

## RELATION BETWEEN EATING BEHAVIOURS AND PERSONAL BODY IMAGE PERCEPTION OF YASAR UNIVERSITY STUDENTS

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### Abstract

In this study, it is aimed to determine that 554 students, studying at Yasar University, whether they have a predisposition to eating behavior disorder or not. Gender, age, weight, and height information have been asked and applied the 26-item Eating Attitudes Test (EAT-26) adapted to the analysis. According to the EAT-26 evaluation scale, who score is " $\geq 30$ ", he is described as "he has a predisposition to eating behavior disorder". The data were evaluated by frequency and Pearson chi-square tests. EAT-26 score was determined as  $\geq 30$  in 1.5% (n=5) of women students and in 79.4% (n=16) of men students. According to the EAT-26 score, 16.2% (n=90) of weak students, 62.8% (n=248) of normal students and 17% (n=94) of before obesity (pre- obese) students have been identified regarding the results. When EAT-26 score was evaluated according to the gender of the students, it was seen that 34.3% (n=190) of students are male and 65.7% (n=364) of students are women. Average EAT-26 score of the students was found as  $20.36 \pm 1.76$  and 4% (n=22) of them have an eating disorder. But no statistically significant difference was found between the age of participation in the survey according to gender ( $p > 0.05$ ).

**Key words:** Body Image, Eating Behaviors', Gender, University  
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## **1. Introduction**

### **1.1. Eating Disorders**

Eating disorders are characterized by changes in eating patterns associated with a series of psychosocial conflicts such as culture, habit, lifestyle, low self-esteem and poor empathy, and an obsession with slimming. Eating disorders are classified as anorexia nervosa (AN), bulimia nervosa (BN), and eating disorder not otherwise specified. In recent years, a new term, orthorexia, was determined as an eating disorder. It is not an independent diagnostic category, but it has some similarities with other eating disorders. It can lead to malnutrition and weight loss as in AN. Unlike in AN and BN, people with orthorexia are preoccupied with consuming healthy and pure foods instead of the quantity of food or its physical appearance. They might spend most of their time following strict rules and are in a state of preoccupation with foods, behaviors that seem like obsessive-compulsive symptoms. Consequently, their social functioning may be negatively affected. Nonetheless, some argue that the preoccupation with food in orthorexia is not as distinctive as in AN and BN case because it is only related to the quality of the food; therefore, it should not be placed in a separate category (Strand, 2004). Steven Bratman defined this concept for the first time in 1997. Orthorexia is a new term about eating behavior disorder and consists of pathologic obsession for biologically pure foods, free of herbicides, pesticides, and other artificial substances. Excessive worry about the techniques and materials used in the food elaboration leads to obsession, loss of social relationships, affective dissatisfactions, and obsessive thoughts about foods (Mathieu, 2005; Zamora et al., 2005; Gunes and Ataoglu, 2014). In recent years, the number of individuals in public that exhibit different forms of “highly sensitive eating behavior disorders,” or “orthorexia nervosa,” has been on the rise. These people categorize foods according to whether they are healthy or not and display obsessive concern and excessively sensitive behavior about the consumption of healthy food. Recently, scientific communities, literature, experts in the field of nutrition, and the mass media have started to use a new concept called orthorexia nervosa. The term Orthorexia is produced from orthos, which means accurate, right, correct, valid in Latin, and orexisis, which means hunger. This term is used for “obsession of healthy and proper nutrition” (Evelly, 2001; Sanlier et al., 2008; Yahia et al., 2008; Mase et al, 2013).

In the 21st century, healthy nutrition is one of the most important concepts emphasized when considering issue related to health improvement. Foods are classified as natural or not, and there are natural food shops everywhere. Every day in media, there are news about environmental pollution and the protective effects of the foods on health, the causes of cancer, and the ways to prevent cancer. Healthy eating habits are not pathologic however, excessive preoccupation with consuming healthy food, spending an excessive amount of time with this preoccupation, and experiencing associated dysfunctions in daily life could be evaluated as a disorder that is linked to behavior and personality (Donini et al.,

2004; Alpaslan et al., 2015). Eating habits vary according to culture, habit, and lifestyle. Therefore, this study aimed to determine the prevalence of “highly sensitive behavior on healthy nutrition (orthorexia)” among students of Yasar University in Izmir, Turkey, and to examine their eating habits.

