J Nutr Diet 2022;50(2):56-65 DOI: 10.33076/2022.BDD.1643

RESEARCH ▪ ARAŞTIRMA

Evaluation of the Relationship Between Depression, Emotional Appetite, and Mindful Eating in University Students

Üniversite Öğrencilerinde Depresyon, Duygusal İştah ve Yeme Farkındalığı İlişkisinin Değerlendirilmesi

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Received/Geliş tarihi: 11.05.2022 • Accepted/Kabul tarihi: 02.08.2022

ABSTRACT

Aim: The aim of this study was to evaluate the relationship between depression, emotional appetite, and mindful eating in university students.

Subjects and Method: The study sample consists of 940 university students (348 males, 592 females). The "Beck Depression Inventory (BDI)" was used to determine the level of depression, the "Emotional Appetite Questionnaire (EMAQ)" to evaluate the relationship between eating behavior and mood, and the "Mindful Eating Questionnaire (MEQ)" to assess mindful eating. Some anthropometric measurements (body weight, height, waist, and hip circumferences) of the individuals were taken.

Results: The mean BDI score of males was higher than females. Out of total, 25% of the students have mild, 17% moderate, and 4% severe depression. There was a significant negative correlation between depression and body mass index (BMI) (r: -0.124). As the BDI score increases, the EMAQ scores increase. A significant positive correlation was found between a negative score of EMAQ and BMI (r: 0.120). It was determined that the MEQ score decreased as the level of depression increased. The MEQ score was negatively correlated with both the EMAQ negative and positive scores to a significant degree (respectively, -0.258, -0.195). As the MEQ score increases, the BMI decreases.

Conclusion: University students are at risk for depression. Negative mood can cause obesity by affecting the amount of food consumed, diet quality, and food choices because of emotional appetite. Mindful eating can prevent obesity by having a positive effect on both depression and emotional appetite. Nutritional knowledge and habits of depressed individuals should be evaluated by dietitians.

Keywords: Depression, emotional appetite, mindful eating

ÖZET

Amaç: Bu çalışma üniversite öğrencilerinde depresyon, duygusal iştah ve yeme farkındalığı arasındaki ilişkinin değerlendirilmesi amacıyla yürütülmüştür.

Bireyler ve Yöntem: Araştırmanın örneklemini, 940 üniversite öğrencisi (348 erkek, 592 kadın) oluşturmaktadır. Depresyon düzeyini belirlemek amacıyla "Beck Depresyon Ölçeği (BDÖ)", yeme davranışı ile duygu durumu ilişkisini değerlendirmek amacıyla "Duygusal İştah Anketi (DİA)" ve yeme farkındalığının değerlendirilmesi amacıyla "Yeme Farkındalığı Ölçeği (YFÖ)" kullanılmıştır. Bireylerin bazı antropometrik ölçümleri (vücut ağırlığı, boy uzunluğu, bel ve kalça çevresi) alınmıştır.

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Bulgular: Erkeklerde BDÖ ortalama puanı kadınlardan daha yüksektir. Öğrencilerin %25'i hafif, %17'si orta ve %4'ü şiddetli düzeyde depresyona sahiptir. Depresyon ölçeği puanı ile beden kütle indeksi (BKİ) arasında negatif yönlü ve anlamlı korelasyon saptanmıştır (r: -0.124). Depresyon ölçeği puanı arttıkça, DİA puanları artmaktadır. Duygusal iştah anketi negatif toplam puanı ile BKİ arasında pozitif yönlü ve anlamlı ilişki bulunmuştur (r: 0.120). Yeme farkındalığı toplam puanının ise depresyon düzeyi arttıkça azaldığı belirlenmiştir. Yeme farkındalığı toplam puanı hem DİA negatif hem de DİA pozitif toplam puanları ile negatif yönlü ve anlamlı korelasyon göstermiştir (sırasıyla, -0.258, -0.195). Yeme farkındalığı ölçeği toplam puanı arttıkça BKİ azalmaktadır.

