Relationships of Body Image and Eating Attitudes with Sociodemographic, Psychologic and Nutritional Factors in University Students Attending First Classes

Üniversite Birinci Sınıf Öğrencilerinin Beden İmgesi ve Yeme Tutumlarının Sosyodemografik, Psikolojik ve Beslenme Faktörleri ile İlişkisi

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ABSTRACT Objective: In this study, we aimed to determine perception, thoughts and behaviors on nutrition and body image of students who have just started their university education, and study their relationships with anthropometric measures, food intakes and feelings about nutrition and body image. **Material and Methods:** A total of 157 students attending the first classes of Health (n:77) and Social (n:80) Sciences Departments of Ondokuz Mayıs University were included in this study. A questionnaire on demographic characteristics and some psychometric tests (Beck Depression Inventory, Eating Attitudes Test-40 and Beck Anxiety Inventory) were applied to all participants along with some anthropometric measurements. SPSS for Windows 10.0 Statistical Package Computer Program was used for the evaluation of all data. **Results:** Eating Attitudes Test Scores in females were significantly higher than males (17.67±7.85 vs. 12.68±5.30; p=0.005 respectively). Beck Anxiety Inventory score was significantly higher in students having any disease in their first degree relatives (18.44±10.10 vs. 13.38±8.67; p=0.002). When the relationships between psychometric tests with age and body weight were examined, depression and anxiety scores showed significant negative correlation only with age (p=0.005). In female students, the ratios of insufficiencies for daily carbohydrate and fat intakes along with energy intake were in high levels. **Conclusion:** Female students were more prone to develop eating disorders. Students with any health problems in their first degree relatives significantly preferred health sciences education. The results of this study must be taken into consideration by families, educators and social media in order to decrease the incidence of eating disorders since these affect physical and mental health of the adolescents adversely.

Key Words: Eating disorders; obesity; diet records; food habits; depression; anxiety disorders; adolescent

ÖZET Amaç: Bu çalışmada, üniversite eğitimine yeni başlamış öğrencilerin beslenme ve beden imgesine ilişkin algı, düşünce ve davranışlarının belirlenmesi ve bunun antropometrik ölçümler, besin tüketimleri ve duygu durumları ile ilişkilerinin araştırılması amaçlanmıştır. **Gereç ve Yöntemler:** Çalışmaya Ondokuz Mayıs Üniversitesi Sağlık (n:77) ve Sosyal (n:80) Bilimler Bölümlerinde birinci sınıfa devam eden toplam 157 öğrenci alınmıştır. Bütün katılımcılara demografik özelliklerine ilişkin bir soru formu ile birlikte bazı psikometrik testler [Beck Depresyon Envanteri (BDE), Yeme Tutumu Testi (YTT), Beck Anksiyete Envanteri (BAE)] uygulanmış ve antropometrik ölçümleri alınmıştır. Bütün verilerin değerlendirilmesinde Windows için SPSS sürüm 10.0 İstatistik Paket Programı kullanılmıştır. **Bulgular:** Kızlarda yeme tutumu testinden alınan puan, erkeklerin aldığı puandan istatistiksel olarak önemli düzeyde daha yüksektir (sırasıyla, 17,67±7,85 ve 12,68±5,30; p=0,005). Birinci derece akrabasında herhangi bir hastalık bulunan öğrencilerin anksiyete puanı, diğerlerinden istatistiksel olarak önemli düzeyde daha yüksektir (sırasıyla, 18,44±10,10 ve 13,38±8,67; p=0,002). Psikometrik testlerin yaş ve vücut ağırlığı ile ilişkisi incelendiğinde, depresyon ve anksiyete puanlarının sadece yaş ile anlamlı negatif korelasyon gösterdiği bulunmuştur. Kız öğrenciler arasında günlük enerji ile birlikte karbonhidrat ve yağ tüketimleri yetersiz olanlar oldukça yüksek düzeydedir. **Sonuç:** Kız öğrenciler yeme bozukluğu gelişmesine daha yatkın bulunmuştur. Birinci derece yakınlarında herhangi bir sağlık sorunu bulunan öğrenciler sağlık bilimleri alanında eğitim almayı anlamlı düzeyde tercih etmişlerdir. Adölesanlarda ruhsal ve fiziksel gelişmeyi olumsuz yönde etkileyen yeme bozuklukları sıklığının azaltılmasında ailelerin, eğitimcilerin ve sosyal medyanın konuya gereken duyarlılığı göstermesi oldukça önemlidir.