## **1.2. Self-Reported Screening Tools for Eating Disorders**

The severity of symptoms and risk of eating disorders were traditionally assessed using the following tools: The Eating Disorder Inventory (64–91 items, depending on the version); the Eating Disorder Examination, Screening Version (Fairburn and Belgin, 1994) the Eating Disorder Examination Questionnaire (Belgin and Fairburn, 1992), the SCOFF Questionnaire (Farnill et al., 2002). The EAT was used extensively to study eating-related disturbances in community populations because of the multiple facets it assesses and its excellent psychometric properties. The first version, the EAT-40, included seven factors: Food preoccupation, drive for thinness and body image preoccupations, vomiting and laxative abuse, dieting, slow eating, covert eating, and perceived pressure to gain weight (Garfinkel and Newman, 2001). Answers were rated on a 6-point Likert scale, with a cut-off point of 30 differentiating between people with normal and disturbed eating.

Eating Attitude Test was developed by Garner and Garfinkel (1979) and is a self-report scale used all over the world to measure problematic eating behaviors (Kartal and Aykut, 2019). The scale consists of 26 questions and the answers are evaluated in a six-step Likert form as “Always (3), Very often (2), often (1), sometimes, rarely and never (0)” (Ergüney-Okumuş and Sertel-Berk 2020). Scoring the last question on the scale is the opposite. A minimum of 0 and a maximum of 78 points can be obtained on the scale (Kartal and Aykut, 2019). If the EAT-26 scale total score is below 20, it is normal, individuals with a score equal to or above 20 are defined as an individual with an eating attitude disorder, and as the score increases, the risk of eating attitude disorder increases (Brytek-Matera et al. 2017).

The EAT-26 was previously assessed in different ethnic groups (Garfinkel and Newman, 2001) and translated and adapted into many languages including Arabic (Nasser, 1986), Japanese (Mukai et al., 1994), Italian (Dotti and Lazzari, 1998) and Hebrew (Koslowsky et al., 1992). The questionnaire was ultimately declared the screening instrument of choice by the National Eating Disorders Screening Program organized by the National Mental Illness Screening Project in 1999.

According to Osorio et al. (2002) the eating behavior is a “normal behavior related to eating habits, selecting foods that you eat; culinary preparations and quantities of ingestion”. Eating well can become a habit and so can eating poorly. Eating poorly might help develop serious diseases as obesity, malnourishment, among others. Food habits and obesity can barely be separated.

The rationale for that is, that the way individual eats determine her health status. Precise food behaviors or habits, regime factors, and surrounding mechanisms may be accountable for variances in global diseases (Azevedo et al. 2016). The study further showed that an average number of deaths were preventable i.e., the deaths were the consequence of avoidable sources, comprised of suboptimal food habits with low intake of fruits and vegetable, pulses, whole grains and nuts and high quantities intake of sugar and salt.

According with the World and Health Organization (2020), the variations in worldwide food market generate opportunities for change people's eating behaviors or habits to decrease the risk of developing various health problems as obesity. Obesity is nonstandard or disproportionate fat growth that grants a danger to one's well-being. It is measured by the Body Mass Index (BMI). An individual with a BMI of 30 and above is normally reflected obese. Equivalent to or above 25 is measured overweight respectively. Also, overweight can be defined as an excess of weight that is more than the allowed. Neumark-Sztainer et al. (1995), noted that eating habits and mealtime arrangements which are unhealthy in diet regularly led consistently to overweight and obese students. Their research findings suggested that school-based agendas still had the potential to contribute to main anticipation dietary challenges.

The hypothesis of this study is that the students of Yasar University have good understanding of eating habits and adequate knowledge about nutrition. This research assumes that they care about their eating habits and their health, so they can perform better their daily activities now and in the future.

