



## Original Article

# Investigation of symptoms of anorexia nervosa and related factors in university students

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### Abstract

**Objectives:** This study aims to investigate the effects of social and body perception as well as other variables (gender, financial situation, appetite, doctor recommended special diet, BMI, exercise) on the development of Anorexia Nervosa (AN) in university students.

**Methods:** The population of this descriptive study consists of students at the main campus of a university (n=14109). The sample consists of 1002 students chosen among this group by random sampling method. Data were obtained by face-to-face meetings using the "Personal Information Form", "Eating Attitudes Test (EAT)" and "Social and Body Perception Form (SBPF)".

**Results:** The AN rate was 8.9% and the total SBPF score was  $21.51 \pm 21$  of the students aged  $20.24 \pm 20$ . SBPF Cronbach alpha coefficient was found to be 0.83. A statistically significant difference was detected between the EAT total scores and gender, financial situation and doctor recommended special diet ( $p < 0.05$ ). A statistically significant relationship was detected between the EAT total scores and SBPF total scores ( $p < 0.05$ ).

**Conclusion:** The study found that the social and body perception of the students with AN was low. Social and body perception is an important factor in the development of AN.

**Keywords:** Anorexia nervosa; eating behavior; social and body perception; university students.

### What is known on this subject?

- AN is encountered in young females with higher sociocultural and economic levels more frequently. AN and body image is associated.

### What is the contribution of this paper?

- A statistically significant difference was found between the total score of the Eating Attitudes Test (EAT) and gender, financial status and doctor recommended special diet. Social and body perception levels are important factors in the development of AN.

### What is its contribution to the practice?

- Social and body perception status of high risk groups can be assessed, and solution strategies developed for the groups with low perception levels to prevent development of AN.

Anorexia nervosa (AN) is the excessive fear of gaining weight, resulting in excessive limitations on eating amounts.<sup>[1]</sup> The frequency of occurrence varies based on diagnosis criteria and sampling features. Studies in the literature

have indicated that being young, having a first degree relative with AN (mother, father, sibling), death or illness of a loved one, adapting to a new school, work or home environment, changes in weight, separation of spouses, adolescence problems, socio-cultural norms, and sexual trauma can cause the development of eating disorders.<sup>[2,3]</sup> More than 90% of individuals with eating disorders are younger than 25.<sup>[4]</sup> University education coincides with the end of adolescence. Individuals experience rapid changes in their body, pay more attention to their physical appearance and other people's appearances, compare themselves with others more during adolescence, which affects body perception.<sup>[5,6]</sup> Moreover, old and new moral values, and assessments on social media play a role in self-acceptance of an individual.<sup>[5,6]</sup> Following a diet during adolescence and irregular eating habits increase the risk of converting an eating attitude into irregular eating habits

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during early adulthood.<sup>[7]</sup> University life is a period where individuals drift apart from their family environment, experience changes in their eating habits and may have difficulties adapting to a new environment. Additionally, students have competitive and perfectionist personalities, thus increasing stress and worry.<sup>[8]</sup> This may have a role in the occurrence of future eating disorders. Being part of a group and wishing to assert oneself affects the importance individuals attach to physical appearance. Therefore, encountering individuals from different regions and sociocultural sections might influence the development of eating disorders. Considering these factors, the objective of this study was to examine the effect of social and body perception as well as other variables (gender, financial status, appetite, doctor recommended special diet, BMI and exercise) on the occurrence of AN symptoms in university students. This study is thought to contribute to the relevant literature in terms of revealing the current status of university students regarding this subject as it is a distinctive study on university students' eating attitudes and AN symptoms.

## Materials and Method

### Sample

The population of the study included students from associate degree and license programs who studied at the central campus of Amasya University (n=14109). The number of students in all the schools at the central campus was taken from the registrar's office. The goal of the study was to reach 10% of the total student number. Sample of the study included 1410 students who were informed about the study through the basic random sampling method. Of the forms completed by the students, 241 were erroneous and deficient, thus they were excluded from the study. The study was finalized with 1002 students as 167 students declined to participate in the study.

### Data Collection Tools

**Personal Information Form:** This form included 20 questions in four sections on sociodemographic information, diet, exercising and health status.

**Eating Attitudes Test (EAT):** This was developed by Garner and Garfinkel<sup>[9]</sup> (1979) as a self-assessment scale to assess AN symptoms. It was adapted to Turkish by Savaşır and Erol<sup>[10]</sup> (1989), and used on children, adolescents, adult females. The EAT included 40 items with six-multiple-choices as a Likert-type scale. Assessment of items numbered 1, 18, 19, 23, 27, 39 were as follows: 1 point-sometimes, 2 points-rarely, 3 points-never and 0 points-always, often and frequently. Assessment of the other items were as follows: 3 points-always, 1 point-often and 0 points-other options. Total score ranged between 0 and 120. Score intervals of the scale were assessed as follows: Between 0–29 points as without AN Symptoms; 30–32 points as with Subclinical AN Symptoms; and 33–120 points as without AN Symptoms.

