

Orthorexia nervosa tendency among students of the department of nutrition and dietetics at a university in Istanbul

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ABSTRACT

OBJECTIVE: The aim of this study was to determine an orthorexia nervosa scale score for and evaluate orthorexic tendency among students of nutrition and dietetics according to various sociodemographic characteristics.

METHODS: This cross-sectional study was carried out in May and June of 2016 among 208 students in the nutrition and dietetics department at a university in Istanbul. After receiving the approval of the university ethics committee, of a total of 300 students, 208 agreed to join the study. Participants completed a questionnaire related to individual characteristics and the ORTO-11 scale during a face-to-face interview. The ORTO-11 scale is a verified Turkish scoring system in which a low score indicates orthorexic tendency. The Mann-Whitney U test, independent samples t-test, Kruskal-Wallis test, and analysis of variance were used to assess the data. $P < 0.05$ was accepted as statistically significant.

RESULTS: Orthorexic tendency was significantly higher in males ($p=0.050$) and students who lived with their family ($p=0.002$). Mean ORTHO-11 scale score did not differ significantly between groups when the participants were grouped by parameters of smoking, alcohol consumption, chronic disease status, body mass index, diet observance, or use of nutritional supplement products.

CONCLUSION: The orthorexic tendency was higher in men and in students who lived with their family. Additional assessment of individual eating habits, eating behavior, and personality characteristics would shed light on the reasons for the difference between gender groups. Qualitative studies should be carried out and possible confounding factors should be determined.

Keywords: Eating behavior disorder; food choice; orthorexia.

Behavioral responses associated with the act of eating, manner or mode of eating, and patterns in the act guide the definition of eating behavior [1]. Eating behavior is influenced by individual percep-

tion, previous experiences, nutritional status, and social, demographic, and cultural conditions [2-4].

An eating disorder is a disease state in which disorders of eating attitude and behavior emerge as a



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result of an impaired perception of body image, and the groups at greatest risk are thought to be adolescents and young women [1, 5]. Individuals with eating disorders experience an obsessive fear of being overweight, which increases the level of anxiety related to body image [5, 6].

Various forms of eating disorders have existed for a very long time; however, anorexia nervosa (AN), and bulimia nervosa have only recently been included in the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition [7].

The term orthorexia nervosa (ON) was first defined by Steven Bratman in 1997 as a form of AN. The term was derived from the Greek words "orthos" (right, true) and orexia (appetite), and it is related to an obsession with healthy foods and nutrition [8, 9].

In a case of ON, typically, the individual excessively controls each meal, and failing to observe the planned dietary regime results in self-reproach and self-hatred [10, 11]. Orthorexic individuals pay extreme attention to eating healthy foods; they are very attentive to the contents of foods they purchase, and tend to be particular about the methods and tools used in the preparation of food [4, 12]. Many orthorexic individuals prefer to eat raw food. Mental stress caused by obsessive dietary habits may lead these individuals to refrain from consuming many foods and result in a loss of weight, as seen in the eating disorder of AN [13].

Healthy modifications to lifestyle and eating play a fundamental role in the prevention of various conditions, such as cardiovascular disease, cancer, osteoporosis, hypertension, and obesity [4, 13]. Concern about healthy nutrition is considered a psychiatric disorder when it transforms into an exaggerated effort to painstakingly comply with a healthy diet, a fixation that preoccupies the individual and creates problems in their social life [13].

Since a universal definition of ON has not yet been made and diagnostic criteria have not been established, the contributions of new studies to the literature are of great importance.

It has been reported in some studies that ON is frequently present among female dieticians and that

ON influences their decision to become a dietician [4, 14]. The objective of the present study was to determine ORTO-11 scores among university students of nutrition and dietetics and to evaluate their orthorexic tendency based on sociodemographic characteristics.

MATERIALS AND METHODS

Method and participants

This cross-sectional study was conducted among undergraduate students of the department of nutrition and dietetics of a university located on the Anatolian side of Istanbul province in May and June of 2016. The ethics committee of Marmara University granted approval for the study (date: May 6, 2016) before the data collection process was initiated. Probability sampling was not performed, and an attempt was made to reach all 300 students in the department program. A total of 208 (70%) students were willing to participate in the study, and the data were collected in face-to-face interviews using a questionnaire that inquired about individual characteristics and the ORTO-11 scale.

Questionnaire

The questionnaire was used to collect sociodemographic characteristic data: height/weight (based on self-report), smoking status of the participants, use of alcohol or nutritional supplements, if they lived with their family, presence of any chronic disease in the student or their family, degree of satisfaction with their external appearance, and whether they had been on a diet to lose weight in the last 3 months. Body mass index (BMI) of the participants was calculated and World Health Organization (WHO) classification of nutritional status was applied.