### **1.3. Eating Disorders from a Cultural Perspective**

#### **The Students of Yasar University as a Case Study**

Culture is an important factor affecting the research of an eating disorder (Soh and Walter, 2013). While Eating Disorders are most common in Western societies, recently, their prevalence in non-Western societies, e.g., Asian societies, has been gradually increasing (Agüera et al., 2017). This is due to the exposure to Western cultural norms, including the thin body ideal, resulting from globalization, worldwide broadcast media, and social media (O'Brien et al., 2017). Accordingly, can the widely used EAT-26, originally designed, and tested among Canadian women 45 years ago, be a sensitive and appropriate screening tool for non-Western populations in the 21st century? To examine this question, we chose students of Yasar University as a case study. Yasar University is a multicultural University encompassing various ethnic and religious groups, including international students from many different countries. Many students generally represent a modern, Western-oriented students, with some exceptional people like transitioning from a more traditional society to a relatively modern and westernized one. To the best of our knowledge, despite extensive research conducted around the world and in Turkey, no such study has been conducted on the students of Yasar University until now.

## **2. Material and Method**

### **2.1. Study design, setting and sample**

This project took place from January 2021 to July 2021 at Yasar University, Izmir. To be selected to be part of the study, the participants had to be regular undergraduate students of any degree, at least in first second year, over 18 years old. A sample size of 554 participants voluntarily participates in the study by signing an informed consent. Their eating behaviors were determined and evaluated by a questionnaire. This questionnaire, which consisted of 26 questions, looks at the overall overview, health, food habits and sugar consumption. It assessed the subjects' frequency of eating meals and other different factors that influencing their food choices at different places.

### **2.2. Data collection procedure**

Data were collected online by the project team using a structured questionnaire that consisted of socio-demographic information, a screener for eating disorder risk. After the questionnaire was completed, project team conducted anthropometric assessments of study participants and reviewed the questionnaire for completeness and accuracy.

### **2.3. Screening of eating disorder risk**

The validated self-reported Eating Attitude Test-26 (EAT-26) questionnaire was used to assess the risk of disordered eating attitudes and behaviors (Garner and Garfinkel, 1980). This tool is composed of 26 items under three factors: dieting, bulimia, and food preoccupation and oral control. For scoring, a six-point scale from 'always' to 'never' was used. For all items except item-26 (inverse scoring), a score of 3, 2 and 1 was given 'always', 'usually' and 'often', respectively, and 0 for 'sometimes', 'rarely' and 'never'. Thus, total scores could range from 0 to 78. An individual who scored  $\geq 20$  was classified as 'at risk', and below 20 as 'no risk', for disordered eating attitudes and behaviors (Pengpid and Peltzer, 2015).

### **2.4. Statistical analyses**

The validity and reliability study of EAT-26 in Turkey was performed by Savaşır and Erol (1989) who had the reliability coefficient of the test repeated with one-month intervals as 0.65. They found the internal consistency calculated by Cronbach's alpha to be 0.70. Factor analysis of the scale revealed 4 interpretable factors in fat formation, including anxiety, dietary behavior, social stress, and thinness obsession. The Cronbach alpha reliability coefficient of the scale was found to be between 0.47-0.90 in female students and between 0.34-0.80 in male students (Batur, 2004). World Health Organization (2006) declared the obesity classification (<18.5: thin, 18.5-24.9: normal, 25.0-29.9: pre-obese,

30.0-34.9: 1st degree obese, 35.0-39.9: 2nd degree obese, >40: morbidly obese). The BMI value of the students was calculated with the formula "Body Weight/(Height)<sup>2</sup> (kg/m<sup>2</sup>)" from the body weight and height information obtained by the participants' self-reports. The data obtained were evaluated with the frequency and Pearson chi-square tests in the SPSS program, and the p<0.05 level was considered statistically significant.