Sonuç: Üniversite öğrencileri depresyon açısından risk altındadır. Olumsuz duygu durumu duygusal iştah sonucu tüketilen besin miktarını, diyet kalitesini ve besin seçimlerini etkileyerek obeziteye neden olabilir. Yeme farkındalığı hem depresyon hem de duygusal iştah üzerinde olumlu etki göstererek obeziteyi önleyebilir. Depresif bireylerin beslenme alışkanlıklarının diyetisyenler tarafından değerlendirilmesi önemlidir.

Anahtar kelimeler: Depresyon, duygusal iştah, yeme farkındalığı

INTRODUCTION

Depression, defined as a mood disorder dominated by a deep sadness that negatively affects an individual's thoughts, feelings, and behaviors, is a common disease worldwide (1). Just as depression affects nutritional status, nutritional status also affects depression (2). Although depression is typically characterized by loss of appetite followed by weight loss, it can also cause increased appetite and weight gain (3). According to the Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5), there are many subtypes of depression (4). While melancholic depression is associated with anorexia and insomnia, atypical depression is associated with increased appetite, fatigue, and weight gain (2). The association between atypical depression and weight gain is explained by emotional appetite (3).

Emotional appetite is defined as eating behavior that occurs only against emotional change, not because of the feeling of hunger, mealtime, or social necessity (5). Individuals with emotional appetites often eat to cope with stress, anxiety, frustration, sadness, and anger, and they have difficulty controlling their food intake. The most important point about emotional appetite is that the individual consumes delicious but non-nutritious and high-energy foods (6). Therefore, emotional appetite is often associated with weight gain (7).

Mindful eating may be a key factor in countering food intake that occurs in response to depressive symptoms in individuals with atypical characteristics and emotional appetite (6). Mindful eating is defined as noticing how and why eating behavior occurs, internalizing physical hunger and satiety signals and being aware of feelings and thoughts, focusing on the food to be consumed at that moment without being affected by environmental factors and without judging food choices, rather than what is eaten by internal and external processes (8). Mindful eating leads individuals to more conscious food consumption and plays an active role in weight control (9). There are studies showing that as mindful eating increases, the level of depression (2,10) and emotional appetite decrease (6,11). Besides, there are also studies showing that overweight and obese individuals have low levels of mindful eating (8,12).

Problems such as making new friends, separation from the family, decreased social support, increased responsibility, and economic difficulties experienced during the process of adaptation to the university may increase the risk of depression in university students (13). Both depression and irregular eating habits of students can predispose them to emotional appetite. In this study, it was aimed to reveal the associations between depression, emotional appetite, and mindful

eating in university students. The secondary aim of the study was to associate depression, emotional appetite, and mindful eating with some anthropometric measurements.

SUBJECTS AND METHOD

Participants

It was found that it should be at least 115 individuals in the study when calculated using the correlation bivariate normal model with 5% margin of error, 95% confidence interval, and 80% power using the G-power 3.1.9.4 program. This study was conducted with a total of 940 university students, 348 males (37.0%) and 592 females (63.0%), aged 18-32 years, who study in different departments at Gazi University. Students who did not meet exclusion criteria were included in the study. The exclusion criteria were as follows: being under 18 years, having a physical or mental disability, undergoing psychiatric drug use in the last 6 months, and any chronic disease diagnosis. The study was approved by the Gazi University Ethics Commission dated 21/12/2020 (Research Code: 2020-738). Participants were informed about the study, and their declarations on volunteering were received.

Data Collection Tools

The data of the study were collected by face-to-face interview technique through a questionnaire. The questionnaire form included questions about the general characteristics and nutritional habits of individuals and some anthropometric measurements. The "Beck Depression Inventory (BDI)" was used to determine the level of depression, the "Emotional Appetite Questionnaire (EMAQ)" to evaluate the relationship between eating behavior and mood, and the "Mindful Eating Questionnaire (MEQ)" to assess mindful eating.

Beck Depression Inventory (BDI)

Beck et al. (14) developed this 21-item self-assessment scale to measure the behavioral symptoms of depression in adolescents and adults and to determine the risk for depression. Its validity and reliability in Turkish were made by Hisli (15). A high total score indicates that the severity level of depression is also high. On the scale, 0-9 points are interpreted as no depression, 10-16 points as mild, 17-29 points as moderate, and 30-63 points as severe depression (16).

