Original article

The relationships between Orthorexia nervosa, social appearance anxiety and women's self-esteem: A cross-sectional study

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Abstract

Objectives: It is known that eating disorders and desire to be thin are more common in women. It was also stated that social appearance anxiety and self-esteem in women may be associated with eating disorders. This study aimed to identify the relationships between Orthorexia nervosa, social appearance anxiety and women's self-esteem. ***Material and methods:*** This descriptive cross-sectional study was conducted with 222 women. ***Results and Discussion:*** The study determined a mean score on the Orthorexia Scale. It determined that 27% of the women had orthorexic tendencies, and that the orthorexic tendencies of those who were worried about gaining weight were lower than those who were not worried about gaining weight. There was a negative and statistically significant relationship between the social appearance anxiety scale (SAAS) and the Rosenberg Self-Esteem Scale (RSES). ***Conclusion:*** Health professionals should be informed about Orthorexia nervosa. At-risk groups should undergo screening, necessary precautions should be taken, and the condition should be treated.

Keywords: Women; Orthorexia nervosa; social appearance anxiety; self-esteem

Introduction

In 1997, Steven Bratman first used the term, orthorexia nervosa, to describe healthy food addicts who wanted to be healthy, but ultimately followed strict dietary guidelines with harmful health consequences.[1] Although orthorexia nervosa is not included in the Diagnostic and Statistical Manual of Mental Disorders (DSM-V 2013), it is still questioned whether it is a disorder, a behavioral addiction or an excessive dietary habit.[2] The behaviors observed in relation to orthorexia are: preoccupation with food consumption, avoiding all foods containing fat, salt, sugar, artificial substances and genetically engineered foods, unusual anxiety about one's own health, spending a great deal of time in daily life trying to eat healthily, and eating, preparing and buying healthy food.[3]

The search for a perfect diet can lead to anemia, osteopenia and other medical consequences. This attention can turn into an obsession, self-discipline can turn into self-punishment, and efforts to eat healthily can turn into addictions. Orthorexia has been reported to cause physical, psychological and social problems.[4] A paradoxical feeling of loneliness and dissatisfaction can arise in relation to the social isolation caused by certain eating behaviors.[5]

The people at risk include: women[6-7], people on strict diets who are unhappy with their body weight, overweight or obese, people under a lot of stress, people with low self-esteem[8], and people who attach great importance to their body image such as actors and actresses.[9] A relationship has also been found between reduced satisfaction with body parts and increased orthorexic tendencies.[10]Body dissatisfaction and anxiety about body shape and

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size can be related to high levels of stress and disorder, which may contribute to eating concerns and irregular eating habits.[11] Social appearance anxiety (i.e., fear of others negatively evaluating one's appearance) has been found to be a risk factor for eating disorders. [12-13] Social appearance anxiety is defined as feeling nervous and anxious due to one's physical appearance being evaluated by others.[14] Previous studies have found that orthorexia nervosa involves cognitive concerns about body shape and weight.[15]Turel and her friends found that the risk of eating disorders was higher for women than it was for men.[16] The risk factors for the development of body dissatisfaction and eating disorders have been identified as internalizing the ideal of being thin, low self-esteem, self-criticism and perfectionism.[17] Mantilla et al. determined that the relationship between aspects of self-image and the eating disorders of individuals with eating disorders was much stronger than those of a normal sample, and they found that body appearance was important for the self-esteem of individuals with eating disorders.[18]

Studies have found that poor eating attitudes and behaviors are associated with poorer psychological health, including low self-esteem, high levels of depression and body dissatisfaction.[19-21]Cervera et al. found that high self-esteem prevents eating disorders, and they observed, in a sample of women who were 12 to 21 years old, that self-esteem was related to the development of eating disorders. [22] Based on all these data, this descriptive cross-sectional study aimed to determine the relationships between being female, social appearance anxiety and low self-esteem, which are risk factors for eating disorders and orthorexia nervosa.

Material and Methods

Study design and participants

This study was conducted from March to May 2019. The study included 222 women who were over 18 years old, were not diagnosed with an eating disorder and agreed to participate in the study. G Power 3.1.5 software was used to determine a sample size of 222 women. Previous studies in Turkey found the standard deviation of the Orto-11 Scale to be 3.8. [23]. The sample size was calculated with G Power. The study was conducted with women who were living in a district in the province of a city.

