 34.57 % are girls, 63.10 % are between the ages of 17 and 18, and 36.90 % are between the ages of 15 and 16. BMI shows 67.50 % normal weight, 16.70 % underweight, and 3.00 % obese. It was determined that 35.73 % of the adolescents' mothers were primary school graduates, 18.56 % were high school graduates, and 1.16 % were postgraduates, while 31.93 % of their fathers were secondary school graduates, 23.78 % were primary school graduates, and 0.70 % had no education. It was stated that 43.39 % of the adolescents are the first child, 15.78 % are the third, and 8.35 % are the fourth child.

**Table 2. Information about adolescents' health status**

Variables	Factor	n	%
Those with health problems	Diabetes	4	4.94
	Overweight	5	6.17
	Hypertension	1	1.23
	Ulcer	4	4.94
	Migraine	67	82.72
	Total	81	100.00
Use of nutritional supplements	Does use	36	8.40
	Does not use	395	91.60
	Total	431	100.00
Diet	Yes	43	9.98
	No	388	90.02
	Total	431	100.00
Receives support for slimming	Yes	36	8.30
	No	395	91.70
	Total	431	100.00
BMI	<17.0-18.4 kg/m <sup>2</sup>	72	16.70
	≥ 18.50- ≤ 24.99 kg/m <sup>2</sup>	291	67.50
	≥25 - ≤29.9 kg/m <sup>2</sup>	55	12.80
	≥30 - ≤39.9 kg/m <sup>2</sup>	13	3.00
	Total	431	100.00
Physical activity status	Does	175	40.60
	Does not	256	59.40
	Total	431	100.00
Vigorous physical activity	Light <3 MET	40	21.60
	Moderate: 3-6 MET	56	30.30
	Vigorous: 6-8 MET	25	13.50
	Very vigorous > 8 MET	64	34.60
	Total	185	100.00
Moderate physical activity	Light physical activity	97	28.60
	Moderate physical activity	166	49.00
	Vigorous physical activity	76	22.40
	Total	339	100.00
Light physical activity	Light physical activity	310	76.50
	Moderate physical activity	95	23.50
	Total	405	100.00

In Table 2 it can be seen that of those with reported health problems, 82.72 % had migraines, 4.94 % had ulcers and diabetes, and 1.23 % had hypertension. It was stated that 55.06 % of the adolescents with health problems were using prescription drugs, while 44.94 % did not use drugs. It was also stated that 37.89 % of the adolescents used nutritional supplements and 62.11 % did not use nutritional supplements.

Asked about losing weight, 90.02 % of the adolescents said they did not diet and 9.98 % said they did. It was stated that 51.16 % received support from nutrition experts and dieticians, 27.91 % from social media, and 6.98 % from doctors to lose weight. In addition, it was determined that 99.53 % of them did not use drugs to lose weight, while 0.46 % of them did use drugs. When examining the distribution of adolescents for physical activity in Table 2 it can be seen that 59.40 % of the adolescents do not engage in physical activity while 40.60 % do. Of those adolescents who engage in vigorous physical activity, it can be seen that 34.60 % do very vigorous physical activity, 21.60 % moderate physical activity, and 13.50 % vigorous physical activity. Of those adolescents who engage in moderate physical activity, it can be seen that 49.00 % of them do moderate physical activity, 28.60 % of them do light physical activity, and 22.40 % of them do vigorous physical activity. In addition, it was found that of those who do light physical activity,

76.50 % do light physical activity and 23.50 % do moderate physical activity. While it can be said that more adolescents do not do physical activity, it can also be said that students who do engage in physical activity practice all types of light, moderate, and vigorous physical activity.