Emotional Appetite Questionnaire (EMAQ)

The Emotional Appetite Questionnaire (EMAQ) was developed by Nolan et al. (17) to evaluate emotional eating. Its validity and reliability in Turkish were made by Demirel et al. (18). The scoring of the scale is graded as "1-4" (less), "5" (same), and "6-9" (more). The presence of emotional eating is evaluated in negative/positive emotions (14 items) and negative/positive situations (8 items). The EMAQ negative total score is obtained by summing the scores of negative emotions and negative situations, and EMAQ positive total score is obtained by summing the scores of positive emotions and positive situations. This scale, which does not have any cut-off points, shows which emotions and situations in emotional eating may exist (18).

Mindful Eating Questionnaire (MEQ)

The Mindful Eating Questionnaire (MEQ), which is developed by Framson et al. (19), questions the associations between eating behavior, awareness, and emotional state. This scale, adapted to Turkish by Kose et al., consists of 7 subgroups and 30 questions measured with a 5-Likert type (1=Never, 5=Always). Subgroups of the scale are disinhibition, emotional eating, eating control, focus, eating discipline, mindfulness, and interference. The high score obtained from each subgroup indicates that the individual has the feature in which the relevant subgroup is evaluated. The scale also gives the total mindful eating score (8).

Anthropometric Measurements

The body weight, height, waist circumference, and hip circumference of the individuals were measured by the researchers following the usual methods (20). The

BMI (kg/m^2), waist/hip ratio, and waist/height ratio were calculated using the data obtained. Individuals' BMI of <18.50 kg/m^2 is accepted as underweight, 18.50-24.99 kg/m^2 as normal, 25.00-29.99 kg/m^2 as overweight, and 30.00 kg/m^2 as obesity (21). No classification was made for waist/hip ratio and waist/height ratio, but their relationship with depression, emotional appetite, and mindful eating scores was evaluated.

Statistical Analysis

In the statistical evaluation of the data, continuous variables were expressed as mean ($\bar{x}$) and standard deviation (*SD*), and categorical variables were expressed as number (*n*) and percentage (%). The Chi-square test was used to compare categorical data. In order to determine whether there was a difference between the continuous variables, the Independent Samples t test was used in the independent groups if the variables showed normal distribution, and the Mann-Whitney U test was used if the variables did not show a normal distribution. The Kruskal-Wallis test ($\chi 2$) was used to compare more than two independent groups (depression level), and then the Mann Whitney U test was used to compare the pairwise groups. Pearson correlation coefficient and Spearman correlation coefficient were used to examine the correlations between depression, emotional appetite, mindful eating scores, and anthropometric measurements. Statistical analyses were performed using the SPSS version 24.0 program (22). All statistical calculations were evaluated at 95% confidence interval, p <0.001 and p <0.05 significance levels.

RESULTS

A total of 940 university students (348 males and 592 females) participated in this study. According to BMI classification, most of the students (70.4% of males and 76.9% of females) of both genders had normal weight, 21.3% of males and 9.8% of females were overweight, and 6.3% of males and 1.8% of females were obese.

The BDI mean score of female students (11.1±8.80) was found to be significantly higher than of males (9.6±8.90) (Table 1). While 54% of the students did not have symptoms of depression, 25% had mild, 17% moderate, and 4% severe depression (Figure 1).

There was no difference between the genders in terms of EMAQ negative total scores (p>0.05), but the EMAQ positive total score of males were found to be significantly higher than females (p<0.05). The mean MEQ total score of females (95.2±12.79) was higher than males (93.3±12.61) (p<.05) (Table 1).

It was determined that depression levels differed according to gender and field of education (p<0.05). The presence of chronic disease and smoking rates were found to be higher in individuals with moderate and severe depression, respectively, compared with the other depression levels (p<0.05). While 63.7% of students who did not show symptoms of depression consumed three main meals a day, only 35.9% of those with severe depression consumed three main meals a day. It was found that as the severity of depression increased, the frequency of meal skipping increased (p<0.001) (Table 2).

There was no significant difference between EMAQ negative total scores according to depression level (p>0.05). However, the EMAQ positive total score was significantly higher in those with moderate than in those without depression (p=0.001). It was determined that the total MEQ score was lowest in individuals with severe depression (p<0.001). The BMI was significantly higher in those who did not show symptoms of depression than in those with moderate depression (p=0.002) (Table 3).