**Social and Body Perception Form (SBPF):** The form was developed by the researchers and included 22 questions. Scoring of the four-point Likert type scale was as follows: 3 points-always, 2 points-often, 1 point-rarely and 0 points-never. The highest score that could be obtained from the scale was 66 and the lowest was 0. The question numbered 11 was reversely scored. As the score obtained from SBPF went higher, social and body perception levels were assessed as lower. Cronbach's alpha coefficient of SBPF was found to be reliable at a high level with 0.83.

### Ethical Considerations

Amasya University Science Ethics Committee gave ethical permission for the study (30640013-044-1176). The students who volunteered to participate gave verbal consent.

### Statistical Analysis

The data were analyzed with the SPSS 20 program using mean, percentage calculation, Kruskal Wallis-H and Chi-Square. Because the expected values on the sources were not sufficient Pearson Chi-Square analysis was used through Monte Carlo simulation. The statistically significance value was set as  $p < 0.05$ .

### Limitations of the Study

Study interval was limited to the students included in the sample and the data collection tools used.

## Results

Students' score on SBPF was  $21.51 \pm 8.94$  and rate of incidence of AN symptoms was 8.9%.

### Students' Demographic Characteristics and Features On Eating Attitudes

Of the students aged  $20.24 \pm 2.06$ , 71.5% were female, 96.6% were single, 41.3% resided at the state dormitory, 68.7% had a moderate level of income, 66% did not receive a scholarship, 59.9% ate 3–4 meals a day, 75.8% did not exercise regularly and 97.2% did not have food intolerance (Table 1).

### Comparison of Students' Sociodemographic Characteristics and Total Scores On the Eating Attitudes Test

A statistically significant difference was found between the total score of the EAT and gender, financial status and doctor recommended special diet ( $p < 0.05$ ). No statistically significant correlation was found between students' total score on the EAT and marital status, appetite, last weight loss, regular exercise, sports activity they participated in, weekly or daily amount of exercising, following a special diet or having a food intolerance ( $p > 0.05$ ). Of the participants following a special

**Table 1. Students' demographic, diet, physical activity and health status characteristics**

Category	Characteristics	n	%	
Sociodemographic Information	Gender	Male	286	28.54
		Female	716	71.46
	Department	Vocational schools of higher education	349	34.83
		Vocational school of health sciences	296	29.54
		Faculties	357	35.63
	Marital status	Married	34	3.39
		Single	968	96.61
	Residence	State dormitory	414	41.32
		Private dormitory	206	20.56
	Financial status	House	382	38.12
		Good	252	25.15
		Moderate	688	68.66
	Received a scholarship	Poor	62	6.19
Yes		341	34.03	
Diet	Existence of food intolerance (yeast, gluten, lactose, etc.)	No	661	65.97
		Yes	28	2.79
	Number of daily meals	No	974	97.21
		1-2	356	35.53
		3-4	600	59.88
	Appetite	5-6	46	4.59
		Good	673	67.17
		Moderate	259	25.85
	Food that one cannot give up	Poor	70	6.99
		None	282	28.14
		Dessert	158	15.77
		Fast food	142	14.17
		Fruit	27	2.69
		Vegetables	165	16.47
		Meat products	152	15.17
	Food that one never consumes	Pastry	76	7.58
		None	390	38.92
		Dessert	29	2.89
		Fast food	47	4.69
Fruit		4	0.4	
Vegetables		363	36.23	
Meat products		137	13.67	
Exercising	Exercises regularly	Pastry	32	3.19
		Yes	250	24.95
	Type of exercise/sport	No	752	75.05
		I do not do any sports	752	75.05
		Football	50	4.99
		Volleyball	34	3.39
		Basketball	13	1.3
		Walking	76	7.58
		Fitness	64	6.39
	Weekly exercise status	Handball	13	1.3
		I do not do any sports	752	75.04
		Once a week	36	3.59
		Twice a week	105	10.48
Three times a week		60	5.99	
Four times or more a week		49	4.89	

