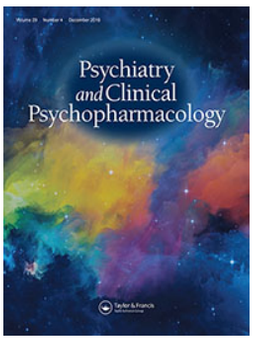

Psychiatry and Clinical Psychopharmacology

ISSN: 2475-0573 (Print) 2475-0581 (Online) Journal homepage: https://www.tandfonline.com/loi/tbcp21

Body image, depression and eating behaviour: a comparative study in eating disordered women and healthy controls

F. Elif Ergüney Okumuş, H. Özlem Sertel Berk & Başak Yücel

To cite this article: F. Elif Ergüney Okumuş, H. Özlem Sertel Berk & Başak Yücel (2019) Body image, depression and eating behaviour: a comparative study in eating disordered women and healthy controls, Psychiatry and Clinical Psychopharmacology, 29:4, 774-780, DOI: 10.1080/24750573.2019.1637327

To link to this article: https://doi.org/10.1080/24750573.2019.1637327

Published online: 04 Jul 2019.

PSYCHIATRY AND CLINICAL PSYCHOPHARMACOLOGY
2019, VOL. 29, NO. 4, 774–780
https://doi.org/10.1080/24750573.2019.1637327

Taylor & Francis
Taylor & Francis Group

Body image, depression and eating behaviour: a comparative study in eating disordered women and healthy controls

F. Elif Ergüney Okumuş [a], H. Özlem Sertel Berk [b] and Başak Yücel [c]

[a]Department of Psychology, Istanbul Sabahattin Zaim University, Istanbul, Turkey; [b]Department of Psychology, Istanbul University, Istanbul, Turkey; [c]Department of Psychiatry, Istanbul University, Istanbul, Turkey

ABSTRACT

OBJECTIVE: The aim of this study is to compare eating behaviours, body image, and depressive symptoms in eating disordered women with a demographically matched healthy control sample to evaluate the predictors of eating behaviour.

METHODS: 150 women (75 in the Eating Disorders Group-EDG and 75 in Healthy Control Group-HCG) participated in the study. All participants completed the Eating Disorder Examination Questionnaire (EDE-Q), Beck Depression Inventory (BDI), and Photographic Figure Rating Scale for Women (PFRS). Body Mass Index (BMI) was also measured.

RESULTS: HCG significantly differed from EDG in all study variables except body dissatisfaction. Positive correlations were found between EDE-Q and its subscales, PFRS, BDI, and BMI. Excluding body image distortion, the study variables together explained 49.1% of the variance in EDE-Q total scores, with body dissatisfaction being the most powerful after controlling for group differences.

CONCLUSION: Women with EDs suffer more disordered eating behaviour, stronger depression symptoms, and lower BMI more than their healthy counterparts, although these factors are quite common in healthy women too. Body dissatisfaction, which is an important predictor of eating problems, is also equally prevalent in healthy controls. Finally, healthy women tend to underestimate their body size, which can be a protective factor against EDs.

ARTICLE HISTORY
Received 10 May 2019
Accepted 24 June 2019

KEYWORDS
Eating disorders; body image; body dissatisfaction; depression; eating behaviours; anorexia nervosa; bulimia nervosa

Introduction

Eating Disorders (EDs) are among the life-threatening psychiatric problems that affect health in multiple ways. Although young women are at particularly high risk, men and children also suffer from EDs [1]. The basic psychopathology in EDs is an intense fear of gaining weight, and a pre-occupation with the body and eating that encourages compensatory behaviours like dieting, exercise, self-induced vomiting, misuse of laxatives, and diuretics [2]. Prominent EDs subtypes include Anorexia Nervosa (AN) and Bulimia Nervosa (BN), which differ in body weight and compensatory behaviours, although most cases do not receive a full diagnosis. In the Diagnostic and Statistical Manual of Mental Disorders (DSM) 4th Edition [3], this last group was included under Eating Disorders Not Otherwise Specified (EDNOS), and reported as more prevalent then AN and BN [4]. DSM-5 tried to overcome this issue by changing some of the disputed diagnostic criteria (e.g. amenorrhoea in AN and frequency of binges in BN). It then categorized EDs in adults as AN, BN, and Binge Eating Disorder (BED) in the Feeding and Eating Disorders chapter [5].

Lifetime EDs in the West varies between 1% and 5%. Under DSM-5 criteria, reported rates are 1–4% for AN, 1–2% for BN and 1–4% for BED [6]. Prevalence has also been increasing in non-Western countries recently [7]. Unfortunately, there is no epidemiological study of EDs in Turkey, although other research suggests that it is between 1% and 3% [8]. Nevertheless, subthreshold EDs are more prevalent than full diagnosis [9].