#### **2.4.1. Sociodemographic Data Form**

In this form, the participants were asked about personal information such as age, gender, duration of daily internet use, living place, smoking, alcohol use, substance use, psychiatric history and weight and height. Body mass index (BMI) was calculated manually by using the formula weight (kg)/height<sup>2</sup>(m<sup>2</sup>).

#### **2.4.2. Eating Attitudes Test-26 (EAT-26)**

This questionnaire was developed by Garner et al. (1982) as a self-report scale to measure anorexia nervosa symptoms. It has validity and reliability. Turkish adapted by Kartal and Aykut (2019).

#### **2.4.3. Ethical Considerations**

The Ethics Committee of the Yasar University confirmed that the study matches the ethical research protocols. Written informed consent was obtained from each student prior to participation. An anonymous questionnaire was used. Participants had the ability to assent to or dissent from participation. Investigators from both genders were chosen to conduct this research as taking some data such as weight and height could be embarrassing for the participants if the investigator was from the opposite gender. Participants were assured that all the data collected would only be kept confidential and only accessible for the investigators and research purposes. The EAT-26 has been reproduced with permission Garner and Garfinkel (1979).

### **3. Results**

This research was carried out on a total of 554 university students, 190 (34.3%) male and 364 (65.7%) female, aged between 18-25 and studying at Yaşar University, and it is shown in Table 1. The mean age of 554 students participating in the study ( $\bar{X} \pm SD$ ) (min:18-max:25) was 20.36±1.76. As seen in Table 2, no statistically significant difference was found between the students in the survey according to Body Mass Index classification(p>0.05).

**Table 1:** Gender distribution table of individuals (%)

<b>Gender</b>	<b>n</b>	<b>%</b>
Men	190	34.3
Women	364	65.7
Total	554	100.0

<b>BMI Classification</b>		<b>Men</b>		<b>Women</b>		<b>Total</b>	
		<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>
Weak	<18,5	12	6.3	78	21.4	90	16.2
Healthy	18,5 - 24,9	107	56.3	241	66.2	348	62.8
Slightly fat	25,0 - 29,9	55	28.9	39	10.7	94	17.0
Fat	≥30	16	79.4	5	1.5	22	4.0

Body mass index (BMI) distribution of students by gender as seen in Table 2, the majority of the participants (62.8%) were students with normal BMI, 16.2% were underweight, 17.0% were slightly obese, and 4.0% were obese.

**Table 2:** Distribution table of students according to Body Mass Index (BMI) classification

**Table 3:** Distribution of students' eating habits (%)

<b>Meal Consumption</b>		<b>Men (n=190)</b>		<b>Women (n=364)</b>		<b>Total (n=554)</b>		<b>P</b>
		<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	
<b>Main meal consumption</b>								
1 meal		7	3,7	10	2,7	17	3,1	
2 meals		78	41,0	211	58,0	289	52,2	0,001
3 meals		105	55,3	143	39,3	248	44,8	
<b>Skipped main meal</b>								
Breakfast		64	33,7	68	18,7	132	23,8	
Lunch		49	25,8	159	43,7	208	37,5	
Dinner		3	1,6	11	3,0	14	2,5	0,000
Those who do not skip meals		74	38,9	126	34,6	200	36,1	
<b>Reason for skipping main meal</b>								
I'm on a diet		0	-	3	1,3	3	0,8	
Snack is enough		0	-	2	0,8	2	0,6	
I'm lazy to prepare		11	9,3	34	14,4	45	12,7	
Intermittent fasting		1	0,8	0	-	1	0,3	0,292
There is no time		30	25,4	40	16,9	70	19,8	
I dont want		68	57,6	146	61,9	214	60,5	
I get up late		8	6,8	11	4,7	19	5,4	

**Snack consumption**

I don't consume	104	54,7	131	36,0	235	42,4	0,000
1 meal	69	36,3	166	45,6	235	42,4	
2 meals	13	6,9	54	14,8	67	12,1	
3 meals	4	2,1	13	3,6	17	3,1	

The main and snack consumption of students by gender, the frequency of skipped meals and the distribution of their reasons are given in Table 4. When the meal consumption status was evaluated, it was determined that 44.8% consumed three main meals, 52.2% consumed two meals and 3.1% consumed one meal. Students mostly skip lunch (37.5%). It was determined that 60.5% of the individuals did not feel like it, and 19.5% of them skipped meals because they did not find time. While male students (54.7%) report that they do not consume snacks, many female students consume a single snack (45.6%). Consumption of main meals and snacks and the type of skipped main meal were found to be statistically significant ( $p < 0.001$ ) according to gender, while the reason for skipping the main meal was not statistically significant ( $p > 0.05$ ).