Instruments

A sociodemographic questionnaire prepared by the researcher, the Orto-11 Scale, the Social Appearance Anxiety Scale and the Rosenberg Self-Esteem Scale were administered to the participants.

Demographic data collected included 20 questions about the socio-demographic characteristics of the participants and their attitudes towards nutrition/diet in the questionnaire. There is also a height-weight question to measure body mass index (BMI). BMI is a value obtained by dividing body weight in kilograms by the square of height in meters (BMI=kg/m^2). People whose BMI is 18.5–24.9 kg/m^2 are considered to have normal body weight. People whose BMI is 25.0-29.9 kg/m^2 are considered overweight. People whose BMI is 30.0-34.9 kg/m^2 are considered obese class I, people whose BMI is 35.0-39.9 kg/m^2 are considered obese class II, and people whose BMI is ≥40.0 kg/m^2 are considered obese class III. [24]

TheOrto-11 Scale is used to calculate the risk of orthorexia nervosa. The Orto-11 was adapted into Turkish by Arusoglu in 2006 in Turkey. It was originally created as the Orto-15 Scale by Donini et al. in 2005 with ten questions based on the yes/no diagnostic questions created for Bratman'sOrthorexia Test. The questions were readjusted after a pilot study by Donini et al., and items 1, 3, 7, 8, 9 and 10 on Bratman'sOrthorexia Test were included after being changed in terms of expression. The items were rewritten for a 4-point Likert-type scale with the responses: always, sometimes, rarely and never. The items are scored from one to four. [25-26]

An 11-question scale was created by removing these four questions from the scale because their statistical power was not sufficient: 1. Do you pay attention to the calories in the food when you eat?, 2. Do you become indecisive if you have to choose a food in a place with a variety of foods?, In your opinion, does your mood affect your eating pattern? and 15. Have you especially preferred eating alone recently? [27] The cut-off point used by the study for evaluating the ORTO-11 Scale was determined by the method from Arusoglu's study as 24 in the 25% slice. Values below 24 were deemed to indicate a tendency toward an orthorexia nervosa.

Social Appearance Anxiety were assessed using The Social Appearance Anxiety Scale (SAAS).This scale

was developed by Hart et al. (2008) to measure anxiety about being negatively evaluated by others because of one's overall appearance. It was adapted into Turkish by Dogan (2010) and consists of 16 items. The SAAS is a five-point Likert-type scale with responses that range from 1 (not at all) to 5 (extremely). Its first item is coded reversely. The lowest possible score is 16, and the highest is 80. Higher scores indicate more social appearance anxiety. The internal consistency coefficient of the SAAS was found to be .93, and the reliability coefficient calculated by split testing was found to be .88. The test-retest reliability coefficient was calculated to evaluate the invariance of the scale over time, and the reliability coefficient was found to be .85 at a two-week interval. An item analysis was also carried out to determine its item discrimination and the items' degree of predicting total scores. Item analysis determined that the scale items' corrected total item correlations varied between .32 and .82. [14]

The Rosenberg Self-Esteem Scale is used to determine the women's self-esteem levels. The Rosenberg Self-Esteem Scale (RSES) was developed by Rosenberg (1965). It has 63 questions in 12 subscales. The first 10 items of the scale adapted into Turkish by Cuhadaroglu (1986) measure self-esteem. This study utilized 10 items of the self-esteem subscale to determine the students' self-esteem levels. The responses are strongly agreeing, agree, disagree and strongly disagree. On the scale, strongly agree is scored as 3, disagree as 2 and strongly disagree as 1 for items 1, 2, 4, 6 and 7, and strongly agree is scored as 0, agree as 1, disagree as 2, strongly disagree as 3 for items 3, 5, 8, 9 and 10. The scale scores range from 0 to 30, and 30 is considered the maximum self-esteem level. The reliability study conducted by Rosenberg (1965) determined that the test-retest reliability coefficients varied between .82 and .88, and the coefficient of internal consistency (Cronbach's alpha) varied between .77 and .88 for the subscales of the RSES. The reliability study of its Turkish version by Cuhadaroglu (1986) found that the test-retest reliability coefficients varied between .48 and .79. The Cronbach's alpha internal consistency coefficient of the study was .88 for the self-esteem subscale. [28]

Statistycal analysis

The statistical analysis was done using SPSS 23 software. The descriptive data were expressed as numbers, percentage distributions, means and standard deviations. Correlation analysis was used to determine the relationship between the independent variables and the dependent variable. The reliability level of the results was considered significant at a confidence level of 95% when P was equal or less than 0.05.