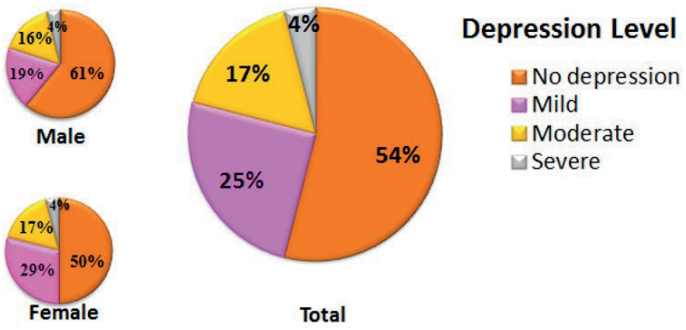

Figure 1. The depression levels of individuals

Tablo 1. The evaluation of individuals' depression, emotional appetite, mindful eating scores and some anthropometric measurements by gender

	Male (N=348)		Female (N=592)		Total (N=940)		$p^{\#}$
	$\bar{X}$	*SD*	$\bar{X}$	*SD*	$\bar{X}$	*SD*	
BDI	9.6	8.90	11.1	8.80	10.6	8.87	0.000**
EMAQ							
Negative total	50.7	17.86	51.2	18.88	51.0	18.50	0.777
Positive total	44.0	12.70	41.3	11.99	42.3	12.32	**0.002***
MEQ							
Disinhibition	15.5	3.78	15.9	3.94	15.7	3.88	0.059
Emotional eating	16.8	4.34	15.5	4.72	16.0	4.63	**0.000****
Eating control	13.3	3.45	14.5	3.54	14.1	3.57	**0.000****
Focus	13.6	2.84	14.3	2.62	14.1	2.72	**0.000****
Eating discipline	11.9	3.29	12.0	3.16	12.0	3.21	0.625
Mindfulness	15.7	2.52	15.9	2.22	15.8	2.34	0.646
Interference	6.5	1.76	7.0	1.81	6.8	1.80	**0.000****
Total	93.3	12.61	95.2	12.79	94.5	12.75	**0.039***
BMI (kg/m^2)	24.0	3.53	21.6	2.95	22.5	3.38	**0.000****
Waist circumference (cm)	85.9	11.60	72.6	9.33	77.5	12.07	**0.000****
Hip circumference (cm)	100.9	10.71	96.2	8.15	97.9	9.46	**0.000****
Waist/hip ratio	0.85	0.07	0.76	0.08	0.79	0.09	**0.000****
Waist/height ratio	0.48	0.07	0.44	0.06	0.46	0.06	**0.000****

BDI: Beck Depression Inventory, BMI: Body Mass Index, EMAQ: Emotional Appetite Questionnaire, MEQ: Mindful Eating Questionnaire.
*#Independent sample t test, *p<0.05, **p<0.001*

A significant negative association was found between the BDI score and BMI (p<0.001), waist circumference (p<0.05), and hip circumference (p<0.001) measurements. Positive significant relationships were found between the BDI score and the EMAQ negative and positive scores (p<0.001). There were significant positive associations between the negative total score of the EMAQ and BMI, waist circumference, waist/hip, and waist/height ratios. While the EMAQ positive total score was significantly negatively associated with hip circumference, it was significantly positively associated with waist/hip ratio (Table 4).

The MEQ total score was significantly negatively associated with both EMAQ negative and positive total scores. Besides, the MEQ total score was significantly negatively associated with BMI, waist circumference, hip circumference, waist/hip ratio, and waist/height ratio (Table 4).

DISCUSSION

Problems experienced during the adaptation process to university may increase the risk of depression in university students (13). In a meta-analysis of 37 studies, the prevalence of depression was found to be 24.4% in university students (23). In this study, 46.0% of the students had mild, moderate, or severe depression (Figure 1). The reason for the high prevalence of depression in our study may be attributed to the fact that most of the students have received education in the field of healthcare. Theoretical education, clinical practices, and social and personal life can create stress in the students who study in the field of healthcare, and depression may occur when these students cannot cope with stress.

