

Risk of eating disorders and its association with expectations of thinness, body satisfaction and body mass index in Turkish university students: A cross-sectional study

Ahmet Murat Günel¹, Keşer Karlı², Hande Öngün Yılmaz³

¹Department of Nutrition and Dietetics, University of İstanbul Okan, İstanbul, Turkey; ²Department of Nutrition and Dietetics, University of Kastamonu, Kastamonu, Turkey, ³Department of Nutrition and Dietetics, University of Bandırma Onyedi Eylül, Bandırma, Turkey

Abstract. *Background and aim:* Eating disorders are a diagnostic group characterized by the desire to be thin, excessive fear of obesity, and severely impaired body satisfaction. This study aimed to determine university students' risk of eating disorders and their relationship with the expectation of thinness, body satisfaction, and body mass index (BMI). *Methods:* The cross-sectional study was conducted with 535 (Female: 478, Male: 57) participants studying at the faculty of health sciences of two universities. Students were randomly selected according to their university, department, and gender using a stratified sampling method. Data were collected using the information form, Eating Attitude Test Short Form (EAT-26), Interpersonal Outcome Expectancies for Thinness (IOET), and Body Satisfaction Scale (BAS). *Results:* Participants' mean EAT-26 scores were 10.97 (SD=9.99), IOET-TR scores 10.97 (SD=9.99), BAS scores 35.08 (SD=7.47). It was found a positive correlation between EAT-26 and IOET-TR ($r=0.141$, $p=0.001$); a negative correlation between EAT-26 and BAS ($r=-0.228$, $p<0.001$). While there is no significant relationship between BMI, EAT-26, and IOET-TR; a negative relationship was found between BMI and BAS ($r=-0.241$, $p<0.001$). *Conclusions:* This study showed participants at risk of eating disorders, have expectations of thinness, and decreased body satisfaction. Also, it is found that overweight and obese people are more prone to eating disorders. The level of knowledge and awareness of students should be increased by providing various training with a multidisciplinary approach.

Key words: Eating disorders, body mass index, body satisfaction, thinness expectation

Introduction

Adequate and balanced nutrition is essential to maintain a healthy life. With the deterioration of eating attitude, inadequate and unbalanced eating habits may arise and eating disorders may occur. Eating disorders are a diagnostic group characterized by the desire to be thin, excessive fear of obesity, and severely impaired body satisfaction (1). Body satisfaction is a multifactorial concept that includes feelings, thoughts, and perceptions about the individual's body image. It represents what the individual feels, thinks, and

perceives about his/her own body (2). Body dissatisfaction is characterized by being discontent with the body and body parts, excessive preoccupation with the body, and avoidance of social environments (3). In recent years, thinness and some beauty stereotypes have been highlighted in the media and social life and associated with being attractive. Especially among young adults, the idea of having a social advantage or being popular by being slim is becoming widespread. Perceiving oneself as overweight or obese is perceived as an obstacle for dating, and it leads to an increase in the desire to be fit. This situation causes body dissatisfaction, especially

among university students (4). Individuals who have been heavily exposed to these thoughts experience deterioration in eating attitude and the tendency to eating disorders increases. Studies indicate that individuals who are concerned about their body weight and spend overtime on issues related to their bodies are not satisfied with their body weight, have difficulty regulating their eating habits, and exhibit unhealthy weight control behaviors such as skipping meals (5). It has been reported that as individuals' body dissatisfaction increases, their eating attitudes deteriorate (6). In a meta-analysis of eating disorders, weighted averages (ranges) of point prevalence by continents were 4.6% (2.0-13.5%) in the Americas, 2.2% (0.2-13.1%) in Europe, and in Asia, 3.5% (0.6-7.8%) were reported (7).

In this study, we aimed to determine the risk of eating disorders in young adults, who are university students from two different universities (state and foundation), and to evaluate its relationship with the expectation of thinness, body satisfaction, and body mass index.