Anahtar Kelimeler: Yeme bozuklukları; obezite; diyet kayıtları; yemek alışkanlıkları; depresyon; anksiyete bozuklukları; ergen

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Eating disorders in children and adolescents remain as a serious problem and may result in premature deaths or life-long medical and psychosocial morbidity. Despite increasing awareness of the major eating disorders, a specific etiology for the pathogenesis of anorexia nervosa (AN) and bulimia nervosa (BN) remains unclear. Rather than a single factor-causal theories, eating disorders are now viewed as multifactorial disorders with the symptom pattern representing a final common pathway.[1] Scientists have focused variously on the contribution of environmental and social factors, psychological predisposition, and biological vulnerability with recent familial aggregation studies renewing interest in the contribution of genetic predisposition. Dieting continues to be a common entry point in both syndromes, with the greatest risk being the group of severe dieters.[2] Not surprisingly, therefore, sociocultural and environmental factors, as they relate to ideal body shape, are thought to play an important role in the development of eating disorders. The neurotransmitter serotonin is known to affect appetite control, sexual and social behavior, stress responses, and mood. The major serotonin metabolite, 5-hydroxyindoleacetic acid, is low in people who are underweight with AN, but then rises to above normal levels in those who have made long-standing recoveries.[3,4]

In Western societies, eating disorders especially among young women and adolescents are known to occur with increasing frequency. There is uncertainty between boundaries of normal eating behavior and eating pathology. In fact, these sub-threshold cases, especially in young women, are more commonly seen than clinical situations which reached the level of psychiatric disorders.[5-7]

In addition to differences related to eating behavior, there are gender differences especially in the perception of body image and in dietary habits. Studies indicate that all of these situations are more common in women.[8] From this perspective, it is important to investigate undiagnosed eating disorders or hidden mild diseases, especially in the young people to get the protective measures and recognition of the disease.

In recent years, especially with the influence of media, eating disorders in young people, health problems caused by nutritional deficiency and imbalance has been increasing gradually. In a study individuals who frequented pro-eating disorder sites had showed higher levels of body dissatisfaction and eating disturbance than a control group.[9] Inadequate and unbalanced nutrition during adolescence not only affects physical performance, but also adversely affects mental health, cognitive functions and so the quality of life.

In this study, we aimed to evaluate the nutritional status and eating attitudes of university students attending first classes at different Departments of Ondokuz Mayıs University (OMU), and to investigate its relation with accompanying sociodemographic characteristics, anthropometric measurements and moods.

MATERIAL AND METHODS

Two hundred students attending the first classes of health and social departments at OMU between 2009-2010 were planned to be included in this study. At the end, a total of 157 students [77 Health Sciences students (Group 1) and 80 Social Sciences students (Group 2)] who accepted to participate were included. An informed consent was also obtained from all participants. Only new students who started their first year in the university were accepted since we wanted to include them before they have a formal training on health, nutrition and psychology at the undergraduate level. A questionnaire on demographic characteristics and family history, and some psychometric tests namely Beck Depression Inventory (BDI), Eating Attitudes Test (EAT-40) and Beck Anxiety Inventory (BAI) were applied to all participants. The information on height, body weight and waist circumference were obtained by the self reports of students. Waist circumference measurements were missing in most of the questionnaires, so it was excluded from the study. Body Mass Indexes (BMI) of the students were calculated using kg/m^2 formula.[10] A BMI lower than or equal to18.5 kg/m^2 were classified as underweight, a BMI between 18.5-24.9 kg/m^2 was regarded as normal, a

BMI between 25.0-29.9 kg/m^2 was regarded as overweight and a BMI ≥30.0 kg/m^2 was regarded as obese.[10,11]