Ethical clearance: Thıs study was approved by Trakya University, Faculty of Medicine Scientific Research Ethics Committee.

Results and Discussion

Table 1 shows the descriptive characteristics of the participants. Of them, 49.1% had normal BMI, 71.1% did not exercise regularly, and 86.5% attributed importance to their appearance. Of them, 61.7% were worried about gaining weight.

Table 1. The Participants' Descriptive Characteristics

Descriptive characteristics	N	%
Gender		
Having children		
Yes	127	57.2
No	95	42.8
Education level		
Primary school or less	34	15.3
Middle school	29	13.1
High school	67	30.2
Bachelor's degree or more	92	41.4
Marital status		
Married	135	60.8
Single	87	39.2
Current place of residence		
Town/District	168	75.7
City center	54	24.3
Income		
Less income than expenses	53	23.9
Income equal to expenses	140	63.1
More income than expenses	29	13.0
Employment status		
Employed	138	62.2

Descriptive characteristics	N	%
Unemployed	84	37.8
Smoking		
Yes	76	34.2
No	146	65.8
Caring about appearance		
Yes	192	86.5
No	30	13.5
Regular physical exercise		
Yes	62	27.9
No	160	71.1
Worried about gaining weight		
Yes	137	61.7
No	85	38.3
BMI		
BMI lower than 18.5 kg/m² (thin)	10	4.5
BMI of 18.5-24.9 kg/m² (normal)	109	49.1
BMI of 25.00-29.9 kg/m² (obese)	65	29.3
BMI of 30.00-34.9 kg/m² (obese class 1)	28	12.6
BMI of 35-39.9 kg/m² (obese class 1)	10	4.5
		Mean (SD)
Age		34.31(11.13)

Table 2 compares the mean scores of the participants and their socio-demographic characteristics. The participants who had children and were married had statistically and significantly higher social appearance anxiety and lower self-esteem than the participants who had no children and were single (p<0.05). The self-esteem of smokers and the participants who attributed importance to their appearance was determined to be statistically and significantly higher (p< 0.05). The participants who were worried about gaining weight had higher ORTO-11 scores (p< 0.05), indicating lower orthorexic tendencies. No statistically significant differences were found in the ORTO-11 Scale scores by age, education level, marital status, income level, place of residence, employment status and smoking.

Table 2. A Comparison of the Orto-11 Scale, Social Appearance Anxiety Scale and Rosenberg Self-Esteem Scores and the Participants' Descriptive Characteristics

Descriptive Characteristics (N)	Orto-11 Scale Mean rank	Social Appearance Anxiety Scale Mean rank	Rosenberg Self-Esteem Scale Mean rank
Having children			
Yes (127)	106.67	104.02	120.58
No (95)	117.95	121.51	99.36
Test/p	Z=0.193 p=.087	Z=-2.009 **p=0.045**	Z=-2.443 **p=0.015**
Marital Status			
Married (135)	113.53	103.13	119.17
Single (87)	108.36	124.49	99.60
Test/p	Z=-0.588 p=0.556	Z=-2.421 **p=0.015**	Z=-2.222 **p=0.026**
Smoking			
Yes (76)	115.54	118.71	99.56
No (146)	109.40	107.75	117.72
Test/p	Z=-0.679 p=0.497	Z=-1.208 p=0.227	Z=-2.204 **p=0.045**
Caring about appearance			
Yes (192)	110.43	109.08	115.93
No (30)	118.32	126.97	83.15
Test/p	Z=-0.628 p=0.530	Z=-1.419 p=0.156	Z=-2.607 **p=0.009**
Worried about gaining weight			
Yes (137)		122.55	105.14
No (85)		93.68	121.76
Test/p		Z=-3.258 p=**0.001**	Z=-1.880 p=0.060

Table 3 shows the participants' mean scores on the ORTO-11 Scale, the Social Appearance Anxiety Scale and the Rosenberg Self-Esteem Scale. The participants' mean ORTO-11 mean score was 26.58±3.48, their mean SAAS score was 31.16±11.45, and their mean RSES mean score was 23.23±4.30.

