Investigation of the relationships between eating attitudes, body image and depression among Turkish university students

**Summary. Introduction.** Eating disorders are one of the most prevalent psychiatric disorders and have become a growing problem nowadays. Research shows that eating disorders are mostly widespread in industrialized societies where beauty is associated with thinness. This study investigates the relationships between eating attitudes, body image and depression among Turkish university students aged 18 to 25. Materials and methods. The sample comprised of 221 female and 80 male university students from four different universities located in Istanbul and Ankara. Demographic Information Form, Body Image Scale, Eating Attitude Test (EAT-40) and Beck Depression Inventory were used to collect data. Height and weight of the participants were also collected to measure Body Mass Index (BMI) of the individuals. Results. This study found that 55 (18.3%) students had abnormal eating attitudes, 115 (38.2%) students had negative body image and 102 (33.9%) students showed moderate and severe levels of depression. Body image was negatively correlated with eating attitude and depression in underweight individuals when grouped according to their BMI. Being underweight was significantly higher in females. Females also had more negative body image and higher depression levels. Individuals with abnormal eating attitudes had higher depression levels. BMI and gender did not lead to any significant difference in the eating attitudes of the students. Conclusion. This study has contributed to the literature on the relationships between eating attitudes, body image and depression among Turkish university students between the ages of 18 and 25. It has further drawn attention to the importance of eating disorders in Turkey and being aware of the relationships among eating attitudes, body image, depression, and BMI. Results of the study are discussed in detail and in consideration of cultural context.

**Key words:** eating attitude, body image, depression, body-mass index, university, student.

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**Introduction.** Eating disorders are one of the most prevalent psychiatric disorders and have become a growing problem nowadays. Research shows that eating disorders are mostly widespread in industrialized societies where beauty is associated with thinness. The ‘thin ideal’ of the industrialized West seems to be creating a pressure to be thin, especially in women. I...
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**MATERIALS AND METHODS**

**Participants**

Participants were 301 university students attending different universities. These universities were Bogazici University, Sabancı University and Nisantasi University in Istanbul and Middle East Technical University (METU) in Ankara. Sabancı and Nisantasi universities are private universities, Bogazici and METU are state universities. 221 of participants (73.4%) were female and the remaining 80 (26.6%) were male. In terms of age, 194 (64.5%) participants were in between 18-21 years and the remaining 107 (35.5%) were in between 21-25 years. Inclusion criteria were being a university student and being between the ages of 18-25.

**Instruments**

Sociodemographic Information Form, Beck Depression Inventory (BDI), Eating Attitude Test (EAT-40) and Body Image Scale were used to collect data.

**Eating Attitude Test (EAT-40)**

The EAT-40 was developed by Garner and Garfinkel in 1979 to screen and assess the symptoms of anorexia nervosa; but it has been used in nonclinical samples as a general screening measure for abnormal eating attitudes. Turkish version of EAT-40 is a likert type scale with 40 items just like the original. The rating range is from ‘always’ to ‘never’ and the resulting scores range from 0 to 200. Scores of 3 and above mean that a person probably has pathological eating symptoms. The reported internal consistency of the Turkish version calculated by Cronbach alpha was 0.70.

**Body Image Scale**

Originally named Body-Cathexis Scale, has been developed by Secord and Jourand in 1953. The original scale consists of two parts and has a total of 101 items. The Turkish version of the scale is a likert type scale with 40 items (1: I like it very much, 5: I don’t like it at all). The resulting scores range from 40 to 200. The cut-off score is 135. High score indicates that the person has an unhealthy perception of body image. Participants who score above 135 are considered to have a negative body image. The reliability and validity study of the scale reported the Cronbach’s alpha reliability coefficient as 0.91.

**Beck Depression Inventory**

This is a self-report scale which measures the emotional, cognitive and motivational symptoms of depression. It was developed by Beck in 1961. The scale consists of 21 items each containing four alternatives, scored from 0 to 3. The resulting scores range from 0 to 63. The cut-off point is 17. Higher scores in the scale indicate the greater severity of depression. If the total score is below 9, it is regarded as nondepressed (normal), 9-16 mild, 17-29 moderate, 30 and over severe depression, respectively. Turkish adaptation of the scale was done by Hisli in 1988. The split-half reliability given to thinness in the society and social pressure from friends, family and social media about physical appearance pave the way for eating disorders and related consequences. Weight and body shape concerns, discrepancy between self and ideal, and perfectionism are also considered as major risk factors. Psychopathological components associated with eating disorders include a different range of emotional or behavioral problems. Most commonly, associations with other psychiatric disorders and suicidality are observed with eating disorders. Comorbidity with other psychiatric disorders include mood disorders such as depression, substance use disorders and personality disorders.