Theories and research in this area demonstrate that body image is an important contributor to disordered eating behaviour, and an essential part of diagnosis and treatment as it is assumed that full recovery is only possible by developing a positive body image [10,11]. Body image is a multidimensional framework that is described as an internal representation of weight, body shape, and appearance, and that includes cognitive–affective, perceptual, and behavioural dimensions [12,13]. The perceptual part of body image can be explained as body image distortion whereas the cognitive–affective component refers to thoughts and feelings about the body, including body dissatisfaction [14]. The behavioural dimensions are usually the behavioural correlates of these thoughts and feelings, such as body checking or avoidance. Patients with EDs distort their body size by up to 70% more than controls while body image distortion

CONTACT F. Elif Ergüney Okumuş elif.okumus@izu.edu.tr Istanbul Sabahattin Zaim University, Department of Psychology, Istanbul Sabahattin Zaim University, Halkalı Cad. Halkalı, 34303 Istanbul, Turkey

is almost 80% more common in this group than controls [12]. Body dissatisfaction is an important predictor of disordered eating behaviours, and quite common in non-clinical samples [15]. Another important factor that contributes to EDs and body image is Body Mass Index (BMI), which positively correlates with body dissatisfaction [16]. Depression symptoms are also quite prevalent in EDs patients [17], so depression is an important indicator of eating pathology [18], although its symptoms are associated with body dissatisfaction in both clinical [13] and non-clinical samples [19]. Recent research on disturbances in emotion-regulation systems in EDs has demonstrated the efficacy of third-wave behavioural treatments like dialectical-behaviour therapy [20].

EDs are serious chronic illnesses that interfere with daily functioning and have a high mortality rate [21]. The aetiology is still not clear, but further studies that focus on the contributors to EDs are helpful for encouraging recovery. Body image and depressive problems are common in patients with EDs and considered to predict eating pathology. Thus, the transdiagnostic view of EDs is an appropriate framework since eating pathology has its origins in weight and shape concerns. In contrast, categorical approaches have failed to provide accurate diagnoses in the majority of cases [2]. Disordered eating behaviours and body dissatisfaction are prevalent in healthy women, which puts them at risk of developing EDs. Since eating problems tend to become chronic with low full recovery rates, preventive studies on at-risk groups are essential [22]. Hence, the first aim of this study is to compare eating behaviours, depressive symptoms, and body image in women with EDs and controls, using a matched-sample cross-sectional design. The second purpose is to evaluate relations between body image, BMI, eating behaviours, and depression to determine the predictor effects of these variables on eating behaviours.

Methods

Participants and Procedure

Participants were 150 women, aged 16–45 (M = 25.9, SD = 6.9), equally distributed into Eating Disorders Group (EDG) and Healthy Control Group (HCG). The inclusion criterion for EDG was having eating psychopathology. The exclusion criteria were having a diagnosis of any psychotic disorder, age above 45, going through menopause, pregnancy, and high level of cognitive impairment due to malnutrition. Women in HCG had the same demographic features (age, height, education, marital status, and socioeconomic level) as EDG participants. Participants were mostly single (77.3%), with a high educational level (90%) and middle class (70.6%). The mean age of EDG (M = 25.8, SD = 7) and HCG (M = 26, SD = 6.8) did not differ significantly ($t_{(148)} = 0.188$, $p > .05$). Patients in EDG were reached through the database of the Eating Disorders Programme of Istanbul Faculty of Medicine at Istanbul University. Twenty-four had a DSM-IV-TR EDs diagnosis at the time of the study: 12 patients had a DSM-IV-TR AN diagnosis (7 restricted type and 5 binging/purging type) while 12 patients had a DSM-IV-TR BN diagnosis (11 binge/purging type and 1 nonpurging type). Thirty-five patients in the EDG met the DSM-IV-TR EDNOS diagnosis while 16 patients were referred with a recent EDs diagnosis but did not satisfy the EDs criteria at the time of the study. This last group was also included in the EDG since they still had EDs symptomatology. Mean duration of illness in EDG was 73.2 months (SD = 55.4), mean age of EDs onset was 17.4 (SD = 3.8). 62.7% ($N = 47$) of EDG had a comorbid psychiatric disorder, mostly major depressive disorder, and they were not receiving any kind of treatment for EDs. 29.3% were outpatients ($N = 22$) and only 8% ($N = 6$) of them were inpatients.

The Scientific Board of Istanbul University Department of Psychology and Institute of Social Sciences ethically and scientifically approved the study. Data collection period took almost 9 months. Informed consent was obtained from all participants or their families in case of minors. A clinical interview was conducted to obtain demographic information, such as age, marital status, education, socioeconomic level, weight, height, lowest-highest weight, medical status, and family history of psychiatric disorders. Clinical information about EDs, including the age of onset, first/previous diagnosis, duration of EDs, and current/previous treatments, were also obtained for EDG participants. The Structured Clinical Interview (SCID-I) was then applied to diagnose EDs and other psychiatric disorders [23,24]. The clinical interview and application of SCID-I took almost 20–30 min. Finally, the participants completed questionnaires that assess depression, eating psychopathology, and body image in a mixed order for preventing sequence effect. Whole process took about 30–40 min for each participant.