EAT (Eating Attitudes Test): EAT developed by Garner et al. is thought to be a good screening tool for eating disorders.[12] Total score is directly related to the level of psychopathology. That means EAT not only identifies people disordered acceptable at the clinical level, but also shows individuals who are prone to this disorder. Likert-type six-digit response form which includes 40 items was filled by the participants. The cut-off score of the scale has been identified as 30. Validity and reliability studies of EAT in Turkey has been made by Savasır and Erol.[13]

BDI (Beck Depression Inventory): Inventory was developed by Beck et al. in 1961.[14] It was developed to determine the level of depression and applied to healthy people and psychiatric patients. Validity and reliability studies were made by Hisli and the cut-off score was accepted as 17.[15] It contains a total of 21 self-assessment sentences and provides four-point Likert-type measurement. Each item is scored from 0 to 3, and total score ranges between 0-63. A high total score shows the severity of the depression.

BAI (Beck Anxiety Inventory): It has been developed by Beck and colleagues.[16] Validity and reliability studies were made by Ulusoy and colleagues in our country.[17] It measures the frequency of anxiety symptoms that the individual experience. It is a Likert-type self-assessment scale consisting of 21 items and scored from 0 to 3. A high total score indicates the severity of anxiety of the individual.[17]

Personal Information Form: It was prepared to get information on socio-demographic data (age, gender, place of birth, education level, marital status, health status, the place of living, family information), height and body weight of the participants.

The days to apply tests for the students attending first classes of Health and Social Sciences Departments were planned together with classroom consultant. After giving information about the aim and the content of the study, and how to fill the test, the tests were distributed to the class on the day of appointment. Students were informed about how to record their food consumption, for at least 3 days (2 days during the week, 1 day at weekend) and were asked to record their dietary intake. The questionnaires were collected back one week later. Both anthropometric measurements and food consumptions of students were compared with Recommended Dietary Allowances (RDA) values based on age and sex.[18,19]

The data were evaluated using SPSS for Windows 10.0 Statistical Package Program. Student's t-test, Pearson's Chi-square and Fisher's exact tests were used in comparisons, and $p<0.05$ was considered as significant. In order to show the importance of the difference between the gender and eating attitude test score mean values, z-test statistic measurement was applied.

Ethics Committee Approval: Authorization for this study was obtained upon 2009/67 numbered judgment from Samsun Clinical Research Ethics Committee.

RESULTS

Out of total, 88.3% of health sciences students (Group 1) and 83.8% of social science students (Group 2) were females. In both groups, most of the students were living in dormitory (42.9% in Group 1and 60.0% in Group 2). Totally, 76.6% of students in Group 1 and 82.5% of Group 2 consisted of healthy participants (Table 1). The rate of smoking was fairly low (5.2% in Group 1and 7.5% in Group 2) in both groups. There was an important morbidity in the first degree relatives in 49.4% of Health Sciences and 32.5% of Social Sciences students (p=0.032).

There were no significant differences between the groups for the mean age, BMI or psychometric test scores (Table 2A). However, mean EAT score of females was significantly higher than males (Table 2B). Mean BMI value was significantly lower in females. The ones with a BMI lower than 18.5 kg/m^2 are accepted as underweight.[11,19] According to this, the rates under the value of 18.5

TABLE 1: Comparing the socio-demographic characteristics of the groups.

	Social Sciences		Health Sciences		
	n	%	n	%	p
Gender					
Male	13	16.3	9	11.7	0.410
Female	67	83.8	68	88.3	
Residence					
Household	14	17.5	14	18.2	
Dormitory	48	60.0	33	42.9	0.057
Student hostel	18	22.5	30	38.9	
Illness					
Present	14	17.5	18	23.4	0.361
None	66	82.5	59	76.6	
Drug tenancy					
Present	3	3.8	9	11.7	0.062
None	77	96.3	68	88.3	
Smoking					
Yes	6	7.5	4	5.2	0.746
None	74	92.5	73	94.8	
Illnesses in the 1st degree					
Present	26	32.5	38	49.4	0.032*
None	54	67.5	39	50.6	

*Significant: p<0.05.

kg/m^2 were 12.59% (n:7) in females and 4.54% (n:1) in males (p<0.001). Statistically, a z-test was applied for comparing the differences between genders and EAT scores. Mean EAT score was 12.68 in males and 17.67 in females, the difference being statistically significant (p<0.001).