ORTO-11 scale

Donini et al. introduced the ORTO-15 scale to assess ON in 2005, and subsequently also performed a validation study [14, 15]. Arusoğlu et al. narrowed the focus of the ORTO-15 scale, and created the

Turkish ORTO-11 scale adaptation in 2006 [16]. This Likert-4 type scale contains 11 questions regarding selection, purchase, and preparation of food, as well as respondent behavior with respect to the consumption of food they evaluated as “healthy.” The responses “never,” “sometimes,” “often,” or “always” yield a score of 0 to 4 points for each question; a lower score indicates greater tendency toward ON [16]. The ORTO-15 scale has a cut-off point, while the ORTO-11 scale does not.

Data analysis

Quantitative data were analyzed using the Mann-Whitney U test, independent samples t-test, Kruskal-Wallis test, and analysis of variance. Chi-square and Fisher’s exact tests were used to assess qualitative data. $P < 0.05$ was accepted as the level of statistical significance.

RESULTS

The study population consisted of 208 students (female: $n=179$, 86%; male: $n=29$, 24%) who volunteered to participate in the study. An equal number of students lived with their family or in a student residence (each: $n=76$; 36%). Of the entire group, 164 (79%) participants were nonsmokers, and 170 (82%) did not consume alcohol. Most ($n=199$; 96%) said that they did not have any chronic disease, though chronic disease was present in the family of 86 (41%) participants. Mean BMI of the participants was 20.9 ± 2.6 kg/m² according to the WHO classification of nutritional status, 162 (78%) of individuals were normal weight.

In response to the question, “Are you pleased with your image in the mirror?” 62 (30%) said not at all/not pleased, and 166 (70%) said somewhat/very pleased. Most ($n=159$; 77%) of the participants had not been following a diet to lose weight within the last 3 months. In addition, 159 (77%) participants were not using nutritional supplements at all, while 36 (17%) participants said that they had used such products in the past. Thirteen participants were using nutritional supplements at the time of the interview. A summary of these characteristics is provided in Table 1.

TABLE 1. Distribution of participants according to characteristics

	n	%
Gender		
Female	179	86.1
Male	29	13.9
University class		
Year 1	32	15.4
Year 2	75	36.1
Year 3	56	26.9
Year 4	45	21.6
Residence		
With family	76	36.5
Student housing	50	24.0
Student hostel	76	36.5
Alone	3	1.4
Other	3	1.4
Tobacco use		
Never smoked	164	78.8
Quit smoking	17	8.2
Current smoker	27	13.0
Alcohol use		
Yes	38	18.3
No	170	81.7
Chronic disease		
Present	9	4.3
Absent	199	95.7
Chronic disease in the family		
Present	86	41.3
Absent	122	58.7
BMI group		
Underweight	32	15.4
Normal	163	78.4
Overweight	11	5.3
Obese	2	1.0
Are you pleased with your image in the mirror?		
Not at all pleased	4	1.9
Not pleased	10	4.8
Somewhat pleased	48	23.1
Pleased	122	58.7
Very pleased	24	11.5
Are you on a diet?		
Yes	43	20.7
No	165	79.3
Nutritional supplement use		
Never used	159	76.4
Used in the past	36	17.3
I am still using	13	6.3
Total	208	100.0

BMI: Body mass index.

TABLE 2. ORTO-11 score according to characteristics

	n	%	Mean	SD	p
Gender					
Female	179	86.1	28.9	3.7	0.050
Male	29	13.9	27.4	3.4	
University class					
Year 1	32	15.4	29.4	3.8	0.13
Year 2	75	36.1	28.9	3.3	
Year 3	56	26.9	29.1	3.0	
Year 4	45	21.6	27.4	4.6	
Residence					
With family	76	36.5	27.7	3.8	0.002
Other	132	63.5	29.3	3.5	
Tobacco use					
Smoker	181	87.0	27.5	4.2	0.07
Nonsmoker	27	13.0	28.9	3.5	
Alcohol use					
Yes	38	18.3	29.5	3.4	0.18
No	170	81.7	28.5	3.7	
Chronic disease					
Yes	9	4.3	30.4	3.4	0.1
No	199	95.7	28.6	3.7	
Chronic disease in the family					
Yes	86	41.3	29.0	3.7	0.5
No	122	58.7	28.5	3.7	
Are you pleased with your image in the mirror?*					
Low	62	29.8	29.2	2.6	0.4
High	146	70.2	28.5	4.0	
BMI group**					
Underweight/normal	195	93.8	28.8	3.6	0.38
Overweight/obese	13	6.3	27.6	4.1	
On diet					
Yes	43	20.7	29.5	3.5	0.15
No	165	79.3	28.5	3.7	
Nutritional supplement use					
Nonuser	159	76.4	28.6	3.6	0.4
Past/present user	49	23.6	29.1	3.8	

SD: Standard deviation; *Low: I am not pleased at all/I am not pleased/I am somewhat pleased; High: I am pleased/I am a very pleased. **BMI: Body mass index.