Methods

Participants and procedure

In the cross-sectional study conducted in November-December 2020, students of Istanbul Okan University (foundation) and Kastamonu University (state) Faculty of Health Sciences were included in the study. The approval of the ethics committee of Istanbul Okan University for the research was obtained at meeting number 128 on 11.11.2020. To conduct the research permissions were obtained from both universities. The universe of the study consists of a total of 2084 students, 996 at Istanbul Okan University and 1088 at Kastamonu University both from the Faculty of Health Sciences (excluding the preparatory grade students). With a 95% confidence level and a 5% margin of error, the minimum sample size to be included in the study was calculated as 324. To increase the sampling's ability to represent the universe, a stratified sampling model was chosen based on departments in each faculty. Istanbul Okan University Faculty of Health Sciences has 6 departments: Nutrition and Dietetics Turkish (n=89) and English (n=28), Child Development (n=31), Physiotherapy and Rehabilitation

(n=46), Nursing (n=50), and Health Management (n=12). Kastamonu University Faculty of Health Sciences has 3 departments: Nutrition and Dietetics (n=97), Nursing (n=142), and Midwifery (n=40). 535 students over the age of 18 were included in the study based on volunteering by simple random selection, one out of every 4 people in order of school numbers considering their strata weights. Participants were informed about the purpose of the research, and those who volunteered after their consent was asked to be filled out completely the data collection form prepared online via Google Forms.

Data Collection

The data of the research were collected using a data collection form consisting of four parts prepared online via Google Forms. The first part of the data collection form consists of questions about the socio-demographic characteristics of the participants (age, gender, department, grade they study, working status) and anthropometric measurements (height, weight). Individuals' BMI levels were calculated using body weight (kg) and height length (m) information [with the formula BMI (kg/m²)] (8). The second part of the data collection form is EAT-26 (Eating Attitude Test Short Form) (9), the third part is IOET-TR (Interpersonal Outcome Expectancies for Thinness Scale) (10), and the last part, there is BAS (Body Satisfaction Scale) (11).

Eating Attitude Test Short Form (EAT-26): The EAT-26 scale (9) was created in 1982 by Garner, Olmsted, Bohr, and Garfinkel shortening the Eating Attitude Test (EAT-40) developed by Garner and Garfinkel in 1979 (12). Eating Attitude Test Short Form (EAT-26) was adapted into Turkish by Ergüney Okumu and Sertel Berk in 2019 (13). In EAT-26, there are 26 questions about eating attitudes and behaviors. EAT-26 is used as a quick and practical screening tool to determine the tendency to eating disorders, especially in non-clinical groups. In EAT-26, the answers are numbered as "3=Always, 2=Very often, 1=Frequently, 0=other answers (Sometimes, rarely, never)". On the other hand, the 26th question is scored in reverse, that is, "1=Sometimes, 2=Rarely, and 3=Never", while other answers get 0 points again.

Scores of 20 and above on the scale indicate the risk of eating disorders (9).

Interpersonal Outcome Expectancies for Thinness Scale (IOET-TR): Interpersonal Outcome Expectancies for Thinness Scale (IOET) (10) was developed by Li and Chang in 2019 and adapted into Turkish by Alim et al. (IOET-TR) (14). In the same year, this scale, which was developed to evaluate situations such as the belief that expectations are an important factor in tendencies for eating disorders and that thinness will be advantageous, is composed of 8 questions. There is a 7-point Likert in the IOET-TR scale, and it is evaluated as 7 points as "I strongly agree" and 1 point as "I strongly disagree". There are no questions that are scored reversely on the scale. A minimum of 8 and a maximum of 56 points result is considered directly proportional to the idea that the participants will have interpersonal advantages if they are thin (10).

Body Satisfaction Scale (BAS): The Body Satisfaction Scale (BAS) (11) was developed by Avalos et al. in 2005 to evaluate body satisfaction and was adapted into Turkish by Bakalım and Ta delen-Karçkay in 2016 (3). BAS is a 9-question scale aiming to measure how much an individual values his/her own body and accepts it as the way it is despite the ideal body sizes imposed by the media. There is a 5-point Likert in the BAS scale, and it is evaluated as 5 points are always and 1 point is never. There are no questions that are evaluated reversely on the scale. A minimum of 9 and a maximum of 45 points result is directly proportional to the body satisfaction of the people (11).

Statistical Analysis

All statistical analyses were performed using IBM® SPSS® Statistics 23 program and worked with a significance level of $p < 0.05$. The normality test was performed with the skewness and kurtosis analysis according to their values (assuming reference range: -1, +1). While IOET-TR and BAS scores were found to have a normal distribution; It was observed that there was no normal distribution in the EAT-26 scale scores, age, and BMI values. Pearson correlation and Spearman's rho correlation coefficient were used in the correlation analysis of numerical variables. In difference analysis, Independent t-Test and Mann-Whitney U test were used in the comparison of variables in which

one side is numerical and the other has two-parameter categorical features; In cases where categorical variables are containing more than two parameters, the Kruskal Wallis H test and One-Way ANOVA were used. In non-parametric analysis, posthoc analysis is performed with Bonferroni correction, while the Tukey test was used in parametric analyses.