For the importance of differences between departments and EAT scores, z-test statistics was used. However, no significant differences were observed between EAT scores of students attending health and social departments (17.63 and 16.33, respectively; p=0.294). The rate of females whose scores were above the EAT cut-off point, was 22% (n:30) while it was 18% (n:4) in males (p=0.237).

When we analyzed the distribution rates which were over the EAT cut-off point referring to the departments, it was 23% (n:18) in Health Sciences students and 20% (n:16) in Social Sciences students. Although the percentage of females whose depression scores were higher than BDI cut-off point was 9% (n=12), none of the males had higher depression scores than this cut off point. The analysis showed that 10% (n:8) of Health Sciences students and 5% (n:4) of Social Sciences students had a rate greater than the BDI cut-off point .

The mean anxiety score was significantly higher among students whose first degree relatives had any disease (Table 3A). Depression and anxiety scores of cigarette smokers were higher than non-smokers, but it was not statistically significant (Table 3B). When we examined the relationship of psychometric tests with age and body weight, significant negative correlations were found only between age and depression and anxiety scores (Table 4A).

Students's T-test statistics was used to compare food consumptions of the groups. Daily energy intakes were 1734±467 kcal in Health Sciences and 1836±550 kcal in Social Sciences students, but the difference was not significant (p=0.246). Nutrient

TABLE 2: Some of anthropometric measurements and psychometric test scores of the groups and the gender distribution.

A	Social Sciences (n=80)		Health Sciences (n=77)		
	Mean	SD	Mean	SD	p
Age (years)	19.85	1.71	19.88	1.44	0.895
Height (m)	1.66	0.07	1.64	0.05	0.124
Body weight (kg)	60.93	12.31	58.81	9.19	0.225
BMI (kg/m^2)	21.99	3.52	21.71	2.73	0.576
Sibling (n)	3.19	1.77	3.32	1.49	0.601
EAT scores	16.34	7.43	17.64	8.02	0.294
BDI scores	10.79	7.00	11.61	8.11	0.501
BAI scores	15.48	9.87	15.40	9.33	0.962
B	**Male students (n=23)**		**Female students (n=134)**		
Gender	**Mean**	**SD**	**Mean**	**SD**	**p**
Age (years)	20.64	2.52	19.74	1.34	0.013*
Height (m)	1.74	0.07	1.64	0.05	<0.001*
Body weight (kg)	70.73	11.61	58.12	9.74	<0.001*
BMI (kg/m^2)	23.21	2.88	21.63	3.15	0.028*
EAT scores	12.68	5.30	17.67	7.85	<0.001*
BDI scores	9.27	6.50	11.50	7.68	0.201
BAI scores	12.27	8.50	15.96	9.67	0.095

*Significant: p<0.05.

BMI: Body mass index; EAT: Eating Attitudes Test; BDI: Beck Depression Inventory; BAI: Beck Anxiety Inventory.

TABLE 3: The distribution of test scores according to presence of an illness in the first-degree relatives of the participants and tobacco smoking.

A Illness in the 1st degree relatives	Present (n=93) Mean	 SD	None (n=64) Mean	 SD	 p
EAT scores	18.27	8.35	16.09	7.18	0.082
BDI scores	12.09	7.94	10.55	7.24	0.211
BAI scores	18.44	10.10	13.38	8.67	<0.001*
B **Smoking**	**Yes (n=10)** **Mean**	 **SD**	**None (n=147)** **Mean**	 **SD**	 **p**
EAT scores	18.27	8.35	16.09	7.18	0.082
BDI scores	12.09	7.94	10.55	7.24	0.211
BAI scores	18.44	10.10	13.38	8.67	<0.001*

*Significant: p<0.05.