When the distribution of the students according to whether they have an eating behavior disorder or not, it was found that 20.9% of the students had an eating behavior disorder in general. While it was absent in 81.6% of male students and 77.7% of female students; Eating behavior disorder was observed in 18.4% of male students and 22.3% of female students. When their distribution according to gender and whether they have eating behavior disorder or not, the difference between the ratios of male and female students was found to be statistically insignificant ( $p > 0.05$ ). The distribution of the students according to the scores they got from the EAT-26 scale are given in Tables 4.

**Table 4:** Gender distribution table according to EAT-26

Eating Attitude	Men (n=190)		Women (n=364)		Total (n=554)		P
	n	%	n	%	n	%	
Normal (<20)	155	81.6	283	77.7	438	79.1	0.293
Eating disorder (≥ 20)	35	18.4	81	22.3	116	20.9	

**Table 5:** BMI distribution table according to EAT-26

Eating Attitude	Normal < 20		Eating disorder ≥ 20		Total		P
	n	%	n	%	n	%	
BKI <18,5	83	18,9	7	6,0	90	16,2	0.001
18,5 - 24,9	271	61,8	77	66,4	348	62,8	
25,0 - 29,9	64	14,8	30	25,9	94	17,0	
≥30	20	45,7	2	1,7	22	4,0	
Total	438		116		554		



Considering the distribution of students with eating behavior disorder and body mass index according to the EAT-26 scale, it is seen that eating behavior disorder is low in students with obesity (BMI  $\geq 30$ ) (1.7%), and in students with normal body mass index (BMI 18.5-24.9) was found to be high (66.4%). Again, normal eating behavior was highest (61.8%) in students with normal body mass index. It was found statistically significant between eating behavior disorder and body mass index ( $p < 0.001$ ).

#### **4. Discussion**

The university student period generally covers the childhood postnatal period in the adult transition period. Physiological nutrition disorders in this period, as well as the psychological dimension and self-perception of the person is an undesirable situation. It is known to affect university studies in different societies. It has been reported that the prevalence of eating attitude disorder, defined according to the EAT-26 score in students, ranges from 8.3% to 26. In a study conducted with a student from 228 women's universities in the United Arab Emirates, the mean EAT-26 score was found to be  $13.31 \pm 10.21$ . Eating attitude disorder was found in 24.6% of the students (Thomas et al., 2010). In our country, Baş et al. (2004) in a study conducted with 783 university students, 13.1% of female students had an eating attitude disorder (EAT-26 score  $\geq 20$ ), and the mean EAT-26 score was  $12.86 \pm 7.39$ . In another study conducted by the same researchers with 1205 university students aged between 17 and 21, an eating attitude disorder was determined in 13.9% of the students (Bas et al., 2005). Eating attitude disorder incidence was found to be lower (8.8%) when this study was compared with other studies. Accurate body weight perception is defined as the compatibility between perceived and measured body weight and relates to weight status. It shows higher awareness of health risks (Dorsey et al., 2009). Turkey Body Weight Perception Survey-2011 (TBAAA-2011) results of having an accurate body weight perception. The incidence increases significantly with age showed a decline. While the frequency of individuals evaluating body weight correctly is 62.8% in the 15-24 age group, 56.0% in the 25-34 age group. In addition, the higher the education level, the higher the frequency of accurate perception of body weight. Having the right body image in primary school graduates is 47.3%, while it is 59.6% in individuals with a college or university master's degree (Saglik Bakanligi, 2013). Considering these results, it can be said that the body weight perception of university youth in our country is more accurate than the groups. In this study, the frequency of body image perception among female university students was determined as 71%. The results of our study are close to the frequency of having the correct body weight perception (77%) that Rahman and Berenson (2010) found in their study with 2224 women aged between 18 and 25 in the United States of America. Today, as a result of the increasing desire to be thin with the strengthening of the belief that it is necessary to be thin in order to be attractive and socially acceptable, many individuals are dissatisfied with their body image and are concerned about the amount of fat in their body (Cash and Pruzinsky, 2005; Harrison et al, 2020). It has been reported