While the level of depression does not differ regarding gender in some studies (24,25), it is higher in females

Tablo 2. The distribution of some characteristics of individuals according to their depression level

	Depression level										χ^2	$p^{\#}$
	No depression (N=508)		Mild (N=236)		Moderate (N=157)		Severe (N=39)		Total (N=940)			
	n	%	*n*	%	*n*	%	*n*	%	*n*	%		
Gender												
Female	295	58.1	170	72.0	103	65.6	24	61.5	592	63.0	14.047	**0.003****
Male	213	41.9	66	28.0	54	34.4	15	38.5	348	37.0		
Field of education												
Healthcare	246	48.4	89	37.7	55	35.0	16	41.0	406	43.2	20.864	**0.013***
Engineering/architecture	72	14.2	35	14.8	23	14.6	5	12.9	135	14.4		
Education	99	19.5	44	18.6	40	25.5	11	28.2	194	20.6		
Social	91	17.9	68	28.9	39	24.9	7	17.9	205	21.8		
Presence of chronic disease												
Yes	29	5.7	18	7.6	20	12.7	4	10.3	71	7.6	8.931	**0.030***
No	479	94.3	218	92.4	137	87.3	35	89.7	869	92.4		
Smoking status												
Yes	138	27.2	46	19.5	44	28.0	15	38.5	243	25.9	9.060	**0.029***
No	370	72.8	190	80.5	113	72.0	24	61.5	697	79.1		
Number of main meals												
1	11	2.2	7	3.0	9	5.7	1	2.6	28	3.0		
2	173	34.1	107	45.3	84	53.5	24	61.5	388	41.3	37.728	**0.000****
3	324	63.7	122	51.7	64	40.8	14	35.9	524	55.7		
Number of snacks												
0	119	23.4	48	20.3	36	22.9	11	28.2	214	22.8	6.423	0.697
1	203	40.0	106	44.9	54	34.4	15	38.5	378	40.2		
2	132	26.0	59	25.0	49	31.2	8	20.5	248	26.4		
≥3	54	10.6	23	9.7	18	11.5	5	12.8	100	10.6		
Meal skipping												
Yes	202	39.8	123	52.1	91	58.0	24	61.5	440	46.8	24.041	**0.000****
No	306	60.2	113	47.9	66	42.0	15	38.5	500	53.2		

*Chi-square test, *p<0.05, **p<0.001*

in some studies (26,27). In this study, the level of depression was also found to be higher in females than males. The higher frequency of depression in females is explained by genetic factors, hormonal changes, menstrual cycle, types of drugs, and social opportunities (28).

Depression is recognized as both a cause and a consequence of obesity (29). Many studies have shown a positive association between depression and BMI (7,30). However, in this study, it was found that as the level of depression increases, BMI decreases (Table 4). In addition, it is known that the type of depression associated with obesity is atypical depression. However, in this study, it is not known which type of depression individuals with depression have.

Emotional appetite, which is one of the mechanisms explaining the association between obesity and depression, is generally accepted as a reaction to negative emotions (31). A study conducted with Dutch adults found that as depressive symptoms increased, emotional appetite also increased (30). Similarly, in a study of 1453 university students, depression symptoms were found to be positively associated with emotional appetite (7). In accordance with the

Tablo 3. Emotional appetite, mindful eating scores and some anthropometric measurements according to the depression levels of the individuals