The mean ORTO-11 scale score of all participants was 16.5 ± 4.6 points. The distribution of ORTO-11 scores based on characteristics of the participants can be seen in Table 2. The mean ORTO-11 score of male participants was significantly lower

than that of female participants (Table 2).

When the participants were grouped based on smoking status, presence of chronic disease in the student or the family, and BMI, no significant difference was found in mean ORTO-11 score (Table 2).

When the participants were divided into groups of those living with family members and another residence, examination of the ORTO-11 scores revealed that mean of those living at home (27.7) was significantly lower than the other group (29.3; $p=0.002$) (Table 2).

The mean ORTO-11 score was 1 point higher among those who were observing a diet compared with those who didn't, but the difference was not significant ($p=0.15$). The mean ORTO-11 score of the group who had not used nutritional supplements was 0.5 point lower than those who had previously used such products and current users, without a statistically significant difference between groups. Among the participants who were not very pleased with their image in the mirror, the mean ORTO-11 score of was 0.7 points higher than those who were very pleased, but there was no significant difference between groups ($p=0.4$) (Table 2).

DISCUSSION

The ORTO-11 scale score of students of a university department of nutrition and dietetics was calculated and analyzed based on sociodemographic data and characteristics of the respondents. The association between gender and tendency toward ON was examined, and it was observed that the male participants had a greater predisposition toward ON. Some studies [17–21] have reported no significant association between gender and inclination toward ON, while in others [22, 23], the tendency was observed more often among men. Increased ON tendency among women has also been reported [24, 25]. Eating disorders are generally acknowledged to be more frequently seen among women [26]. However in our study, a lack of adequate data about the eating attitudes and behavior of the participants made it difficult to definitively determine the cause of this difference between gender groups. In one study conducted [25], the risk of ON was found to be 5-fold higher among individuals displaying an abnormal eating attitude compared with those with normal eating attitudes. Our subgroup analyses revealed that male participants more frequently consumed tobacco products ($p=0.005$) and alco-

hol ($p=0.021$) compared with female respondents. Though unhealthy habits such as cigarette use were more frequently encountered in men, the greater tendency toward ON may be related to personality characteristics of the male participants. One of the important limitations of this study was our inability to use a standard scale to evaluate the personality characteristics of our participants. Furthermore, our study group consisted only of students of the department of nutrition and dietetics, and therefore our results may be different from those of a survey of the general population.

Study participants living with their family were found to be significantly more predisposed toward ON in our analysis; however previous studies did not find a significant association between living conditions and tendency toward ON [23, 25] Subgroup analyses of our study group revealed that frequency of tobacco ($p=0.052$) and alcohol ($p=0.003$) use was 3 times lower in participants living with their family relative to other groups. Higher predisposition toward ON among individuals refraining from an unhealthy lifestyle seems to be a consistent finding. While observing healthy dietary habits should be encouraged, it becomes dangerous when it becomes an obsessive type of eating behavior. Individuals with this pathological focus will likely develop eating behavior that is not dependent on the place of residence [4, 10, 13]. Since this was a cross-sectional study, it was difficult to evaluate the causal relationship between residence environment and predisposition toward ON.

As in previous studies [14, 24], a significant association between BMI and ON was not found in our research. In the aforementioned studies, the authors indicated that BMI was not a determinative factor for ON and that individuals demonstrating orthorexic behavior generally had a normal BMI. Another study found a significant correlation between extraordinary focus on external appearance, fear of being overweight, and a tendency toward ON [19]. Most (93.8%) of our study participants had a low/normal BMI, which might have prevented us from distinguishing any such difference between groups.

When participants were grouped according to use of tobacco products and alcohol, the ORTO-

11 scores did not differ significantly between groups. No significant association was found between the presence of a chronic disease in the individual or in the family and the participants' tendency toward ON.

Another limitation of our study was the lack of a more detailed inquiry about eating attitude. Orthorexic trend is more frequently seen among individuals who follow a strict dietary regimen [24]. A significant correlation was not found between diet regimen, use of nutritional supplements, and tendency toward ON. This may be due to the small number of study participants who observed a diet plan or used nutritional supplement products.

Conclusion and Recommendations

In our study, the tendency toward ON was greater among men. Further evaluation of eating attitudes and eating behavior, as well as personality characteristics of the individuals, could add to our understanding of difference based on gender. Tendency toward ON was also more frequently detected in participants living with their family. Qualitative studies should be conducted to examine the association between living with family and inclination toward ON, and potential confounding factors should be identified. The ORTO-11 scale does not have a cut-off value, which may lead us to evaluate healthy behavior patterns as a pathological condition. Therefore, validation and reliability studies of this scale should be performed.

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