**Table 1. Students' demographic, diet, physical activity and health status characteristics (continuation)**

Category	Characteristics	n	%	
Health status	Daily exercise status	I do not do any sports	752	75.04
		1 h	150	14.49
		2 h	80	7.98
		3 h and more	20	2
	Status of last weight loss	I did not lose any weight	459	45.81
		I lost about 1-5 kg	389	38.82
		I lost about 6-10 kg	135	13.47
		I lost about 11-15 kg	8	0.8
		I lost about 16-30 kg	11	1.1
	Body mass index	Underweight = <18.50	118	11.78
		Norma = 18.50–24.99	743	74.15
		Mildly overweight = >25.00	124	12.38
		Overweight = >30.00	17	1.7
	Existence of chronic disease	Yes	78	7.78
No		924	92.22	
Doctor recommended special diet	Yes	44	4.39	
	No	958	95.61	
Regular menstruation (n=716)	Never	52	5.18	
	Rarely	202	20.16	
	Often	223	22.26	
	Always	239	23.85	

diet, 27.3% showed AN symptoms while 8% of the participants who do not follow a special diet showed AN symptoms. Of the students with good financial status, 14.3% showed AN symptoms while 11.3% of the students with poor financial status showed AN symptoms. The rate of incidence of AN symptoms was low on students with moderate financial status. Of the female students, 10.3% had AN symptoms while 5.2% of the male students had AN symptoms (Table 2).

### Comparison of Total Score Means of Students' on SBPF and EAT

A statistically significant difference was found between the total scores of SBPF and EAT (Table 3). The SBPF score of the group with AN symptoms was higher than the other groups with the value of  $31.44 \pm 9.46$ . The students with higher scores on the EAT had low social and body perception.

## Discussion

Eating disorders are mental disorders that cause significant deterioration in health and psychosocial functions and mortality.<sup>[11]</sup> According to the EAT scores of students, 8.9% had AN symptoms. Studies in the literature stated that the rate of incidence of AN symptoms was 13–13.1%.<sup>[12]</sup>

A statistically significant difference was found between gender and total score on the EAT, and female participants' scores of AN symptoms were higher than that of males. This result shows similarity with the literature.<sup>[3,13–15]</sup>

Previous studies reported that women had high stress about complying with the physical changes especially as they go through physical changes during adolescence.<sup>[16]</sup> Conversely, men cared less about weight, instead, they focused more on masculine appearance.<sup>[8,17]</sup> Therefore, the problems related to body perception encountered by adolescent females can be associated with the fact that adolescent females experienced AN more frequently.

Some studies indicated that the use of social media, fashion magazines and television programs were correlated to irregular eating habits and body dissatisfaction.<sup>[18–21]</sup> In Turkey, the importance attached to physical appearance and especially to a slim physique of women significantly affects women living in both city centers and rural areas.<sup>[22]</sup> Studies in the literature have indicated that gender inequality had a major effect on women experiencing AN more frequently along with socio-culture and the ideal of having a slim physique.<sup>[23]</sup> Contrary to common belief, some studies have reported that occurrence of eating disorders in young males has increased.<sup>[12,24]</sup>

This study found a statistically significant difference between students' financial status and total scores on the EAT. However, some studies found no significant differences between socio-economic level and the EAT.<sup>[3,13,25–27]</sup> Socio-economic level affects the amount of money that individuals can spend on food. Budget left for nutrition may affect food choices and eating habits of individuals. Contrary to the common belief that eating disorders are mostly seen in individuals with high socio-economic and cultural levels, studies in the literature in-

**Table 2. Comparison of students' sociodemographic characteristics and total mean scores on the Eating Attitudes Test**

Characteristics	Without AN symptoms (0–29 points)		With subclinical AN symptoms (30–32 points)		With AN symptoms (33–120 points)		Total		Chi-Square Test	
	n	%	n	%	n	%	n	%	Chi-Square	p
Gender										
Male	264	92.3	7	2.4	15	5.2	286	100.0	7.748	0.021
Female	616	86.0	26	3.6	74	10.3	716	100.0		
Marital status										
Married	28	82.4	3	8.8	3	8.8	34	100.0	*	0.182
Single	852	88.0	30	3.1	86	8.9	968	100.0		
Financial status										
Good	208	82.5	8	3.2	36	14.3	252	100.0	18.720	0.001
Moderate	622	90.4	20	2.9	46	6.7	688	100.0		
Poor	50	80.6	5	8.1	7	11.3	62	100.0		
Appetite (participant's statement)										
Good	583	86.6	20	3.0	70	10.4	673	100.0	7.253	0.123
Moderate	232	89.6	10	3.9	17	6.6	259	100.0		
Poor	65	92.9	3	4.3	2	2.9	70	100.0		
Doctor recommended special diet										
Yes	29	65.9	3	6.8	12	27.3	44	100.0	*	0.001
No	851	88.8	30	3.1	77	8.0	958	100.0		
Status of last weight loss										
I did not lose any weight	408	88.9	11	2.4	40	8.7	459	100.0	*	0.370
1–5 kg	338	86.9	16	4.1	35	9.0	389	100.0		
6–10 kg	119	88.1	6	4.4	10	7.4	135	100.0		
11–15 kg	7	87.5	0	0.0	1	12.5	8	100.0		
16–30 kg	8	72.7	0	0.0	3	27.3	11	100.0		
Body mass index										
Underweight = <18.50	98	83.1	4	3.4	16	13.6	118	100.0	10.984	0.089
Normal = 18.50–24.99	664	89.4	22	3.0	57	7.7	743	100.0		
Mildly overweight = >25.00	106	85.5	6	4.8	12	9.7	124	100.0		
Overweight = >30.00	12	70.6	1	5.9	4	23.5	17	100.0		
Exercises regularly										
Yes	214	88.4	6	2.5	22	9.1	242	100.0	0.671	0.715
No	666	87.6	27	3.6	67	8.8	760	100.0		
Total	880	87.8	33	3.3	89	8.9	1002	100.0		