Table 3. The Participants' Mean Scores on the Orto-11 Scale, the Social Appearance Anxiety Scale and the Rosenberg Self-Esteem Scale

Minimum-maximum scores on the scales	Mean	Standard Deviation	Minimum	Maximum
Orto-11 Scale (11-44)	26.58	3.48	17	35
Social Appearance Anxiety Scale (16-80)	31.16	11.45	16	74
Rosenberg Self-Esteem Scale (0-30)	23.23	4.30	11	30

Table 4. The Relationships Between the Participants' Scores on the ORTO11, Social Appearance Anxiety and Rosenberg Self-Esteem Scales

	Orto-11	Social Appearance Anxiety Scale	Rosenberg Self-Esteem Scale
	r	r	r
Orto-11	1.000	0.038	-0.036
SAAS	0.038	1.000	-0.463
SES	-0.036	-0.463	1.000
BMI	-0.019	0.103	-0.006

*p<0.01

Table 4 shows the correlation between the ORTO-11 Scale, the SAAS scale and the RSES. There was a negative and statistically significant relationship between the SAAS and the RSES. In other words, as the scores on the social anxiety scale increased, the scores on the Rosenberg Self-Esteem Scale decreased. No statistically significant relationships were determined between the ORTO-11 Scale and the SAAS, the RSES and the BMI.

Women are especially sensitive to different forms of nutrition and statements about their body image throughout their lives. [29] It has been found that they are at risk for orthorexia nervosa. [24] Of this study's participants, 27% had orthorexic tendencies. Another study found that 28.8% of women scored lower than cut-off score and had orthorexic tendencies. [30] Plichta, Jezewska-Zychowicz and Gebski determined that 75.4% of female students had orthorexic tendencies. [31] Brytek-Matera et al. found that 68.55%

of female students met the criteria for high levels of orthorexic (healthy eating) behaviors. [32] Ramacciotti et al. determined that 66.7% of women had orthorexia. [33] Although orthorexia nervosa is not included in the DSM5 diagnosis criteria, it is an important issue that should be emphasized. Considering the complications that can be caused by orthorexia nervosa, mental health teams should address this disorder and make the necessary interventions.

While some studies have not found clear and significant relationships between orthorexia nervosa and negative body image, other studies have found that there is a concern over body image in orthorexia nervosa. [32] While this study did not find a statistically significant relationship between orthorexia nervosa and the SAAS; the orthorexia score of the participants who were worried about gaining weight was higher than that of the participants who were not worried about it, which means that their orthorexic tendencies were lower. In this study, the participants who were worried about gaining weight may have paid more attention to amounts of food rather than eating healthily, and therefore had lower orthorexic tendencies.

Although some studies have found a negative relationship between orthorexia nervosa and BMI[33-35] others have found a positive correlation between orthorexia nervosa and BMI. [36-37] On the other hand, there are some other studies that have found no significant relationship between them. [8,38] This study found a negative relationship between BMI and orthorexia; however, it was not statistically significant. The studies on the obsession with healthy eating determined that the health-related characteristics of the food consumed were taken into consideration, but the amount were not taken into consideration when evaluating this obsession's effect on people's weight gain. [31]

Conclusions

The study determined a mean score of 26.58±3.48 on the ORTO-11 Scale. Yesil et al. similarly determined that women's score on the ORTO-11 Scale was 26.9±3.85. [38] Parra-Fernandez et al. found women's score on the ORTO-11 Scale to be 27.25±5.74. [39] Okumusoglu found women's mean ORTO-11 score to be 15.82±5.29. [40] The ORTO-11 score in this study was like those in the literature and should not be underestimated. Therefore, health professionals should be informed about orthorexia nervosa, and necessary precautions should be taken.

The causality of relationships was not evaluated because this is a descriptive cross-sectional study. Among its limitations is the fact that it was carried out in a single district using self-reporting.

Conflict of interest: The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical clarity: The study was carried out appropriate by the Declaration of Helsinki in 1995 (as revisedin Edinburgh 2000). This research was accepted by the Trakya University Faculty of Medicine Ethics Committee (TÜTF-BAEK 2019/72).

Contribution of Authors:

Data gathering and idea owner of this study: Duran S, Can Öz, Y

Study design: Duran, S

Data gathering: Duran, S

Writing and submitting manuscript: Duran S, Can Öz, Y

Editing and approval of final draft: Duran S, Can Öz, Y

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