Study measures

Body Mass Index (BMI)

BMI, expressed as kg/m^2, is one's body fat measure for determining whether the person has a healthy weight in relation to height. The World Health Organization (WHO) defines BMIs lower than 18.5 as underweight, 18.5–24.9 as normal weight, 25.5–29.9 as overweight, and higher than 30 as obese [25]. Given previous studies showing no significant differences between self-reported and objectively measured BMIs [26], this study also relied on participants' self-reported heights and weights.

Eating Disorders Examination Questionnaire (EDE-Q)

EDE-Q is a 33-item self-report questionnaire developed by Cooper and Fairburn [27] from the Eating Disorders Examination Interview, with the following five subscales: Restriction (R), Binge Eating (BE), Eating Concerns (EC), Body Concerns (BC), and Weight Concerns (WEC). The summed subscales provide a total score of 0–6. The Turkish version of EDE-Q, developed by Yücel et al. [28], is reported to have good psychometric features for assessing eating psychopathology.

Photographic Figure Rating Scale for women (PFRS)

This scale, developed by Swami, Salem, Furnham, and Tove [29], consists of 10 women figures with different BMIs ranging from emaciated to obese. Its five questions produce a Body Dissatisfaction (BD) and Body Image Distortion (BID) score, where less than 100 indicates dissatisfaction due to thinness and underestimation, a score of 100 indicates satisfaction and accurate body size estimation, and scores higher then 100 indicate dissatisfaction due to fatness and overestimation of body size. While BD and BID scores are continuous, they can also be categorized. Detailed calculations and examples are explained elsewhere [30]. The Turkish adaptation of PFRS is reported to have good psychometric features [31].

Beck Depression Inventory (BDI)

This 21-item scale, originally developed by Beck [32] and adapted for Turkish by Hisli [33], assesses emotional, cognitive, and motivational symptoms of depression. The scale has a cut-off score of 17, above which indicates a higher level of depression.

Data analyses

Descriptive statistics (mean, standard deviation, range) were used to analyse the variables obtained from the clinical interviews. Non-parametric analyses were preferred for the comparisons and correlations since the data were not normally distributed within groups. Mann–Whitney U tests were used to compare the significance of differences in EDE-Q, BDI, and PFRS scores between the two groups. A two-tailed Spearman correlation coefficient analysis was also used to evaluate the relationships between the scales while linear regression analysis was used to determine the effects of the independent variables (BMI, BM, BID, BDI) on the dependent variable (EDE-Q total scores). In all statistical analyses, % 95 confidence intervals and a p-value of less than .05 was accepted as statistically significant.

Results

There were no significant differences between EDG and HCG in terms of marital status, education, and socioeconomic level, as shown in Table 1. Participants in EDG had signficantly higher levels of co-morbid medical conditions and family history of psychiatric disorders than HCG ($X^2_{(2)} = 13.353$, $\varphi = 0.29$, $p < .001$ $X^2_{(2)} = 18.525$, $\varphi = 0.35$, $p < .001$). Table 1 also shows that most EDG participants had no body image distortion (48%) compared to HCG, where a majority of participants underestimated their body size (66.6%). These differences were also statistically significant ($X^2_{(2)} = 15.706$, $\varphi = 0.32$, $p < .001$).

EDG participants had significantly higher scores ($p < .001$) for EDE-Q and all its subscales (R, EC, BOC, WEC) ($Z = -3.896$, $r = 0.32$; $Z = -3.618$, $r = 0.29$; $Z = -4.191$, $r = 0.34$; $Z = -3.718$, $r = 0.30$; $Z = -3.952$, $r = 0.32$, respectively). BDI, PFRS-BID, Weight and BMI scores were also significantly different between groups ($Z=-4.452$, $r = 0.36$, $p < .001$; $Z = -2.954$, $r = 0.24$, $p < .01$; $Z = -4.013$, $r = 0.32$, $p < .01$; $Z = -4.706$, $r = 0.38$, $p < .001$, respectively). However, height and PFRS-BD scores did not differ significantly ($p > .05$) between the groups, as shown in Table 2 ($Z = -0.312$, $Z = -0.713$, respectively).

Table 3 shows the correlations between the study variables. For EDG, positive correlations were found between EDE-Q total scores and BDI, PFRS-BM, PFRS-BID, and BMI ($r = 0.51$; $r = 0.60$, $p < .001$; $r = 0.23$; $r = 0.32$, $p < .001$, respectively). In contrast, for HCG, EDE-Q total scores only showed positive correlations with PFRS-BD and BMI ($r = 0.51$; $r = 0.47$ $p < .001$, respectively).

Table 1. Demographic features and body image distortion categories of participants in Eating Disorders Group and Healthy Control Group.