BMI: Body mass index; EAT: Eating Attitudes Test; BDI: Beck Depression Inventory; BAI: Beck Anxiety Inventory.

intakes of groups were compared in Table 4B, and no significant difference was found between groups except for mean daily sodium (Na) and magnesium (Mg) intakes. Daily fiber intakes were at critically low levels in both groups when compared to the reference values, however daily Na intakes were higher than the reference values (Table 4B). It is suggested that fiber intake should be 30-38 g/day and 21-25 g/day for males and females, respectively, and Na intake should be less than or equal to 2400 mg/day.[19,20]

When the mean daily food intakes of the two genders were compared with RDA values; insufficiencies in energy, vitamins A, B_1, B_2, B_6; potassium (K), calcium (Ca), magnesium (Mg) and zinc (Zn) consumptions of the males and the females were quite high (Table 5).

DISCUSSION

Dieting, body dissatisfaction, disordered eating and exercise behaviors are well documented among male and female university students worldwide.[21-23] Obesity, eating disorders and unhealthy dieting practices among youth are of serious public health concerns due to their high prevalence and adverse effects on psychosocial and physical health.[24-26] The prevalence of excess weight among children and adolescents has increased steadily over the past three decades.[27] Childhood obesity has more than doubled in children and tripled in adolescents in the past 30 years.[28,29] The percentage of children aged 6-11 years in the United States who were obese increased from 7% in 1980 to nearly 18% in 2010. Similarly, the percentage of adolescents aged 12-19 years who were obese increased from 5 to 18% over the same period.[28,29] In 2010, more than one third of children and adolescents were overweight or obese.[28]

Eating disorders, such as AN, BN, and binge eating disorder (BED), affect a much smaller percentage of the adolescent population (1-3%), but are of great concern given their serious health consequences.[30,31] Eating disorders not meeting clear with prevalence estimates is as high as 15%.[32] In response to this rising tide of weight-related disorders, obesity and eating disorder, researchers have begun

TABLE 4: Relation of some variables with the psychometric tests and energy and nutrient intakes of the groups.

A	EAT		Depression		Anxiety	
	r	p	r	p	r	p
Age (years)	-	0.332	0.174	0.030*	0.163	0.041*
Body weight (kg)	-	0.195	-	0.466	-	0.818
BMI (kg/m²)	-	0.547	-	0.909	-	0.319
Sibling (n)	-	0.627	-	0.657	-	0.732
BDI scores	0.278	<0.001*				
BAI scores	0.303	<0.001*	0.463	<0.001*		

B Energy and Nutrients	Group	n	Mean	SD	p
Energy (kcal)	1.00	77	1734.74	467.11	0.246
	2.00	80	1836.15	550.79	
Fiber (g)	1.00	77	19.71	6.05	0.577
	2.00	80	18.27	6.26	
Cholesterol (mg)	1.00	77	225.65	133.04	0.122
	2.00	80	192.65	108.78	
Na (mg)	1.00	77	4161.97	1081.33	0.030*
	2.00	80	3692.80	1418.14	
Mg (mg)	1.00	77	217.67	61.99	0.039*
	2.00	80	194.82	66.10	

*Significant: p<0.05.

BMI: Body mass index; EAT: Eating Attitudes Test; BDI: Beck Depression Inventory; BAI: Beck Anxiety Inventory.

TABLE 5: Insufficiency percentages of males (M) and females (F) whose nutrient consumptions were below RDA.

	Mean		SD		RDA		Insufficiency rates (%)*	
Gender	M	F	M	F	M	F	M	F
Energy (kcal)	2163	1724	537	474	2900	2200	0.85	0.86
Protein (g)	77.23	56.71	25.87	19.22	58	46	0.39	0.25
Lipid (g)	72.11	68.01	12.24	22.06	65	65	0.28	0.5
Carbohydrate (g)	294,82	217.38	93.61	65.83	300	300	0.65	0.92
Fiber (g)	22.47	18.6	7.51	5.76	25	25	0.59	0.87
Vitamin A (mg)	806.74	984.11	315.16	833.42	1000	800	0.84	0.49
Vitamin B_1 (mg)	0.81	0.66	0.26	0.19	1.5	1.1	1	0.97
Vitamin B_2 (mg)	1.3	1.02	0.59	0.36	1.7	1.3	0.83	0.86
Vitamin B_6 (mg)	1.16	0.96	0.41	0.29	2	1.6	1	0.97
Vitamin C (mg)	58.43	80	36.99	56.86	60	60	0.64	0.44
Na (mg)	4450.25	3886.55	1523.44	1192.89	2400	2400	0.08	0.06
K (mg)	1962.10	1736.89	661.58	540.52	3500	3500	1	1
Ca (mg)	541.17	527.78	218.51	215.12	1200	1200	1	0.98
Mg (mg)	234.84	203.82	75.97	61.58	350	280	0.98	0.9
P (mg)	1118.14	877.74	364.29	277.57	1200	1200	0.57	0.92
Fe (mg)	11.32	9.37	3.18	2.7	10	15	0.48	0.98
Zn (mg)	10.41	7.98	3.22	2.65	15	12	0.95	0.93