Depression and negative body image are prevalent concerns related to eating disorders. Depression is a mood disorder commonly co-occurring with eating disorders and studies indicate that depression is the most common comorbid diagnosis with eating disorders. Lifetime rates of depression in individuals with eating disorders range between 50% and 75%. Furthermore, depression is associated with increased risk for attempted suicide, especially in anorexia nervosa patients. On the other hand, approximately 30% of boys and 60% of adolescent girls report a desire to alter their shape or size. Starting in adolescence, girls are responding to weight concerns by extreme caloric restriction and severe weight control efforts such as purging. Over 80% of women in university settings report negative body image. We also know that individuals with an eating disorder have a negative body image and express a desire to be overweight. Especially, anorexia nervosa patients were shown to have high levels of negative and distorted body image.

Research has shown that eating disorders typically occur during adolescence which makes it a period of highest vulnerability for young people. Thus, there is evidence that eating disorders are common in university populations with a prevalence ranging from 8% to 17%. Research also shows that eating disorders lead to serious health consequences in the long run, if not treated. In fact, eating disorders are being increasingly recognized for mortality in young people besides having some of the highest mortality rates among all psychiatric disorders. Therefore, it is of crucial importance to screen for eating disorders in young populations and intervene at an early stage if any signs are present.

The complex relationship between eating attitudes, body image and depression continue to be a significant subject of research and data is being augmented in Western countries. Recent studies demonstrate that eating disorders are also spreading in non-Western countries. Developing countries are continuously being affected by cultural transformation, urbanization and modernization which promote the Western beauty standard of thinness. Turkey is one of the developing countries in the world which is affected by urbanization and modernization under the influence of the West. Literature of eating disorders in Turkish society is relatively scarce. It has been hypothesized that there is an increasing occurrence of eating disorders in young population of Turkey due to the effect of industrialization and media exposure of cultural norms of the West. To extend the current literature, this study contributes to the knowledge on the relationships between eating attitudes, body image and depression among Turkish university students aged 18 to 25. It is the aim of this study to raise awareness in the area of eating disorders which may compose a public concern in the future, especially in the young population of the Turkish society.

bility was found as 0.74 which makes the scale a valid measure to be used in Turkish population\(^2\).

**Sociodemographic Information Form**

This form was formed by the researchers to gain information about participants such as age, gender, height and weight, university type, academic year (freshman, sophomore, junior, senior), income and education levels of parents. Participants were asked to provide responses to the questions appearing on the form. Body Mass Index of the participants were obtained from the answers that they provided about their height and weight. BMI was calculated using the formula \(BMl=\frac{\text{weight (kg)}}{\text{height}^2 (\text{m})}\). A BMI below 18.5 was considered as underweight, 18.5-25 normal weight, 25-30 overweight, 30 and over obese, respectively\(^3\).

**Procedure and Data Analysis**

Participants were informed about the study and written consents were obtained. Data collection took place in the fall semester of the 2017-2018 academic year. Initially, the study included 350 individuals, however 49 participants were excluded from the study due to item non-responses. For statistical analysis, the IBM SPSS version 21.0 package program was used (IBM Corp. released 2012. Armonk, NY, USA).

The data analysis included descriptive statistics, chi-square test, independent samples t-test and Pearson correlation test. Descriptive data were presented in mean or percentage. Chi-square test was conducted to assess the relationship between BMI and gender. Independent samples t-test was used to explore the differences between body image, eating attitude and depression according to gender. It was also used to assess the levels of body image and depression in terms of eating attitudes. In addition, Pearson correlation test was conducted to investigate the relationship between body image, eating attitude and depression according to BMI.

**RESULTS**

Table 1 presents that 221 (73.4%) participants were female and 80 (26.6%) were male. 194 (64.5%) participants were between the ages of 18-21 and the remaining 107 (35.5%) were between 21-25. In terms of BMI, 39 (13%) participants were considered underweight, 200 (66.4%) were normal weight and 62 (20.6) were overweight and obese.

Obtained findings show that 115 (38.2%) participants had negative body image and 55 (18.3%) participants had abnormal eating attitudes. While 91 (30.2%) participants showed mild level of depression, 102 (33.9%) showed moderate and severe levels (Table 2).

Chi-square test showed that BMI and gender \((p=.029)\) presented a statistically significant relationship \((p<0.05)\). As shown in Figure 1, the percentage of underweight participants in the female group 35 (15.8%) were more than in the male group 4 (5%).