	EDG % (*N*) *N* = 75	HCG % (*N*) *N* = 75	Test statistics
Marital status			
Single	78.7 (59)	76 (57)	$X^2 = 0.177$
Married	17.3 (13)	20 (15)	
Other	4 (3)	4 (3)	
Education			
Primary	10.7 (8)	10.7 (8)	$X^2 = 0.135$
High school	28 (21)	30.7 (23)	
Collage	61.3 (46)	58.6 (44)	
Socioeconomic status			
Low	2.7 (2)	2.7 (2)	
Middle	72 (54)	69.3 (52)	$X^2 = 0.149$
Upper-middle	22.6 (17)	25.3 (19)	
Upper	2.7 (2)	2.7 (2)	
General medical illness			
Yes	36 (27)	10.7 (8)	$X^2 = 13.353$*
No	64 (48)	89.3 (67)	
Family history of psychiatric disorder			
Yes	54.7 (34)	13.3 (10)	$X^2 = 18.525$*
No	45.3 (41)	86.7 (65)	
Body image distortion			
Underestimation	34.7 (26)	66.6 (50)	$X^2 = 15.706$*
Accurate size estimation	48 (36)	26.7 (20)	
Overestimation	17.3 (13)	6.7 (5)	

*$p < .001$.

Table 2. Comparison of scale scores, body mass index, weight, and height in Eating Disorders Group and Healthy Control Group.

	EDG (N = 75) Mean/SD	HCG (N = 75) Mean/SD	Total (N = 150) Mean/SD	Test Statistics
EDE-Q Total score	2.1/1.6	1.0/0.9	1.6/1.4	Z = −3.896**
EDE-Q Restrained	2.0/1.7	1./1.3	1.6/1.6	Z = −3.618**
EDE-Q Eating concern	1.9/1.7	0.6/0.8	1.3/1.5	Z = −4.191**
EDE-Q Body concern	2.5/1.8	1.3/1.2	1.9/1.6	Z = −3.718**
EDE-Q Weight concern	2.2/1.7	1.1/0.9	1.6/1.5	Z = −3.952**
Beck Depression inventory	14.3/9.9	7.4/5.3	10.8/8.6	Z = −4.452**
PFRS-Body dissatisfaction	130.8/75.4	124.5/43.8	127.7/61.5	Z = -.312
PFRS-Body Image distortion	96.7/26.7	85.4/15.9	91.1/22.7	Z = −2.954*
Weight	52.89/12.2	59.9/11.5	56.3/12.3	Z = −4.013*
Height	163.6/6.8	163.1/5.0	163.4/5.9	Z = -.713
BMI	19.7/4.3	22.5/4.5	21.1/4.6	Z = −4.706**

Note: EDE-Q: Eating Disorders Examination Questionnaire, PFRS: Photographic Figure Rating Scale, BMI: Body Mass Index.
*$p < .01$, **$p < .001$.

Lastly, the hierarchical regression analysis showed that body dissatisfaction, depression, and BMI explained 49.1% of the EDE-Q total scores. However, body image distortion scores had no such effect after controlling for group differences (Table 4). Tolarance range is between .60 and .84, VIF range is 1.18 −1.65 and effect size is close to moderate.

Discussion

The results of this study of Turkish participants indicate that eating disordered women tend to have more co-morbid medical and psychiatric illness, and family history of psychiatric illness than demographically matched healthy women. As expected, disordered eating behaviours of all kinds, depression symptoms, and lower body mass index are more common among women with EDs. One important finding is that body dissatisfaction did not significantly differ between healthy controls and EDs patients. In other words, healthy women experienced as much body dissatisfaction as EDs participants, as earlier studies have also reported [34]. Previous research in this area has highlighted the increase of body dissatisfaction in non-clinical samples, especially in young women, but also in men and children [35–37]. Moreover, interventions that focus on reducing body dissatisfaction in non-clinical samples have drawn attention to this emerging issue [38,39] since body image is the most important indicator of disordered eating behaviours [11]. It has been long thought that eating and body problems are more prevalent in the West due to the greater idealization of thinness, yet recent studies show otherwise. For example, Lai, Mak, Pang, Fong, Ho and Guldan [40] found that body image problems are also common in non-Western countries. However, we should bear in mind that the body dissatisfaction experienced in EDs may be more multifaceted, time-consuming, distressing, and life-interfering than we could assess in this study [41,42]. In addition to these findings, this study found that body concern subscale scores of the EDE-Q were amongst the highest of all in EDG, indicating that body image is an important part of EDs pathology. However, as mentioned before, body image is a multidimensional variable so the way it was measured can produce different results.

One other important result from our study is that the body image distortion scores differed between the two groups, as expected. Nevertheless, when considered as a categorical variable, actual estimators were more common in patients with EDs than healthy controls. Overestimation was also more common in EDG whereas healthy women tended to underestimate their body size. Body image distortion is an important diagnosis criterion for ED, with previous studies demonstrating that ED patients (especially AN) seriously overestimate their weight by up to 70% [10]. However, studies comparing body image distortion in ED and controls have provided inconsistent

Table 3. Correlations between scale scores and Body Mass Index in Eating Disorders Group and Healthy Control Group.