	No depression (N=508)		Mild (N=236)		Moderate (N=157)		Severe (N=39)		Total (N=940)		$p^{\#}$
	$\bar{X}$	*SD*	$\bar{X}$	*SD*	$\bar{X}$	*SD*	$\bar{X}$	*SD*	$\bar{X}$	*SD*	
EMAQ											
Negative total	49.5	17.22	52.2	9.00	54.0	21.12	51.0	19.00	51.0	18.50	0.064
Positive total	$41.2^{a,b,c\S}$	12.52	$43.9^{b,a}$	11.49	$44.6^{c,a,d}$	12.38	$38.0^{d,c}$	11.85	42.3	12.32	**0.000****
MEQ-Total											
Disinhibition	$16.2^{a,c}$	3.61	15.4^{b}	4.17	$14.8^{c,a}$	4.06	15.8^{d}	3.83	15.7	3.88	**0.001***
Emotional eating	$16.8^{a,b,c}$	4.04	$15.4^{b,a}$	5.00	$14.8^{c,a}$	4.88	14.5^{d}	6.38	16.0	4.63	**0.000****
Eating control	$14.5^{a,b,c,d}$	3.34	$14.0^{b,a,d}$	3.77	$13.3^{c,a,d}$	3.66	$12.1^{d,a,b,c}$	3.85	14.1	3.57	**0.000****
Focus	13.9	2.69	14.3	2.65	14.1	2.83	14.3	3.12	14.1	2.72	0.143
Eating discipline	$12.6^{a,b,c,d}$	3.14	$11.4^{b,a}$	2.89	$11.1^{c,a}$	3.30	$10.5^{d,a}$	3.58	12.0	3.21	**0.000****
Mindfulness	$16.1^{a,b,c,d}$	2.32	$15.5^{b,a,d}$	2.23	$15.8^{c,a,d}$	2.40	$14.1^{d,a,b,c}$	2.08	15.8	2.34	**0.000****
Interference	6.6	1.84	7.0	1.71	6.6	1.87	7.3	1.58	6.8	1.80	0.113
Total	$96.8^{a,b,c,d}$	11.98	$92.9^{b,a}$	13.17	$90.5^{c,a}$	12.58	$89.1^{d,a}$	14.26	94.5	12.75	**0.000****
BMI (kg/m²)	$22.7^{a,c}$	3.19	22.5^{b}	3.32	$21.9^{c,a}$	3.94	22.3^{d}	3.46	22.5	3.38	**0.002***
Waist circumferences (cm)	78.2	12.31	77.2	11.40	76.1	12.64	76.5	10.22	77.5	12.07	0.140
Hip circumferences (cm)	$98.6^{a,c}$	9.34	97.6^{b}	8.61	$96.4^{c,a}$	11.28	96.8^{d}	6.77	97.9	9.46	**0.008***
Waist/hip ratio	0.79	0.09	0.79	0.09	0.79	0.08	0.79	0.09	0.79	0.09	0.865
Waist/height ratio	0.46	0.06	0.46	0.07	0.45	0.07	0.45	0.06	0.46	0.06	0.126

BDI: Beck Depression Inventory, BMI: Body Mass Index, EMAQ: Emotional Appetite Questionnaire, MEQ: Mindful Eating Questionnaire
[#]Kruskal-Wallis test, [§]Mann Whitney U test. The presence of more than one letter indicates that the difference between those groups is significant.
**p<0.05, **p<0.001*

literature, our study also showed that as the depression score increases, emotional appetite increases (Table 4). Emotional appetite can result in obesity, as it is associated with higher consumption of high-energy foods such as chocolate, cake, biscuits, pastries, pizza, hamburgers, and French fries (31). Emotional appetite has been shown to be positively associated with BMI in many cross-sectional studies (32,33). Similarly, in this study, it was shown that as the EMAQ negative total score increases, the BMI also increases (Table 4). Negative emotion stimuli can cause an increase in body weight by increasing the tendency of individuals to eat. This effect is also important in establishing the link between depression and obesity, as emotional appetite is characterized by a tendency to experience particularly negative emotions.

Mindful eating decreases the relevance of the act of eating by avoiding negative emotions, and it ensures that emotions are accepted (34). It has been reported that mindful eating reduces stress and depression (2,10), and emotional appetite decreases as mindful eating increases (6,35). In our study, it was also shown that mindful eating was negatively associated with depression and emotional appetite (Table 4). This can be explained by the fact that as mindful eating of individuals increases, they can learn to accept negative emotions, thereby suppressing emotional appetite.