*Percentage of males and females whose nutrient consumptions were under RDA recommendations.
M: Male; F: Female.

calling for collaboration between the fields to address these disorders.[33-35] Evidence from cross-sectional studies suggests that these disorders can occur simultaneously in the same individual.[35] For example, in a large population-based survey of adolescents, Boutelle et al. found that overweight adolescents were more likely than their non-overweight peers to engage in unhealthy weight control behaviors, such as diet pill use, vomiting and laxative use.[36] Research also suggests that individuals may crossover from one condition to another.[33,35]

In our study, the mean BMI values were in normal ranges in both sexes, but it was significantly lower in females compared to males (21.63±3.15 kg/m^2 vs. 23.21±2.88 kg/m^2, p=0.028). The percentage of underweights (BMI <18.5 kg/m^2) was 12.59% (n:17) in females and 4.54 % (n:1) in males. Distribution of underweight students in Health and Social Science departments were found to be extremely similar [11.25% (n:9) and 11.49% (n:9), respectively, p=0,017].

In a study, conducted in various Departments of Istanbul University, it was found that a the vast majority of young and newly registered students have shown normal BMI values.[37] Nonetheless, approximately 10% of this group was reported to be underweight. It was noteworthy that 73.1% of the students, who were underweight, were females. Besides, most of females were finding themselves as obese (64.6%).

Clinical and population studies of women have consistently demonstrated an increased association between major depression and AN, with a depression risk factor for development of incident eating disorders in adolescence.[2,38] Familial transmission of risk has emerged as an increasing focus of research attention. There are now multiple case-control studies designed to investigate the familiarity of eating disorders, which demonstrate a higher rate of AN in relatives of propends with AN. The frequency of BN is also greater in the relatives of AN propends.[4,38]

What we have determined in our study is that the mean values of anxiety test scores were significantly higher in the students who had health problems in their first degree relatives (Table 3A). Besides, detection of a positive significant correla-

tion between EAT scores and depression and anxiety scores (Table 4A), was found to be congruent with the other alternative studies, indicating the relationship of psychiatric diseases with nutritional disorders.

The prevalence of potential eating disorders among the students of Gazi University Medical Faculty was found as 13.7%. This prevalence was 20.5% in males and 11.9% in females, with a statistically significant difference ($p<0.05$) between two genders.[39]

In another study performed to investigate the relation between eating attitudes and socio-demographic characteristics in the students of Karadeniz Teknik University (KTU) Trabzon Social Health School (SHS), it was found that 4.83% of the cases scored higher than the fraction score at the EAT-40.[40]

Percentage of students who exceeded EAT cut-off points in our study was 22% (n:30) in females and 18% (n:4) in males. Furthermore, even the detected average values of three tests were higher in females compared to males, only the mean values of EAT test has been found significantly different (Table 2A). Considering the students in health and social departments, detected values that were above the EAT cut-off point were 23% (n:18) and 20% (n:20) respectively.

Recently, a study was performed among the university students in a semi-urban area and eating disorders were found more frequently in females, most frequently being AN.[41] It was concluded that it seems to be necessary to review the opinion that the eating disorder is specific to the culture by reviewing and investigating the regional distribution and prevalence of eating disorders on different sample groups, and also evaluation of childhood abuse and family functions as risk factors on eating disorders.