Findings in Table 3 show that there is a statistically significant difference between male and female participants in terms of body image \((t=3.838; p<.001)\) and depression \((t=3.207; p=.001)\) levels. Female participants had more negative body image and higher depression levels than male participants. However, they showed no statistically significant difference in terms of eating attitude \((t=1.463; p=.145)\).

As shown in Table 4, students with abnormal eating attitudes statistically significantly showed higher depression levels \((t=2.323; p=.021)\) compared to students who have normal eating attitudes \((p<0.05)\). However, there was no statistically significant body image difference \((t=1.885; p=.060)\) between the two groups \((p>0.05)\).

As shown in Table 5, there was a negatively, mild to moderate, statistically significant correlation of body image with eating attitude \((r=-.375; p<.05)\) and depression \((r=-.467; p<.01)\) in the underweight group. Results of the normal weight group showed that body image and depression \((r=-.)\)
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Table 3. Investigation of body image, eating attitude and depression levels in terms of gender.

<table>
<thead>
<tr>
<th>Scale</th>
<th>Group</th>
<th>n</th>
<th>x</th>
<th>sd</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Image</td>
<td>Female</td>
<td>221</td>
<td>138.8</td>
<td>23.1</td>
<td>-3.838</td>
<td>&lt;.001*</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>80</td>
<td>150.3</td>
<td>22.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating Attitude</td>
<td>Female</td>
<td>221</td>
<td>20.6</td>
<td>13.8</td>
<td>1.463</td>
<td>.145</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>80</td>
<td>18.1</td>
<td>9.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>Female</td>
<td>221</td>
<td>14.7</td>
<td>8.5</td>
<td>3.207</td>
<td>.001*</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>80</td>
<td>11.2</td>
<td>8.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Independent samples t test.

Table 4. Investigation of body image and depression levels in terms of eating attitude groups.

<table>
<thead>
<tr>
<th>Scale</th>
<th>Group</th>
<th>n</th>
<th>x</th>
<th>sd</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body image</td>
<td>Normal eating attitude</td>
<td>246</td>
<td>143.1</td>
<td>22.8</td>
<td>1.885</td>
<td>.060</td>
</tr>
<tr>
<td></td>
<td>Abnormal eating attitude</td>
<td>55</td>
<td>136.5</td>
<td>26.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>Normal eating attitude</td>
<td>246</td>
<td>13.3</td>
<td>8.5</td>
<td>-2.323</td>
<td>.021*</td>
</tr>
<tr>
<td></td>
<td>Abnormal eating attitude</td>
<td>55</td>
<td>16.2</td>
<td>8.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Independent samples t test.

.522: p<.01) were negatively, moderate and statistically significantly correlated; but eating attitude did not show a statistically significant linear association with body image and depression (p>.05). Results of the overweight and obese group were similar to that of the normal weight group. While body image and depression were negatively, moderate to good and statistically significantly correlated (r=-.647: p<.01), eating attitude had no statistically significant correlation with body image and depression (p>.05) (Table 5). A visualization of the results of the Pearson’s correlation analysis is presented in Figure 2. Each graph shows the results of the analysis pertaining to the relevant BMI group. The direction and the strength of the relationships are indicated by a color scale and nonsignificant results are crossed out for clarity. Change in color from darker to lighter indicates an increase towards a positive correlation and the intensity of the color signifies the strength of the correlation. As shown in Figure 2, although not statistically significant, there is a positive correlation between eating attitude and depression, with the strength of the correlation decreasing from the underweight group to normal to overweight and obese.

This study further investigated the levels of eating attitude, body image and depression in terms of university type, academic year (freshman, sophomore, junior, senior), income and education level of parents. For the sake of brevity, the related tables are not included in the paper. The results revealed that body image was significantly more negative (t=-3.118: p<.002), and depression was significantly higher (t=2.702; p=.007) in participants who attended private universities compared to state universities (p<.01). It was further obtained that abnormality in eating attitudes (F=2.830: p=.039) of participants increased as the income level of parents increased (p<.05). There were no statistically significant differences in the eating attitude, body image and depression levels of the students in terms of academic year, education level of parents and BMI of the students.

**DISCUSSION**

In this study, underweight participants (15.8%) were significantly more in the female group than in the male (5%) according to their BMI. A cross-sectional study conducted by Mikolajczyk et al. showed that underweight females were more than males in Turkey. Further, underweight females were highly prevalent in both Slavic countries (Poland and Bulgaria) and in Turkey. A study conducted in Turkey also has a similar result showing that being 18.5 and below (underweight) according to BMI was higher among females. Literature suggests that women are more affected by the
‘thin ideal’ and research shows that women have more experience with dieting\(^2^{2}\). Therefore, this could indicate that Turkish female university students give more importance to being thin compared to males.