	Group	1	2	3	4	5	6	7	8	9
1. EDE-Q	EDG	–	.895***	.937***	.948***	.938***	.510***	.600***	.230*	.321**
Total	HCG	–	.796***	.831***	.929***	.879***	.182	.513***	.169	.472***
2. EDE-Q	EDG		–	.809***	.794***	.779***	.474***	.491***	.252*	.215
Restrained	HCG		–	.590***	.617***	.630***	.040	.385**	.268	.409***
3. EDE-Q	EDG			–	.887***	.855***	.455***	.607***	.279*	.352**
Eating C.	HCG			–	.758***	.669***	.124	.413***	.230	.244*
4. EDE-Q	EDG				–	.919***	.526***	.636***	.218	.344**
Body C.	HCG				–	.818***	.215	.532***	.124	.522***
5. EDE-Q	EDG					–	.431***	.567***	.191	.295*
Weight C.	HCG					–	.246*	.472***	.151	.402***
6. BDI	EDG						–	.285*	.159	.125
	HCG						–	−.075	.123	−.158
7. PFRS-BD	EDG							–	.442***	.522***
	HCG							–	.425***	.815***
8. PFRS-BID	EDG								–	−.120
	HCG								–	.224
9. BMI	EDG									–
	HCG									–

Note: EDE-Q: Eating Disorders Examination Questionnaire, PFRS: Photographic Figure Rating Scale, BDI: Beck Depression Inventory, BMI: Body Mass Index.
*$p < .05$, **$p < .01$, ***$p < .001$.

Table 4. Hierarchical linear regression model when Eating Disorders Group and Healthy Control Group after controlling for group differences, with Eating Disorders Exemination Questionnaire total score as the dependent variable.

	ΔR^2	F	Beta	t	%95 CI
Total	0.49				
Control variables (EDG-HCG)	.142	24.416**	−.276	−3.967	−1,153–.386
Body dissatisfaction	.275	52.437**	.355	4.640**	.005–.012
Body image distortion	.000	34.724	.029	0.446	−.006–.010
Depression	.060	33.014**	.301	4.337**	.027–.071
Body Mass Index	.015	27.803*	.148	2.029*	.001–.089

Note: Ps: Standardized ß coefficients in the table were obtained from the last step of the analysis.
*$p < .05$, **$p < .001$.

evidence. Some have found no difference [43,44] whereas others reported that ED patients overestimate their weight compared to controls [45–47]. Other studies report that healthy controls mostly overestimate themselves [48]. In addition, Lindholm and Wilson [49] report quite similar results to our findings, highlighting that EDs patients estimate their body size more accurately than controls. A more recent study conducted in Turkey with 333 women [50] demonstrated that healthy women underestimate their body size. Consequently, as Dolan, Birtchnell and Lacey [51] and Hsu and Sobkiewicz [52] conclude, "body image distortion and body dissatisfaction are not specific for women with ED." Although they are necessary components in the development and maintenance of EDs, such disturbances are somewhat normal in young women [14]. Nevertheless, it is important to bear in mind again that these findings may also be an artefact of the measures used to assess body image or due to sample characteristics in this study. There has been a debate in the literature regarding how the way body image is measured can directly affect the results [53,54]. On the other hand, underestimation of body size can also be a protective factor for healthy women. As noted in Beck's [55] depression theory, normal people tend to perceive situations more positively then they actually are whereas depressive people have more realistic perceptions. This bias in perception is called "depressive realism" and is supposed to protect healthy people from depressive symptoms. It can therefore also be assumed that body image distortion in healthy women may protect them from disordered eating behaviour in contrast to ED patients, who have a more realistic body perception.

Lastly, several positive correlations were found between the study variables. These show that, as depression, body dissatisfaction, body image disturbance, and BMI increase, eating disorder symptoms also increase. The hierarchical linear regression analysis while controlling for group differences indicated that body dissatisfaction, body mass index, and depressive symptoms explained 49% of the EDE-Q total scores. The best predictor of disordered eating behaviour was body dissatisfaction whereas body image distortion did not predict disordered eating. These findings are consistent with other studies that have demonstrated that depression, BMI, and especially body dissatisfaction are important predictors of disordered eating in both clinical and non-clinical samples [11,21,35,56–58]. Our findings suggest that disordered eating behaviours, depressive symptoms, and body dissatisfaction are quite common in healthy women too. As previous studies have shown, college students especially experience a strong desire to lose weight and experience body dissatisfaction that can lead to unhealthy eating attitudes and behaviours even though they are of normal weight [36,37]. This study thus indicates that young women are at risk of developing unhealthy eating behaviours. Thus, community-based interventions to reduce this risk and increase body satisfaction are vital (see also [59]).