Reliability analyses of the scales in the study were examined with the Cronbach Alpha coefficient. The Eating Attitude Test Short Form (EAT-26) was 0.858; the Interpersonal Outcome Expectancies for Thinness Scale (IOET-TR) was 0.951; the Body Satisfaction Scale (BAS) was determined as 0.924.

The results were interpreted according to the 95% confidence interval and 5% margin of error.

Results

A total of 535 participants were included in the study, 478 (89.3%) of them are female and 57 (10.7%) of them are male. 282 (52.7%) participants are students of Kastamonu University and 253 (47.3%) participants are students of İstanbul Okan University. While 252 (47.1%) of the participants are from Nutrition and Dietetics; 283 (52.9%) are students of other departments [Child Development (n=31), Midwifery (n=40), Physiotherapy and Rehabilitation (n=46), Nursing (n=192) and Health Management (n=12)].

Average of the participants; age is 20.34 (SD=2.42), height is 165.53 (SD=7.78) cm, body weight is 58.16 (SD=10.78) kg, BMI values are 21.16 (SD=3.17) kg/m^2 . According to BMI, 118 (22.1%) are thin ($< 18.5 \text{ kg/m}^2$); 359 (67.1%) of them are normal ($18.5\text{-}24.99 \text{ kg/m}^2$); 50 (9.3%) of them are overweight ($25.0\text{-}29.99 \text{ kg/m}^2$); 8 (1.5%) of them are classified with obesity ($\geq 30.0 \text{ kg/m}^2$).

Average scores of the students who participated in the research; for the EAT-26, it is 10.97 (SD=9.99), (min=0, max=70); for the IOET-TR, it is 10.97 (SD=9.99), (min=8, max=56); for the BAS, it is 35.08 (SD=7.47), (min=9, max=45). The comparison of EAT-26, IOET-TR, and BAS scores according to the sociodemographic characteristics of the participants is given in Table 1.

When the scores of the participants from EAT-26 were compared based on university and department,

Table 1. Comparison of the sociodemographic characteristics and BMI classification of the participants according to EAT-26, IOET-TR, and BAS Scores

	EAT-26		IOET-TR		BAS	
	Median(Q1-Q3)	P	Mean (SD)	P	Mean (SD)	P
Gender						
Female	8.00 (5.00-14.00)	0.026	19.43 (11.35)	0.686	34.93 (7.60)	0.126
Male	6.00 (3.00-12.50)		20.08 (13.18)		36.13 (6.20)	
University						
Kastamonu University	8.00 (5.00-13.00)	0.662	18.76 (10.76)	0.122	35.38 (7.14)	0.323
istanbul Okan University	8.00 (5.00-14.00)		20.32 (12.34)		34.74 (7.82)	
Department						
Nutrition and Dietetics	8.00 (5.00-12.00)	0.362	18.36 (10.44)	0.029	35.76 (7.16)	0.044
Other Departments	8.00 (5.00-15.00)		20.51 (12.38)		34.47 (7.69)	
BMI Classification						
Thin (<18.5 kg/m ²)	10.00 (6.00-13.00) ^a	0.028	19.66 (11.92) ^c	0.044	36.94 (6.47) ⁱ	0.000
Normal (18.5-24.99 kg/m ²)	8.00 (4.00-14.00) ^b		19.01 (11.04) ^f		35.04 (7.47) ^j	
Overweight (25.0-29.99 kg/m ²)	7.50 (3.75-13.25) ^c		20.98 (11.80) ^g		31.76 (7.95) ^k	
Obesity (≥30.0 kg/m ²)	14.50 (8.00-32.00) ^d		30.00 (20.92) ^h		29.75 (9.36) ^l	

^U: Mann Whitney U Test Statistics Value; ^{KW}: Kruskal Wallis Test Statistics Value; Q1-Q3: 25. -75. Percentile; SD: Standart Deviation
^t: Independent t test statistics Value; ^F: One Way ANOVA Test Statistics Value; Tukey PSD: a<b, d; c<d; f>h; i>k,l; j>k

no significant difference was found. Besides, individuals with obesity have higher scores than normal and overweight individuals (p=0.028).