According to the results of this study, females had more negative body image than males which means that they were more dissatisfied with their body image compared to males. Previous studies show that women and adolescent girls experience higher levels of body image dissatisfaction than men\(^2^{3}\). A study which investigated body weight and shape dissatisfaction found that among undergraduates, there was more body dissatisfaction among female students compared to male students, and female students who are even at a normal weight wished to have a thinner body\(^2^{9}\). Consistent with our results, another study conducted in Turkey also revealed that female university students had more negative body image than male students\(^2^{9}\).

Obtained findings further presented that females presented significantly higher depression levels than males. Literature in this area present the most substantial number of findings. Estimates are that twice as many women as men are depressed\(^3^{9}\). Studies concerning depression levels of university students revealed that females were significantly more depressed or more likely to be depressed than males\(^3^{1},3^{2}\). However, a study which looked at eating attitudes and depression levels of Turkish university students found contradictory results. Unlike our findings, gender did not lead to any significant difference in the depression levels of the students\(^3^{3}\). Contrary to that study, our findings did not present a significant gender difference in terms of eating attitudes of the participants. This may be caused by the unique characteristics of the participants and may be related to the increasing shift in gender roles in Turkish population. Men and women may now be subject to similar expected terms in their societal roles.

Results of this study revealed that 18.3\% of our participants who were either in Istanbul or Ankara which are the top industrialized cities of Turkey presented abnormal eating attitudes indicating high risk for eating disorders. A study conducted by Bas and colleagues investigated eating attitudes and their psychological correlates among Turkish young people\(^3^{4}\). Among 783 students, 11.5\% of them showed abnormal eating attitudes which indicate high risk for eating disorders. They did not investigate into depression or body image\(^3^{4}\). A different study which was conducted by Buyukgoze-Kavas investigated eating attitudes and depression in Turkish university students\(^3^{5}\). 269 participants were included and 12.3\% of them presented high risk for eating disorders. That study did not evaluate body image or BMI\(^3^{5}\). Kutlu and Civi investigated eating habits, body perception and depression status of 262 university students\(^3^{6}\). Body perception was obtained only by asking participants’ ideas about their own weight. Results of that study showed that only 5\% of participants had abnormal eating attitudes\(^3^{2}\). However, unlike the previously mentioned studies, it was noticed that students from Vocational Education Faculty of a university in Central Anatolia which is a relatively rural part of Turkey were included in this study. Similarly, Akdevelioğlu and Gümüş conducted a research related to the eating attitudes and body image of university students and found that 5.9\% of 577 students had abnormal eating attitudes\(^3^{5}\). Their participants were also attending Vocational Education Faculty of a state university\(^3^{5}\). Typically, those students come from low income families and live in unindustrialized cities of Turkey. It can be inferred that eating disorders would be relatively low among those populations. Hence, obtained low percentages may be due to such characteristics of the participants.

Moreover, a main finding of this study shows that body image was negatively, mild to moderate, statistically significantly correlated with eating attitude and depression in the underweight group. Since Eating Attitude Test (EAT-40) measured abnormality of eating attitude in the anorexia nervosa direction, it is not surprising to see this correlation solely in the underweight group. Considering that anorexia nervosa is more common in women\(^3^{6}\) and the female percentage was more in the underweight group in this study, these results are coherent with the existing literature about the relationships between body image, eating disorder and depression, especially in women\(^3^{7}\). The complex interrelationship of negative body image, depression and eating disorders have
long been the subject of research and theoretical models of eating disorders have scrutinized on the significant role of depression, but the nature of this role is still not certain (‘depression is a sequelae of eating disorders or vice versa’ and ‘eating disorder is an expression of depression’). Some studies emphasize that depression is acting as a mediator in this relationship. According to Jonstang’s theoretical model, depression is described as a mediator for body image and eating disorders among adolescents in Norway. The literature in Turkish society is not conclusive and further research is needed to model this complex relationship among Turkish population.