This study is the first case–control study of EDs patients in Turkey that assesses body image multidimensionally, as far as we know. Its results therefore make an important contribution to the literature in this field. However, it has shortcomings as well. These include the small sample size and cross-sectional design, which make it hard to generalize the findings or make causal attributions between variables. Especially, in EDG, the participants were at different stages of EDs and/or treatment, which could confound the results. Future studies with greater subsample sizes can contribute to more sound inferences. From a transdiagnostic view, all EDs subtypes were considered as EDG [2]. According to the literature, however, AN and BN may have different aetiology and prognosis despite their similarities. Nevertheless, with greater sample sizes, it can be possible to control such confounding effects on the outcomes. Moreover, the self-report scales used in this study could have produced biased or incorrect information. Similarly, the use of self-reported height and weight for BMI may be biased, even though it has previously been reported as producing reliable data. Future studies using mixed methods of data collection including both from the EDs and from the observers can help delineating the effects of match between different sources of information on the outcomes.

In conclusion, disordered eating behaviours and body dissatisfaction are quite common in women. Healthy women tend to underestimate their body size, which can be a protective factor for EDs. Body dissatisfaction is an important predictor of eating problems, and as prevalent in healthy controls as in women with EDs. Thus, being aware of body dissatisfaction, disordered eating behaviours and the underlying cognitive–affective factors may be important for community-based interventions such as mindfullness

based training therapies or self regulatory control strategies that aim to prevent ED in young women.

Acknowledgements

E.E.O and O.S.B. designed the study. All authors conducted literature searches, provided summaries of previous research studies and assisted in conducting the statistical analyses. E.E.O. wrote the first draft of the manuscript, and all authors contributed to and have approved the final manuscript. *Note:* Pilot results of this study were part of the first author's MA thesis and presented as a poster presentation in ECED 2015.

Disclosure statement

No potential conflict of interest was reported by the authors.

ORCID

F. Elif Ergüney Okumuş http://orcid.org/0000-0001-5807-0317
H. Özlem Sertel Berk http://orcid.org/0000-0002-3045-3903
Başak Yücel http://orcid.org/0000-0003-4665-6892

References

[1] Micali N, Hagberg KW, Petersen I, et al. The incidence of eating disorders in the UK in 2000–2009: findings from the General Practice Research Database. BMJ Open. 2013;3(5):1–8. doi:10.1136/bmjopen-2013-002646.
[2] Fairburn CG. Cognitive behavior therapy and eating disorders. New Yok: Guilford Press; 2008.
[3] American Psychiatric Association. Diagnostic and statistical manual of mental disorders (DSM-IV), text revision. Washington (DC): American Psychiatric Association; 2000.
[4] Machado PP, Machado BC, Gonçalves S, et al. The prevalence of eating disorders not otherwise specified. Int J Eating Disord. 2007;40(3):212–217. doi:10.1002/eat.20358.
[5] American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (DSM-5®): American Psychiatric Publishing.
[6] Keski-Rahkonen A, Mustelin L. Epidemiology of eating disorders in Europe: prevalence, incidence, comorbidity, course, consequences, and risk factors. Curr Opin Psychiatry. 2016;29(6):340–345. doi:10.1097/YCO.0000000000000278.
[7] Pike KM, Dunne PE. The rise of eating disorders in Asia: a review. J Eat Disord. 2015;3(1):33), doi:10.1186/s40337-015-0070-2.