In Table 3 it can be seen that the girls' mean score for the cognitive restraint, emotional eating, and uncontrolled eating subscales of the emotional eating scale for adolescents as well as the total score were higher ( $\bar{x}=2.126$ ), while the average score for boys was low ( $\bar{x}=1.842$ ). A statistically significant difference was found between the cognitive restraint subscale of the scale and gender ( $U=15324.500$ ,  $P<0.001$ ). In the emotional eating subscale, the girls' mean score is high ( $\bar{x}=2.214$ ), while the boys' mean score is low ( $\bar{x}=1.845$ ). A statistically significant difference was found between the emotional eating subscale and gender ( $U=13724.000$ ,  $P<0.001$ ). In the uncontrolled eating subscale, the girls' mean score ( $\bar{x}=2.195$ ) is high, while the boys' mean score is low ( $\bar{x}=1.781$ ). A statistically significant difference was determined between uncontrolled eating and gender ( $U=13315.000$ ,  $P<0.001$ ). While the girls' mean score between gender and the total mean score of the emotional eating scale is high ( $\bar{x}=2.181$ ), the boys' mean score is low ( $\bar{x}=1.817$ ). A statistically significant difference was found between the scale total mean score and gender ( $U=13262.500$ ,  $P<0.001$ ).

**Table 3. Mann-Whitney U test results of adolescents' emotional eating scale subscales by gender.**

Variables	Gender	n	$\bar{x}$	SD	U	p
Cognitive restraint	Male	282	1.842	0.513	15324.500	<0.001**
	Female	149	2.126	0.592		
Emotional eating	Male	282	1.845	0.532	13724.000	<0.001**
	Female	149	2.214	0.585		
Uncontrolled eating	Male	282	1.781	0.556	13315.000	<0.001**
	Female	149	2.195	0.653		
Scale mean score	Male	282	1.817	0.481	13262.500	<0.001**
	Female	149	2.181	0.565		

\*\* $P<0.001$ .

**Table 4. Kruskal-Wallis test results for the adolescents' emotional eating scale subscales by BMI**

Variables	BMI	n	$\bar{x}$	SD	Chi-square	p	Binary Comparisons
Cognitive restraint	1	72	1.766	0.537	16.985	0.001**	1-3 1-4
	2	291	1.940	0.560			
	3	55	2.094	0.516			
	4	13	2.269	0.512			
Emotional eating	1	72	1.866	0.565	5.803	0.122	
	2	291	1.971	0.581			
	3	55	2.070	0.566			
	4	13	2.179	0.551			
Uncontrolled eating	1	72	1.770	0.625	13.046	0.005**	1-3
	2	291	1.919	0.626			
	3	55	2.091	0.554			
	4	13	2.188	0.631			
Total mean scale score	1	72	1.796	0.541	14.608	0.002**	1-3

\*\* $P<0.01$

1: 17.00-18.49 kg/m<sup>2</sup> (Underweight), 2: 18.50-24.99 kg/m<sup>2</sup> (Normal weight), 3: 25.00-29.99 kg/m<sup>2</sup> (Slightly overweight), 4: 30.00-34.99 kg/m<sup>2</sup> (Class I obesity).

In Table 4 it can be seen that for the cognitive restraint subscale of the emotional scale, those with Class I obesity BMI have a high mean score ( $\bar{x}=2.269$ ), while those with underweight BMI have a lower mean score ( $\bar{x}=1.766$ ). A statistically significant difference was found between the cognitive restraint subscale of the scale and BMI ( $P<0.01$ ). For emotional eating, the mean score for those with Class I obesity BMI is high ( $\bar{x}=2.070$ ), the mean score of those with normal weight BMI ( $\bar{x}=1.971$ ), and the mean score of those with underweight BMI is even lower ( $\bar{x}=1.866$ ). However, no statistically significant difference was found between the emotional eating subscale of the scale and

BMI ( $P>0.05$ ). The mean score for the uncontrolled eating subscale for those with Class I obesity BMI is high ( $\bar{x}=2.188$ ), while those with underweight BMI have a low mean score ( $\bar{x}=1.770$ ). A statistically significant difference was found between the uncontrolled eating subscale of the scale and BMI ( $P<0.01$ ). When the scale's total mean score is examined in terms of BMI, it can be seen that those with Class I obesity BMI have high mean scores ( $\bar{x}=2.209$ ), while those with underweight BMI ( $\bar{x}=1.796$ ) have low mean scores. A statistically significant difference was found between the scale total mean score and gender ( $P<0.01$ ).