People suffering from eating disorders often exhibit a range of additional psychiatric disorders of Axes I or II.[42,43] This research has shown that particularly depression, anxiety disorders with a special emphasis on obsessive-compulsive disorder, substance abuse and personality disorders are frequently diagnosed in eating disorder patients.[42-46] A psychiatric comorbidity may represent an aggravating factor in the course and treatment of eating disorders. It is plausible that additional psychiatric diagnoses exacerbate the general social impairment and decrease treatment responsiveness of patients with eating disorder. A reverse relationship is also conceivable, in which high levels of eating disorder severity are linked with a greater propensity to develop or aggravate comorbid disorders.[45]

Considering the students in health and social sciences departments, detected values that were above the BDI cut-off points were 10% (n:8) and 5% (n:4) respectively. This situation may be interpreted as the female students had more predispositions to nutritional disorders and also somehow had susceptibility to related mood disorders. Students who preferred to study health sciences were much more predisposed to depression in our study; this result has made us to conclude that as they were aware of their health problems and expecting a contribution in their recovery as getting an education like this. Although, mean scores of anxiety test were not significant, high scores were suspected in females and this was commentated with the relation of measured high scores in eating attitude test. Significantly positive relations observed in between EAT, depression and anxiety scores may clearly strengthen this case (Table 4A). On the other hand, low consumption levels of vitamins B_{12}, folic acid and iron were considered that it might be related to depression and anxiety accretion.

In a study conducted to determine the risky behaviors for health in students attending OMU, ratio of female students who were dieting to lose weight in the previous month was significantly higher (%17.9) compared to males.[47] Toxicomania is such an impurity that can be observed concurrently with eating disorders. The rate of tobacco consumers in our study was low (Table 1). Even though tobacco consumers had higher scores of EAT, depression and anxiety; the difference was not significant (Table 3B). Controversially in a study, there was statistically significant association between potential eating disorder and smoking ($p<0.05$).[39]

Unlike previous studies, food consumptions of participants were also evaluated in our study. There

was no significant difference between the groups according to their mean values of nutrient intakes, except for Na and Mg. Energy and some nutrients (vitamin A, B_1, B_2, B_6, K, Ca, Mg, Fe and Zn) intakes were in quite below the required levels referring to RDA in both males and females (Table 5). Another recommendation for daily fiber intake is 14 g for every 1000 kcal or can be accepted as 25-35 g per day for adults without regarding gender.[19,20] According to this, mean values of daily fiber consumptions were in very low levels in both groups. On the other hand, mean daily Na intake was significantly higher according to the recommended daily intake values (2400 mg/day).[18-20] In female students, the ratios of insufficiencies for daily carbohydrate and fat intake along with energy intake were in dramatic levels (Table 5). These findings do not only suggest that females are predisposed to eating disorders, they seriously threaten their health due to their insufficient consumption of many nutrients. Taking in consideration of all nutrient intakes, it is obvious that inadequacy and instability in adolescence nutrition is in remarkable levels. These results may easily give rise not only to physical, but also to mental and cognitive function disorders.

Coherently with the previous researches, it was also determined in our study that adolescent girls were more prone to eating disorders and comorbid psychiatric illnesses. Besides, the rates of insufficiencies in some nutrient intakes were in high levels both in males and females. These data reveal that nutrition education and requirement of healthy menus must be underlined which will support healthy nourishment of students in all ages. Furthermore, units which concern intimately with the psychosocial problems of adolescents must be constructed in the universities. In this way, the risks can be recognized and the cases can be treated in the early stages, besides instigation of the related centers. Ultimately, the goals include primary prevention, early recognition and treatment to prevent long-term sequelae.

LIMITATIONS OF THE STUDY

In this study, psychometric tests, anthropometric measurements and food consumption records were based on participants' self-declarations, so they may be incorrect. Especially, food consumptions might not have been reported correctly. The scope of this study have not included whether these students had chosen their faculties intentionally, or they had come just by chance. Biochemical parameters reflecting nutritional status were not included which is also a limitation. However, since we investigated the psychological statuses of the university students along with their nutritional status and related socio-demographic factors, this study is supposed to be a valuable one.

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