When the IOET-TR scores of the participants were compared according to gender and university, no significant difference was found. Students from other departments and individuals classified with obesity had higher expectations of thinness than the nutrition and dietetics students (p=0.029) and normal-weighted individuals (p=0.044) respectively.

Although there was no statistically significant difference in terms of gender and university factors when comparing BAS scores, it was observed that nutrition and dietetics students got higher BAS scores compared to other departments (p=0.044).

The relation between the BMI value of the participants and the scores they got from EAT-26, IOET-TR, and BAS is shown in Table 2.

Between EAT-26 and IOET-TR weak and positive (r: 0.141; p=0.001), and between EAT-26 and BAS weak and negative (r: -0.228; p<0.001) correlations were found. As participants' risk of eating disorders increases, their expectations of thinness also increase, and body satisfaction decreases. A moderate negative relation was found between IOET-TR and BAS scores (r: -0.388; p<0.001). As individuals' body satisfaction decreases, the expectation of weakness increases. While there was no significant relationship between BMI and EAT-26 and IOET-TR, a negative and slightly significant correlation was found between

Table 2. The relation between BMI, EAT-26, IOET-TR, and BAS scores of the participants

	EAT-26		IOET-TR		BAS		BMI	
	r	p	r	p	r	p	r	p
EAT-26	-	-	0.141^a	-0.059 ^a	0.172	0.001	-0.228^a	<0.001
IOET-TR	0.141^a	0.001	-	0.066 ^a	0.126	-	-0.360^b	<0.001
BAS	-0.228^a	<0.001	-0.360^b	-0.241^a	<0.001	<0.001	-	-
BMI	-0.059 ^a	0.172	0.066 ^a	-	-	0.126	-0.241^a	<0.001

^a: Spearman's Rho coefficient; ^b: Pearson Correlation coefficient

BMI and BAS ($r: -0.241; p < 0.001$). Body satisfaction decreases as the BMI increases.

Participants were classified according to 20 points, the cut-off score of the EAT-26 scale, while 86.4% of the participants' ($n=462$) scores were lower than 20, and 13.6% ($n=73$) scores of 20 and above. Comparison of IOET-TR, BAS, BMI, and age according to EAT-26 classification are given in Table 3. Individuals with an EAT-26 score above 20 were found to have higher thinness expectations ($p=0.017$) and lower body satisfaction ($p < 0.001$).

Discussion

The concepts of a tendency for eating disorders, an expectation of being thin, and body satisfaction are influenced by various factors. In a survey conducted among university students in Turkey, female students had higher scores in the EAT-26 than male students (15). It also reported that female university students have more irregular eating habits than male students (16). In this study, female students got higher scores in EAT-26 than male students. The score difference obtained from the IOET-TR is not significant in terms of gender. This research is the first descriptive study conducted using the IOET-TR scale. Also, no significant difference was found between BAS scores according to gender. Results show significant differences in studies investigating the relationship between body satisfaction and gender in the literature. Although studies in which men have higher body satisfaction than women stand out (17), there are also studies reporting that there is no significant difference (18).

In a meta-analysis, 33 studies were examined, nutrition and dietetics students were more prone to eating disorders (19). In this study, EAT-26 and IOET-TR scale results do not show a significant difference between universities and departments. Although the BAS results among universities were not statistically significant in this study, the scores of students studying in the nutrition and dietetics department were found significantly higher than the other students. Moreover, a study emphasized that nutrition and dietetics students are exposed to more social pressure to be fit due to the department they study in and that their body satisfaction levels are negatively affected (20). A study indicated that students studying in health sciences had lower body image scores than those studying in social sciences (21).

In a study on university students, thin individuals got higher scores of EAT-26 (22). In this study, it was observed that the scores of participants with obesity were statistically significantly higher than normal and overweight participants. Besides, although individuals with obesity got higher scores on the IOET-TR scale than those who were thin, normal, and overweight, the results were not statistically significant. It was determined that thin students had higher body satisfaction than normal and overweight students, and the results were highly significant. A study reported that obese patients had lower body satisfaction compared to normal-weight individuals (23). It's reported that body satisfaction increased as BMI decreased in women, and it's in the opposite direction in men (15).