**Table 5. Mann-Whitney U test results for the adolescents' emotional eating scale subscales by physical activity status**

Subscales	Engage in physical activity					
	status	n	$\bar{x}$	SD	U	p
Cognitive restraint	Does	175	1.896	0.489	21275.000	(0.374)
	Does not	256	1.971	0.599		
Emotional eating	Does	175	1.916	0.533	20633.000	0.162
	Does not	256	2.010	0.605		
Uncontrolled eating	Does	175	1.836	0.557	19599.000	0.027 *
	Does not	256	1.984	0.658		
Total mean scale score	Does	175	1.876	0.469	20082.500	0.068
	Does not	256	1.988	0.579		

\* $P<0.05$ .

In Table 5 it can be seen that under the cognitive restraint subscale, the mean score of adolescents who do not do physical activity is high ( $\bar{x}=1.971$ ), while the mean score of those who do engage in physical activity is low ( $\bar{x}=1.896$ ). However, no statistically significant difference was found between the cognitive restraint subscale of the scale and those adolescents who do not engage in physical activity ( $U=21275.000$ ,  $P>0.05$ ).

Under the emotional eating subscale, the mean score of adolescents who do not do physical activity is high ( $\bar{x}=2.010$ ), the mean score of adolescents who do engage in physical activity is low ( $\bar{x}=1.916$ ) and no statistically significant difference was found between them ( $U=20633.000$ ,  $P>0.05$ ).

Under the uncontrolled eating subscale, it can be seen that the mean score of those who do not engage in physical activity is high ( $\bar{x}=1.984$ ), while the mean score of those who do engage in physical activity is low ( $\bar{x}=1.836$ ). However, a statistically significant difference was found between the uncontrolled eating subscale of the scale and those adolescents who do not engage in physical activity ( $U=19599.000$ ,  $P<0.05$ ).

Looking at the scale total mean score, it can be seen that the mean score of the adolescents who do not engage in physical activity is high ( $\bar{x}=1.988$ ), while the mean score of adolescents who do engage in physical activity is low ( $\bar{x}=1.876$ ). However, under the scale total mean score, no statistically significant difference was found between the adolescents who do not engage in physical activity ( $U=20082.500$ ,  $P>0.05$ ).

## 4. Discussion

In the study conducted to examine the emotional eating behaviours of adolescents according to different variables,

the distribution of adolescents' views on health status and weight loss, gender, BMI, and physical activity variables were examined under the subscales of the emotional eating scale.

It was determined that most of the adolescents did not have health problems, but those with health problems also suffered from migraines, ulcers, diabetes, and hypertension. It was reported that less than half of the adolescents used nutritional supplements. Recent studies have found a relationship between inadequate emotional regulation, [45], body image dissatisfaction [46], and depression-related health problems [47] in adolescents exhibiting emotional eating behaviours. Kara [48] found that 10.70 % of adolescents used nutritional supplements and 89.30 % did not use nutritional supplements. It can be said that the findings obtained in this study are similar to the results of other studies because adolescents are conscientious about not using nutritional supplements.

Another finding of the study was that almost half of the adolescents received support from nutrition and diet specialists, and less than half from social media and doctors to lose weight, according to the dieting variable. However, while the majority of adolescents do not use drugs to lose weight, it was found that only a very few use drugs. An increase in eating behavioural disorders in adolescents was reported by Kontinen et. al. [49], in developed countries, and by Singh and Sharma [50] in developing countries. Bornioli et. al. [51], and Wu et. al. [52] stated that adolescents used slimming drugs, skipped meals, consumed a single meal during the day, fasted, used laxatives and diuretics, and engaged in unhealthy behaviours such as excessive smoking. However, in this study, the fact that very few of the adolescents use medication or receive support to lose weight can be considered as a positive finding for students of this age group.