that there may be a relationship between body mass index and body image, and that body image perception may be impaired in individuals with high body mass index compared to thin individuals (Cash and Pruzinsky, 2005). In this study, about three out of four slightly obese female students and approximately one out of every four female students with normal weight defined themselves as 'obese' and approximately one out of every two underweight students as 'normal'.

In Neighbors and Sobal' study published in 2007, they showed that female students with normal body weight desired approximately one unit less BMI, and obese female students approximately 3.5 units less (Neighbors and Sobal, 2007). In the same study, it was found that most women who were underweight according to BMI classification were satisfied with their body weight and shape. In a study conducted by Çiftçi and Uskun (2012) on 923 university students, it was shown that the eating attitude disorder in students who were slightly obese according to BMI assessment was significantly higher than those who were normal and underweight. In this study, the EAT-26 scores of individuals with normal body weight were found to be significantly lower than those of thin, slightly obese, obese, and the median EAT-26 scores of obese female students were at the border of eating attitude disorder, which supports the findings of Çiftçi and Uskun.

The aim of this research was to know which food habits the university students have. This research concludes that although they are used to read the labels of the products which they buy, everything is pointing that they do not have enough information about what they should eat. A representative part of the participants does not always choose the healthy option, or they are not concerned about what they eat. Also, they have the tendency to change their food habits while they are in stress situations, to even less healthy foods especially during the exam period. This irregular food habit should be avoided because it could bring consequences related with malnutrition in this very critical period. The study also concludes that other people's opinions have a great impact on the choice of healthy foods although other factors such as social and environmental factors were vital in the determinants of eating habits amongst students. It can also be concluded that the economic situation may be a condition to carry out a convenient feed, which might limit the selection of certain types of food and consequently in the impossibility to maintain healthy eating behaviors. However, in this small sample of students, roughly 70% of the participants are interested about what they eat. And with an adequate knowledge about nutrition, they do use it in practice. Because of this, they are not at risk of becoming overweight and obese in the future. This situation is good indeed and not alarming while it recommends conducting future research with broadened scope and larger representative sample size including may be all the Universities in Izmir or may also include the teachers.

## **5. Strengths and Limitations of the Study**

This is the first study to evaluate the susceptibility of some of Bitlis Eren University students to eating behavior disorder using the EAT-40 scale [38]. However, it may cause eating behavior disorder; Since the effects of independent variables such as their families' eating attitudes, students' health, or illness conditions on the development of eating behavior disorder are not evaluated and clinical and psychological examinations are needed for a definitive diagnosis, it is insufficient to fully accept that the students included in the study have eating behavior disorder.

## **6. Conclusions**

It is necessary to take education and preventive measures related to eating behavior disorder, to provide protection, and to provide treatment if the disease has occurred. It will be useful to investigate the young group with large-sample and to conduct screenings in risky groups. It is extremely important to determine the causes of eating behavior disorder, to take preventive measures and to recognize these diseases. Moreover, this research recommends that the university should prepare some action plan to educate its students about nutrition and eating habits and teach them how to use this knowledge in practice. That can be done by conferences and seminars to inform and raise awareness of young people, families, and trainers on the subject. It should be ensured that university students gain healthy eating habits through applied nutrition education given in formal and non-formal education institutions and thus their quality of life should be increased. Because a healthier population brings many advantages to the country. People are more motivated, more productive and the state can spare some money on health care.

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## **Declaration of competing interest**

The authors declare no conflicts of interest.

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