Studies reported that there is a negative relationship between BMI and body satisfaction. As BMI increases, body satisfaction decreases (18,21). A similar result was found in this study, but a relation between EAT-26 and IOET-TR could not be established. Also,

Table 3. Comparison of the participants' EAT-26 score classification with their IOET-TR and BAS scores, BMI, and age

	EAT-26 Score Classification				U/t	p
	<20		≥20			
	Median (Q1-Q3)	Mean (SD)	Median (Q1-Q3)	Mean (SD)		
IOET-TR	16.00 (10.00-24.00)	18.97 (11.26)	19.00 (12.00-31.50)	22.84 (12.79)	-2.443 ^t	0.017
BAS	37.00 (32.00-41.00)	35.91 (6.97)	30.00 (24.50-35.50)	29.82 (8.35)	5.909 ^t	<0.001
BMI	20.44 (18.68-22.88)	21.06 (3.11)	21.64 (19.13-23.48)	21.76 (3.47)	-1.672 ^U	0.095
Age (year)	20.00 (19.00-21.00)	20.33 (2.31)	20.00 (19.00-21.00)	20.41 (3.08)	-0.835 ^U	0.404

^U: Mann Whitney U test Statistics Value; ^t: Independent Samples t-test Statistics Value Q1-Q3: 25. -75. Percentile; SD: Standard Deviation

13.6% of the participants had an eating disorder risk according to the score they got from EAT-26. Yu and Tan reported 10% (24), and Saleh et al. 28.6% (25).

In this study, it's seen that as the EAT-26 scores increase, the IOET TR score increases. This indicates that the risk of disruption in the eating attitude of the participants and the perception that the thinner they are, the more advantageous they will be, shows a positive correlation. Studies show that with the increase in the desire to be thin, eating attitudes deteriorate, and consequently, irregular eating habits grow accordingly (26). Another finding of this study is that as the EAT-26 score increases, the BAS score decreases, that is, as the risk of eating disorder increases, body satisfaction decreases. Studies conducted are in parallel with this result (15,27). Also, in this study, it's seen that with the decrease in body satisfaction of the participants, the thought that the thinner they are, the more advantageous they will become increased. A study conducted among university students in the south of Spain reported that high levels of body dissatisfaction and the desire for a thinner body are linked (28). Also, in this study, those who do not have an eating disorder risk had higher body satisfaction, again, this finding is compatible with the literature (29).

The limitations of our study participants in this research have answered questions online via the Internet. Accordingly, anthropometric measurements could not be measured by the researchers, and these data were based on the statements of the participants. The number of male participants is less than females, but we think that the sample reflects the universe. Because women prefer the faculty of health sciences more than men in Turkey. The research was carried out to include only the students of the health sciences faculties of two universities. Multicenter studies with larger samples may be useful for a stronger generalization. In addition, psychological factors and the economic status of the participants were not evaluated.

Despite the limitations of the study, we believe that it demonstrates the relationship between the risk of eating disorders and the expectation of thinness and body satisfaction in university students. Stratified sample selection increased the ability of the results to represent the population. Studies on eating disorders are generally conducted on women, which limits data on men. In this study, the representativeness of the sample was

increased by including a proportional number of men in the population. This study can be an example of other studies on men on this subject. In addition, we think that since it is the first descriptive study conducted using the IOET and IOET-TR scale, it can shed light on future research.

In this study, 13.6% of the participants are at risk of eating disorders. These people have a greater expectation of thinness and less body satisfaction. Overweight and obese people are more prone to eating disorders. Body satisfaction decreases as BMI increases. As body satisfaction decreases, the expectation of thinness increases. Although most studies on eating disorders and body image have been conducted with female populations, current studies are showing that the incidence of eating disorders and body image problems in men is increasing. Although this research shows that men, who make up a small portion of the sample, have lower EAT 26 scores than women, it reveals that such studies should be conducted among men. Although IOTR and BAS scores did not find a higher significant difference in men, they may help determine the extent of risk and indicate that further studies are needed in this area. Further studies and solution suggestions are needed to properly manage the deterioration of eating attitude and body dissatisfaction, which may become a potential problem for students. The level of knowledge and awareness of students should be increased by providing various training with a multidisciplinary approach.

Ethics Committee Approval: Ethics committee approval was received for this study from the Istanbul Okan University for the research was obtained at meeting number 128 on 11.11.2020.

Informed Consent: Informed consent was obtained from the individuals who participated in this study.