It was determined that with the cognitive restraint, emotional eating, and uncontrolled eating subscales of the emotional eating scale for adolescents, the mean score for girls was higher than that for boys, and the statistical difference between them was significant. It may be said that this is a result of girls attaching more importance to body image and outward appearance than boys do. Macht [53] stated that girls have more impulsive eating tendencies when they are angry or sad compared with boys. Steinglass et. al. [26] stated that when adolescents do not eat because they are excessively restraining themselves from eating both cognitively and behaviourally, this is defined as anorexia nervosa. Litwin et. al. [20] stated that in emotional eating, individuals do not have physiological hunger; rather, they eat due to stress. In addition, the emotional eating tendency has been reported to be due to a lot of stress and lack of self-confidence in girls' lives [54]. Kakoschke et. al. [55], stated that uncontrolled eating increased unhealthy eating behaviours in girls and that negative emotions such as tension or anxiety increased uncontrolled eating. Işgin-Atici et. al. [56] detected excessive uncontrollable eating behaviours in girls with premenstrual syndrome. A study by Yilmazturk [57] revealed that females had significantly greater scores for emotional eating and there was a negative association between self-esteem and emotional eating in Turkey.

Another finding of the study showed that under the cognitive restraint, emotional eating, and uncontrolled eating subscales of the emotional eating scale, those adolescents with 1st-degree obesity BMI had high mean scores while those with underweight BMI had low mean scores, and there was a statistically significant difference between them. It can be said that adolescents with high BMI cannot control their eating even though they say they adopt cognitive restraint when eating. It has been found that girls with high BMI have greater body dissatisfaction and are more depressed [58]. In the study conducted by Fernández-Bustos et. al. [59], it was stated that boys had less anxiety about body dissatisfaction compared with girls [9]. According to Liu et. al. [2] as the level of stress and tension in girls increased compared with boys, and the lonelier they felt, the more emotional eating behaviours they displayed due to their fear of gaining weight and body image concerns. Mikolajczyk et. al. [60] stated that as stress levels or anxiety levels increase among adolescents, particularly those affected by outside stimuli, they exhibit an increase in excessive and uncontrolled eating because they cannot resist hedonistic features such as the smell, colour, and appearance of food. Hayzaran [61] observed that high impulsivity had an effect on individuals' food intake and body weight gain and that they could not control their eating behaviour or resist high-energy foods.

Another finding is that under the cognitive restraint and emotional eating subscales of the scale, the mean score of adolescents who do not engage in physical activity is high, and the mean score of adolescents who do engage in physical activity is low. However, no statistically significant difference was found between the cognitive restraint and emotional eating subscales of the scale and adolescents who do not engage in physical activity.

Under the uncontrolled eating subscale, the mean score of adolescents who do not engage in physical activity is

high, while the mean score of students who do engage in physical activity is low. However, a statistically significant difference was found between the uncontrolled eating subscale of the scale and the adolescents who do not engage in physical activity. In their study, Belvederi Murri et. al. [62] stated that doing moderate physical activity has positive effects on the mental health of the individual throughout his/her life and will prevent the formation of diseases such as Alzheimer's.

## 5. Limitations

In this study, the adolescents in the study group were limited to the province of Istanbul and the age group 15-18. Anthropometric measurements are limited to physical activity and the three-factor eating questionnaire (TFEQ-TR21) in determining the eating behaviours of adolescents.

## 6. Conclusions

This study showed that for the dieting variable, close to half the adolescents received support from nutritional experts and dieticians to lose weight and that the vast majority of them did not use slimming drugs. However, looking at gender and BMI under the cognitive restraint, emotional eating, and uncontrolled eating subscales of the emotional eating scale for adolescents, it can be said that the fact that girls are more conscientious about body image is actually indicative of an eating disorder among girls.

Future studies of emotional eating behaviours may consider examining the relationship between emotional eating disorders and conscious awareness-based stress reduction in students from groups of three consisting of primary, secondary, and high-school students.

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The authors declare that they have no conflicting interests.

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