[8] Vardar E, ve Erzengin M. The prevalence of eating disorders (EDs) and comorbid psychiatric disorders in adolescents: a two-stage community-based study. Turkish J Psychiatry. 2011;22(4):205–212.
[9] Çelik S, Yoldaşcan EB, Okyay RA, et al. Prevalence of eating disorders in female university students and affecting factors. Anatol J Psychiatry/Anadolu Psikiyatri Dergisi. 2016;17(1):42–50. doi:10.5455/apd.175836.
[10] Bruch H. Perceptual and conceptual disturbances in anorexia nervosa. Psychosom Med. 1962;24(2):187–194.
[11] Stice E. Risk and maintenance factors for eating pathology: a meta-analytic review. Psychol Bull. 2002;128(5):825–848. doi:10.1037/abn0000219.
[12] Cash TF, Deagle EA. The nature and extent of body-image disturbances in Anorexia Nervosa and Bulimia Nervosa: a meta-analysis. Int J Eating Disord. 1997;22:107–125. doi:10.1002/(SICI)1098-108X(199709)22:2<107::AID-EAT1 > 3.0.CO;2-J.
[13] Garner DM. Body image and Anorexia Nervosa. In: TF Cash, T Prozinsky, editor. Body image: a handbook of theory, research and clinical practice. New York: Guilford Press; 2002. p. 295–303.
[14] Kearney-Cooke A, Tieger D. Body image disturbances and the development of eating disorders. In: Smolak L, Levine MP, editor. The Wiley handbook of eating disorders. Chichester: John Wiley; 2016. p. 285–296.
[15] Levine MP, Smolak L. Body image development in adolescence. In: TF Cash, T Prozinsky, editor. Body image: a handbook of theory, research and clinical practice. New York: Guilford Press; 2002. p. 74–82.
[16] Foster GD, Matz PE. Weight loss and changes in body image. In: TF Cash, T Prozinsky, editor. Body image: A handbook of theory, research and clinical practice. New York: Guilford Press; 2002. p. 405–413.
[17] Godart NT, Perdereau F, Rein Z, et al. Comorbidity studies of eating disorders and mood disorders: critical review of the literature. J Affect Disord. 2007;97:37–49. doi:10.1016/j.jad.2006.06.023.
[18] Casper RC. Depression and eating disorders. Depress Anxiety. 1998;8(1):96–104. doi:10.1002/(SICI)1520-6394(1998)8:1+<96::AID-DA15 > 3.0.CO;2-4.
[19] Willcox M, Sattler DN. The relationship between eating disorders and depression. J Soc Psychol. 1996;136(2):269–271. doi:10.1080/00224545.1996.9714005.
[20] Linardon J, Fairburn CG, Fitzsimmons-Craft EE, et al. The empirical status of the third-wave behaviour therapies for the treatment of eating disorders: A systematic review. Clin Psychol Rev. 2017;58: 125–140.
[21] Smolak L, Levine MP. The Wiley handbook of eating disorders. Chichester: John Wiley; 2015.
[22] Ergüney-Okumuş FE, Sertel-Berk HÖ, Yücel B. The predictors and role of treatment motivation in eating disorders. Stud Psychol. 2016;36(1):41–64.
[23] Spitzer RL, Williams JB, Gibbon M, et al. The structured clinical interview for DSM-III-R (SCID): I: history, rationale, and description. Arch Gen Psychiatry. 1992;49(8):624–629. doi:10.1001/archpsyc.1992.01820080032005.
[24] Çorapçıoğlu A, Aydemir Ö, Yıldız M, et al. Structured clinical interview for DSM-IV Axis I disorders (SCID-I), clinical version. Ankara: Hekimler yayın birliği; 1999.
[25] World Health Organization. (1993). ICD-10: The ICD-10 classification of mental and behavioural disorders: diagnostic criteria for research.
[26] Spencer EA, Appleby PN, Davey GK, et al. Validity of self-reported height and weight in 4808 EPIC-Oxford participants. Public Health Nutr. 2001;5:561–565. doi:10.1079/PHN2001322.
[27] Cooper Z, Fairburn C. The eating disorder examination: a semi-structured interview for the assessment of the specific psychopathology of eating disorders. Int J Eating Disord. 1987;6(1):1–8. doi:10.1002/1098-108X(198701)6:1<1::AID-EAT2260060102 > 3.0.CO;2-9.
[28] Yucel B, Polat A, Ikiz T, et al. The Turkish version of the eating disorder examination questionnaire:

reliability and validity in adolescents. Eur Eat Disord Rev. 2011;19(6):509–511. doi:10.1002/erv.1104.
[29] Swami V, Salem N, Furnham A, et al. Initial examination of the validity and reliability of the female photographic figure rating scale for body image assessment. Pers Individ Dif. 2008;44:1752–1761. doi:10.1016/j.paid.2008.02.002.
[30] Ergüney FE. (2012). The evaluation of treatment motivation, body image and depression in patients with eating disorders. (Unpublished Master's Thesis). Istanbul University, Institute of Social Sciences.
[31] Sertel-Berk HÖ, ve Yücel B. (2011). Body image distortion and eating disorders: the Turkish validation study of the Female Photographic Figure Rating Scale, oral presentation in ECP, İstanbul.
[32] Beck AT, Ward CH, Mendelson M, et al. An inventory for measuring depression. Arch Gen Psychiatry. 1961;4:561–571. doi:10.1001/archpsyc.1961.01710120031004.
[33] Hisli N. A reliability and validity study of Beck depression Inventory in a university student sample. Turkish J Psychol. 1989;7:3–13.
[34] Fernandez F, Probst M, Meermann R, et al. Body size estimation and body dissatisfaction in eating disorder patients and normal controls. Int J Eating Disord. 1994;16(3):307–310. doi:10.1002/1098-108X(199411)16:3<307::AID-EAT2260160313>3.0.CO;2-P.
[35] Grogan S. Body image: Understanding body dissatisfaction in men, women and children. Routledge; 2016. ISBN: 9781317400431.
[36] Erol A, Toprak G, Yazıcı F, et al. Comparison of locus of control and self-esteem as predictors of severity of anorexic symptoms. Clin Psychiatry. 2000;3:147–152.
[37] Polat A, Yücel B, Genç A, et al. A preliminary report: the characteristics of eating behavior in a group of university students. Arch Neuropsychiatry. 2005;42:1–4.
[38] Albertson ER, Neff KD, Dill-Shackleford KE. Self-compassion and body dissatisfaction in women: a randomized controlled trial of a brief meditation intervention. Mindfulness (N Y). 2015;6(3):444–454. doi:10.1007/s12671-014-0277-3.
[39] Neumark-Sztainer D, Sherwood NE, Coller T, et al. Primary prevention of disordered eating among preadolescent girls: feasibility and short-term effect of a community-based intervention. J Am Diet Assoc. 2000;100(12):1466–1473. doi:10.1016/S0002-8223(00)00410-7.
[40] Lai CM, Mak KK, Pang JS, et al. The associations of sociocultural attitudes towards appearance with body dissatisfaction and eating behaviors in Hong Kong adolescents. Eat Behav. 2013;14(3):320–324. doi:10.1016/j.eatbeh.2013.05.004.
[41] Williamson DA, Gleaves DH, Stewart TM. Categorical versus dimensional models of eating disorders: an examination of the evidence. Int J Eating Disord. 2005;37(1):1–10. doi:10.1002/eat.20074.
[42] Bell L, Rushforth J. Overcoming body image disturbance: a programme for people with eating disorders. London: Routledge; 2008; ISBN: 9781134099160.
[43] Benninghoven D, Tetsch N, Jantschek G. Patients with eating disorders and their siblings: an investigation of body image perception. Eur Child Adolesc Psychiatry. 2008;126:118–126. doi:10.1007/s00787-007-0645-9.
[44] Urdapilleta I, Cheneau C, Masse L, et al. Comparative study of body image among dancers and anorexic girls. Eating and weight disorders-studies on Anorexia. Bulim Obes. 2007;12(3):140–146. doi:10.1007/BF03327641.
[45] Hagman J, Gardner RM, Brown DL, et al. Body size overestimation and its association with body mass index, body dissatisfaction, and drive for thinness in anorexia nervosa. eating and weight disorders-studies on Anorexia. Bulim Obes. 2015;20(4):449–455. doi:10.1007/s40519-015-0193-0.
[46] Cornelisen PL, Johns A, Tovée MJ. Body size over-estimation in women with anorexia nervosa is not qualitatively different from female controls. Body Image. 2013;10:103–111. doi:10.1016/j.bodyim.2012.09.003.
[47] Mohr HM, Zimmermann J, Roder C. Separating two components of body image in anorexia nervosa using fMRI psychological medicine. 2010;40:1519–1529. doi:10.1017/S0033291709991826.
[48] Thompson JK, Thompson CM. Body size distortion and self-esteem in asymptomatic, normal weight males and females. Int J Eating Disord. 1986;5(6):1061–1068. doi:10.1002/1098-108X(198609)5:6<1061::AID-EAT2260050609>3.0.CO;2-C.
[49] Lindholm L, Wilson GT. Body image assessment in patients with Bulimia Nervosa and normal controls. Int J Eating Disord. 1988;7(4):527–539. doi:10.1002/1098-108X(198807)7:4<527::AID-EAT2260070411>3.0.CO;2-8.
[50] Sertel-Berk HÖ, Yücel B. Body image distortion and eating disorders: the Turkish valisation study of the female photographic figure rating scale. Oral Presentation in XII, ECP, Istanbul; 2011.
[51] Dolan BM, Birtchnell SA, Lacey JH. Body image distortion in non-eating disordered women and men. J Psychosom Res. 1987;31(4):513–520. doi:10.1016/0022-3999(87)90009-2.
[52] Hsu LKG, Sobkiewicz TA. Body image disturbance: time to abandon the concept for eating disorders? Int J Eating Disord. 1991;10(1):15–30. doi:10.1002/1098-108X(199101)10:1<15::AID-EAT2260100103>3.0.CO;2-I.
[53] Gardner RM, Brown DL. Body size estimation in anorexia nervosa: a brief review of findings from 2003 through 2013. Psychiatry Res. 2014;219(3):407–410. doi:10.1016/j.psychres.2014.06.029.
[54] Farrell C, Lee M, Shafran R. Assessment of body size estimation: a review. Eur Eat Disord Rev. 2005;13:75–88. doi:10.1002/erv.622.
[55] Beck AT. Cognitive therapy: A 30-year retrospective. Am Psychol. 1991;46(4):368–375.
[56] Bucchianeri MM, Fernandes N, Loth K, et al. Body dissatisfaction: do associations with disordered eating and psychological well-being differ across race/ethnicity in adolescent girls and boys? Cult Divers Ethn Minor Psychol. 2016;22(1):137, doi:10.1037/cdp0000036.
[57] Watson HJ, Joyce T, French E, et al. Prevention of eating disorders: a systematic review of randomized, controlled trials. Int J Eating Disord. 2016;49(9):833–862.
[58] Stice E, Gau JM, Rohde P, et al. Risk factors that predict future onset of each DSM–5 eating disorder: predictive specificity in high-risk adolescent females. J Abnorm Psychol. 2017;126(1):38, doi:10.1037//0033-2909.128.5.825.
[59] Levine MP, Smolak L. The prevention of eating problems and eating disorders: theory, research, and practice. Psychology press; 2006. ISBN: 9781135645359.