Acknowledgments: The authors acknowledge Mr. Salim Yılmaz for his advice on statistical analysis, and Ms. Stacey Mugarura for language-wise editing, and thank all students who participated in this study.

Conflict of Interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement, etc.) that might pose a conflict of interest in connection with the submitted article.

Financial Disclosure: The authors declare that this study has received no financial support.

References

- American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders (DSM-5®), Fifth ed., Arlington: APA, 2013.
- Hosseini SA, Padhy RK. Body Image Distortion. In: StatPearls. StatPearls Publishing, Treasure Island (FL); 2021. PMID: 31536191.
- Bakalim O, Ta delen-Karçkay A. Body Appreciation Scale: Evaluation of the Factor Structure and Psychometric Properties among Male and Female Turkish University Students. *Mersin University Journal of the Faculty of Education* 2016; 12 (1): 410-422. doi: <https://doi.org/10.17860/efd.38032>
- Ercan R. Lise ö rencilerinin beden memnuniyeti ve sosyolojik analizi. *Zeitschrift für die Welt der Türken/Journal of World of Turks* 2020; 12 (2): 141-154.
- Radwan H, Hasan HA, Ismat H, et al., Body Mass Index Perception, Body Image Dissatisfaction and Their Relations with Weight-Related Behaviors among University Students. *Int. J. Environ. Res. Public Health* 2019; 16 (9): 1541. doi: <https://doi.org/10.3390/ijerph16091541>
- Berengüi R, Castejón MÁ, Torregrosa MS. Body dissatisfaction, risk behaviors and eating disorders in university students. *Revista Mexicana de Trastornos Alimentarios* 2016; 7 (1): 1-8. doi: <http://doi.org/10.1016/j.rmta.2016.02.004>
- Galmiche M, Déchelotte P, Lambert G, Tavolacci MP. Prevalence of eating disorders over the 2000-2018 period: a systematic literature review. *Am J Clin Nutr* 2019; 109 (5): 1402-1413. doi: <http://doi.org/10.1093/ajcn/nqy342>
- Body Mass Index – BMI, World Health Organization. Available at <https://www.euro.who.int/en/health-topics/disease-prevention/nutrition/a-healthy-lifestyle/body-mass-index-bmi> Accessed July 06, 2021.
- Garner D, Olmsted M, Bohr Y, Garfinkel P. The Eating Attitudes Test: Psychometric features and clinical correlates. *Psychological Medicine* 1982; 12 (4): 871-878. doi: <http://doi.org/10.1017/S0033291700049163>
- Li M, Chang EC, Chang OD. Psychometric Properties of the Interpersonal Outcome Expectancies for Thinness (IOET) Scale: Evidence for Validity, Reliability, and Utility in the Study of Eating Disturbances in Females. *Journal of Social and Clinical Psychology* 2019; 38 (2): 160-179. doi: <https://doi.org/10.1521/jscp.2019.38.2.160>
- Avalos L, Tylka TL, Wood-Barcalow N. The body appreciation scale: Development and psychometric evaluation. *Body Image* 2005; 2 (3): 285-297. doi: <https://doi.org/10.1016/j.bodyim.2005.06.002>
- Garner DM, Garfinkel PE. The Eating Attitudes Test: An index of the symptoms of anorexia nervosa. *Psychological Medicine* 1979; 9 (2): 273-279. doi: <http://doi.org/10.1017/S0033291700030762>
- Ergüney-Okumu FE, Sertel-Berk HÖ. Yeme Tutum Testi Kısa Formunun (YTT-26) Üniversite Ö rneklerinde Türkçeye Uyarlanması ve Psikometrik Ö zelliklerinin De erlendirilmesi. *Psikoloji Ç alı maları* 2019; 40 (1): 57-78. doi: <https://doi.org/10.26650/SP2019-0039>
- Alim NE, Caliskan G, Gokustun KK, Akkus ZN. Validation of a Turkish version of the interpersonal outcome expectancies for thinness (IOET) scale in university students. *Progr Nutr* 2019; 21 (4): 1045-1051. doi: <https://doi.org/10.23751/pn.v21i4.9042>
- Kartal FT, Aykut MK. Üniversite Ö rencilerinde Sosyal Fizik Kaygısı ve Depresyonun Yeme Bozuklu u Riski ile li kisi. *Bes Diy Derg* 2019; 47 (2): 20-29. doi: <https://doi.org/10.33076/2019.BDD.1088>
- Perryman M, Barnard, M, Reysen R. College students' disordered eating, substance use, and body satisfaction. *College Student Journal* 2018; 52 (4): 516-522.
- He J, Sun S, Zickgraf HF, Lin Z, Fan X. Meta-analysis of gender differences in body appreciation. *Body Image* 2020; 33: 90-100. doi: <https://doi.org/10.1016/j.bodyim.2020.02.011>
- Meneses L, Torres S, Miller KM, Barbosa MR. Extending the use of the Body Appreciation Scale-2 in older adults: A Portuguese validation study. *Body Image* 2019; 29: 74-81. doi: <https://doi.org/10.1016/j.bodyim.2019.02.011>
- Trindade AP, Appolinario JC, Mattos P, Treasure J, Nazar BP. Eating disorder symptoms in Brazilian university students: a systematic review and meta-analysis. *Braz. J. Psychiatry* 2019; 41 (2): 179-187. doi: <https://doi.org/10.1590/1516-4446-2018-0014>
- Díaz Gutiérrez MC, Bilbao y Morcelle GM, Unikel Santoncini C, Muñoz Espinosa A, Escalante Izeta EI, Parra Carriedo A. Relationship between nutritional status, body dissatisfaction and risky eating behaviors in Nutrition students. *Revista Mexicana de Trastornos Alimentarios* 2019; 10 (1): 53-65. doi: <http://dx.doi.org/10.22201/fesi.20071523e.2019.1.490>
- anlier N, Türközü D Toka O. Body image, food addiction, depression, and body mass index in university students. *Ecology of Food and Nutrition* 2016; 55 (6): 491-507. doi: <https://doi.org/10.1080/03670244.2016.1219951>
- engör G, Gezer C. Food addiction and its relationship with disordered eating behaviours and obesity. *Eat Weight Disord.* 2019; 24 (6): 1031-1039. doi: <https://doi.org/10.1007/s40519-019-00662-3>
- Weinberger NA, Luck-Sikorski C. Body appreciation and appearance evaluation in individuals with obesity compared to individuals with normal-weight: findings from a representative German population sample. *Eat Weight Disord* 2021; 26 (7): 2241-2249. doi: <https://doi.org/10.1007/s40519-020-01071-7>
- Yu Z, Tan M. Disordered Eating Behaviors and Food Addiction among Nutrition Major College Students. *Nutrients* 2016; 8 (11): 673. doi: <https://doi.org/10.3390/nu8110673>
- Saleh RN, Salemeah RA, Yhya HH, Sweileh WM. Disordered eating attitudes in female students of An-Najah National University: a cross-sectional study. *J Eat Disord* 2018; 6: 1-6. doi: <https://doi.org/10.1186/s40337-018-0204-4>
- Eikey EV, Reddy MC, Booth KM, et al. Desire to Be Underweight: Exploratory Study on a Weight Loss App Community and User Perceptions of the Impact on Disordered Eating Behaviors. *JMIR Mhealth Uhealth* 2017; 5 (10):