\*Because the expected values on the sources were not sufficient Pearson Chi-Square Analysis was used through Monte Carlo Simulation. AN: Anorexia nervosa.

**Table 3. Comparison of Students' Total Mean Scores on Social and Body Perception Form and Eating Attitudes Test**

	The Social and Body Perception Total Score						Kruskal Wallis H Test		
	n	Mean	Median	Min	Max	SD	Mean Rank	H	p
Eating Attitudes Test									
0–29 without AN symptoms	880	20.28	19	0	49	8.19	465.75	112.45	0.001
30–32 with subclinical AN symptoms	33	27.42	29	11	42	7.85	698.23		
33–120 with AN symptoms	89	31.44	31	12	66	9.46	782.04		
Total	1002	21.51	21	0	66	8.94	1–2 1–3		

AN: Anorexia nervosa; Min: Minimum; Maks: Maximum; SD: Standard deviation.

icated that eating disorders can be seen in every segment of society.<sup>[27]</sup>

The difference between the scores of BMI and EAT was statistically insignificant and the rate of incidence of AN symptoms was higher in overweight individuals (BMI >30). Similarly, studies in the literature have indicated that there were no significant correlations between BMI and EAT<sup>[28]</sup> and EAT scores of overweight individuals were higher;<sup>[29]</sup> however, there are studies that have found significant correlations between these scores.<sup>[30]</sup> EAT is used to diagnose AN based on the assumption that participants' statements are true.<sup>[10]</sup> The finding of high rates of AN symptoms in individuals with high BMI can be interpreted as individuals with obesity might have scored their body perception and discomfort about their attitudes towards eating and EAT according to a desire of ideal eating habits rather than scoring objectively.

Similarly, a study by Savaşır and Erol<sup>[10]</sup> (1989) stated that patients with anorexia may display denial behavior regarding their illness, therefore, they may not express AN symptoms completely on this scale. Thus, EAT alone may not be sufficient to diagnose AN so other patient diagnosis criteria should be used along with it. Some studies found that EAT scores were significantly higher in individuals with low BMI as expected.<sup>[13,25]</sup>

A statistically significant difference was found between the total scores on EAT and SBPF. The study found that students with low levels of social and body perception had high scores on EAT. Similarly, eating disorder risk groups had lower scores on satisfaction with body image and health assessment in the literature.<sup>[31]</sup> This situation might be interpreted as body perception is not only affected by people's own perception but also social perception.

Similar to this study, rapid social changes in recent years altered society's perspective on body image. There is a belief that having a slim physique is necessary to have a successful career in South Korea.<sup>[32]</sup> The percentage of females who desire a slim physique and are not satisfied with their weight is high in Turkey and similar to those in developed countries.<sup>[33]</sup> Moreover, the study reported that the relation between body image, self-perception and BMI can help us understand the psychopathology of eating disorders.<sup>[33]</sup>

Today's popular perspective on body image focuses on good-looking, slim and youthful appearances. This perspective is supported by television, advertisements, fashion programs, various contests and magazines. This leads people to want to change their bodies by altering their perception of their body a little more each day. This perception can be about having the perfect body size continuously presented and disregarding the ideal body size.<sup>[34]</sup> Developing discomfort about the things that individuals have not noticed or seen as a flaw until now can be regarded as unhealthy life style behaviors.

All these studies have shown that factors such as family, social and cultural values that might influence having the ideal body should be examined together. Social and body perceptions of

individuals are significant, and this perception is a significant factor affecting the eating attitudes of individuals.

Consequently, the study found that individuals showing AN symptoms had low social and body perceptions, and these perceptions are important factors in the occurrence of AN. Also, the group with BMI >30 had high scores on EAT, thus it is possible to state that EAT alone is not sufficient to assess AN symptoms. University students are in the risk group of eating disorders due to their age and psycho-social, cultural and economic changes; therefore, awareness training should be provided for this group.

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