Mindful eating reduces the consumption of unnecessary foods and directs individuals to choose healthier foods. Therefore, it is thought to be an effective method in reducing the risk of obesity and even in the management of permanent weight loss (36). A study shows that there is a negative association between eating awareness and BMI (19). Similarly, in this study, as mindful eating increased, BMI decreased. This situation can be explained by the fact that mindful eating improves control of

Tablo 4. The relationship between depression, emotional appetite and mindful eating scores and some anthropometric measurements

	BDI	EMAQ-Negative total	EMAQ-Positive total	BMI (kg/m²)	Waist circumferences (cm)	Hip circumferences (cm)	Waist/hip ratio	Waist/height ratio
MEQ								
Disinhibition	**-0.150****	**-0.262****	**-0.208****	**-0.149****	**-0.096****	**-0.093****	-0.050	**-0.080***
Emotional eating	**-0.191****	**-0.257****	**-0.065***	**-0.091****	-0.013	**-0.067***	0.044	**-0.067***
Eating control	**-0.159****	**-0.219****	**-0.142***	**-0.227****	**-0.194****	**-0.157****	-0.129**	**-0.144***
Focus	**0.071***	-0.052	-0.041	0.006	-0.048	-0.030	-0.062	0.005
Eating discipline	**-0.279****	-0.053	**-0.222****	0.037	-0.035	0.046	**-0.076***	-0.027
Mindfulness	**-0.164****	-0.011	-0.019	0.034	0.015	**-0.067***	-0.044	0.020
Interference	0.018	-0.014	0.058	-0.057	-0.021	-0.044	-0.012	0.011
Total	**-0.247****	**-0.258****	**-0.195****	**-0.134****	**-0.110****	**-0.085****	**-0.081***	**-0.091****
BDI	1.000	**0.089****	**0.119****	**-0.124****	**-0.069***	**-0.110****	-0.022	-0.049
EMAQ-Negative total		1.000	0.048	**0.120****	**0.098****	0.047	0.078*	0.117**
EMAQ-Positive total			1.000	0.028	0.051	**-0.080***	**0.112****	0.026
BMI (kg/m²)				1.000	0.705**	**0.710****	**0.398****	**0.693****
Waist circumferences (cm)					1.000	**0.677****	**0.799****	**0.933****
Hip circumferences (cm)						1.000	0.165**	**0.633****
Waist/hip ratio							1.000	**0.741****
Waist/height ratio								1.000

BDI: Beck Depression Inventory, BMI: Body Mass Index, EMAQ: Emotional Appetite Questionnaire, MEQ: Mindful Eating Questionnaire
Pearson correlation coefficient was used for normally distributed data. Spearman correlation coefficient was used for non-normally distributed data.
**p<0.05, **p<0.001*

overeating, increases hunger and satiety awareness, and decreases depression and anxiety.

Although the use of the scales with international validity and reliability and large sample size are the strengths of the study, there are also some limitations in the present study. The scales used to assess depression and emotional appetite are self-reported and only describe tendencies and symptoms, and do not diagnose clinical conditions. It is known that different types of depression may affect food intake in different ways, and in this study, the fact that the type of depression of individuals is not known makes it difficult to interpret some data.

As a result, this study showed that university students are at risk for depression. Instead of homeostatic hunger that develops with physiological signals, eating with an emotional appetite, especially with negative emotions, can lead to bad eating habits, thus obesity. Mindful eating can reduce depression and emotional appetite by preventing individuals' negative emotional changes, and it may also prevent obesity by correcting bad eating habits. For this reason, mindful eating and emotional appetite control can be recommended for the prevention and treatment of obesity in university students. In addition, it is necessary to determine the nutritional knowledge and habits of individuals with depressive symptoms, thereby developing appropriate recommendations.

Author contributions ▪ Yazarlık katkısı: *Study design: EY, OY; Data collection: EY, OY; Data analysis: OY; Draft preparation: EY, OY; Critical review for content: EY; Final approval of the version to be published: EY, OY ▪ Çalışmanın tasarımı: EY, OY; Çalışma verilerinin elde edilmesi: EY, OY;*

Verilerin analiz edilmesi: OY; Makale taslağının oluşturulması: EY, OY; İçerik için eleştirel gözden geçirme: EY; Yayınlanacak versiyonun son onayı: EY, OY.

Ethics approval ▪ Etik Kurul Onayı: *The study approved by the Gazi University Ethics Commission dated 21/12/2020 (Research Code: 2020-738). ▪ Bu çalışma 21/12/2020 tarihli Gazi Üniversitesi Etik Komisyonu onayıyla yürütülmüştür (Araştırma Kodu: 2020-738).*

Conflict of interest ▪ Çıkar çatışması: *Yazarlar çıkar çatışması olmadığını beyan ederler. ▪ The authors declare that they have no conflict of interest.*

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