- e150. doi: <https://doi.org/10.2196/mhealth.6683>
27. Uchôa FNM, Uchôa NM, Daniele TMDC, et al. Influence of the Mass Media and Body Dissatisfaction on the Risk in Adolescents of Developing Eating Disorders. *Int J Environ Res Public Health* 2019; 16 (9): 1508. doi: <https://doi.org/10.3390/ijerph16091508>
28. Aparicio-Martinez P, Perea-Moreno A-J, Martinez-Jimenez MP, Redel-Macías MD, Pagliari C, Vaquero-Abellan M. Social Media, Thin-Ideal, Body Dissatisfaction and Disordered Eating Attitudes: An Exploratory Analysis. *Int. J. Environ. Res. Public Health* 2019; 16 (21): 4177. doi: <https://doi.org/10.3390/ijerph16214177>
29. Alkazemi D, Zafar TA, Ebrahim M, Kubow S. Distorted weight perception correlates with disordered eating attitudes in Kuwaiti college women. *Int J Eat Disord*. 2018; 51 (5): 449-458. doi: <https://doi.org/10.1002/eat.22852>

Correspondence:

Hande Öngün Yılmaz, PhD
Department of Nutrition and Dietetics,
Bandırma Onyedi Eylül University
E-mail: dythandeongun@gmail.com