Moreover, the results of the other BMI groups (normal, overweight & obese) demonstrated a negative correlation between body image and depression, but not eating attitude. This may be due to age of the EAT-40 which measures abnormality towards anorexia nervosa. Literature suggests that overweight and obese people tend to have either binge eating disorder or might eating syndrome which contribute to their overweight. Nonetheless, it is important to underline the significant correlation between depression and body image among all the BMI groups, especially the increase in the strength of the correlation from underweight to normal to overweight and obese groups. There is substantial evidence in the literature about the relationships between depression and body image with BMI. People with higher BMI usually report high levels of depression and negative body image and eating disorders may result from obesity experienced during childhood and teenage years. Increased BMI is a known predictor of disordered eating as well. Therefore, it is important to recognize increased BMI in young individuals as one of the possible signs of future eating pathology.

This study found that individuals with abnormal eating attitudes showed significantly higher levels of depression compared to students who have normal eating attitudes, but they did not differ in terms of body image which was unexpected. One reason for this might be that the sample of this study is going through a unique experience which led to a more acceptance of their body image or another unknown culture-specific reason which needs to be further investigated. On the other hand, results of this study are consistent with the literature concerning the association between eating disorders and depression. For instance, a study which focused on university students in Malaysia, found that students who were susceptible to depression were more susceptible to eating disorders.

Although it cannot be generalized, eating disorders seem to be more common among high-income families. Our results also revealed that abnormality in eating attitudes of participants increased as the income level of their parents increased. Considering that eating disorders are more prevalent in industrialized regions, these results make sense since Istanbul and Ankara are highly developed cities of Turkey. Therefore, the jobs of parents are more in the service sector rather than agriculture and livestock as in the Central and Eastern Anatolia. It can be inferred that typically income levels of parents are higher. Especially, students who attend private universities usually come from high-income families. Therefore, our results showing that body image was more negative and depression was higher in participants who attended private universities may be explained by this. Manaf and colleagues also attributed the high levels of depression among female university students to the fact that their study was conducted in a private university. These results can be an indicator of high risk for developing eating disorders in a population which display similar characteristics.

It is known that more than 90% of the eating disorder cases occur among individuals who are at or below the age of 25 and the prevalence is particularly high among college students. In our study, this percentage was 18.3% and the participants were university students aged 18 to 25. Addressing eating pathology in college populations is particularly important because young people are going through a rapid change during the transition from compulsory schooling into further education. Adjustment to university life can be very challenging including issues related to residential life, academic pressure, extracurricular activities or social life which exacerbate the risk of developing psychiatric disorders including eating or mood disorders. Therefore, understanding college youth who are not receiving clinical care can be helpful in the early detection and treatment of eating disorders which also increases the chances of full recovery. This information can assist the development and implementation of effective campus-level prevention, detection, and intervention strategies. Efforts should be made towards implementing school-based interventions to support healthy eating patterns of young people and improving health services within universities by which students with untreated eating pathology can be reached.

The literature about eating disorders in Turkish population is still very limited, hence the prevalence of eating disorders is yet uncertain. Considering that Turkey has been in a transition period towards the West, many aspects have been affected such as attitudes, values, gender roles and lifestyles. The rapid change of globalization in these aspects has influenced the society profoundly especially through media. In the last decades, the idea that being thin is the sign of beauty is being accepted by university students even in the rural parts of Turkey even though the cultural definition of beauty in those regions had long been associated with being full-figured. From a cultural point of view, it can be said that there is a concerning increase in the risk of developing eating disorders in Turkey especially among young generation. Further research is needed to determine the prevalence rate and comorbidity of eating disorders in Turkish society.

**CONCLUSIONS**

It is important to underline that all of the measurement tools were self-reporting which creates a limitation to the study and the sample of the study reflects the attitudes of a certain group of young people who live in large cities of Turkey, attend specific schools and hold specific cultural norms. Including larger samples from socio-demographically more diverse populations in Turkey should be taken into consideration for further research. In addition, the conclusions were based on correlations and do not provide information on the causal mechanisms which need to be further investigated with longitudinal studies.

This study concluded that 18.3% of the 301 students had abnormal eating attitudes which indicate high risk for eating disorders. While 115 (38.2%) students had negative body im-
age, 102 (33.9%) students showed moderate and severe levels of depression. Underweight participants were more in the female group. Females also had more negative body image and higher depression levels than males. Gender and BMI did not lead to any difference in the eating attitudes of the students. Body image was negatively correlated with eating attitude and depression in the underweight group. Individuals with abnormal eating attitudes had higher depression levels. This study has contributed to the literature on the relationships between eating attitudes, body image and depression among Turkish university students aged between 18 and 25. It has further drawn attention to the importance of eating disorders in Turkey and being aware of the relationships between eating attitudes, body image, depression and BMI.

Conflict of interests: the authors have no conflict of interests to declare.

REFERENCES

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