THE EFFECT OF SELF-ESTEEM AND INCIDENCE OF ORTHOREXIA NERVOSA AMONG UNIVERSITY STUDENTS OF HEALTH EDUCATION

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AUTHORS' CONTRIBUTIONS

This work was carried out in collaboration between both authors. Author AÖ designed the study, wrote the protocol and interpreted the data. Author GÜ anchored the field study, gathered the initial data and performed preliminary data analysis. Author AÖ managed the literature searches and produced the initial draft. Both authors read and approved the final manuscript.

Original Research Article

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ABSTRACT

Objective: This study was aimed to investigate the incidence of orthorexia nervosa among University students, educating them about the health science field and the effect of self esteem on it.

Methodology: A total of 165 volunteer students who were students of health science departments in a state University in Turkey were used for this study. Students who received nutrition education at various classes were an accepted study group (n=85), and those who had not been accepted as a control group (n=80). A questionnaire containing demographic information was administered to all participants along with Coopersmith Self Esteem Inventory, Orto - 15 Test, and the Maudsley Obsessive Compulsive Inventory. Statistical analysis was performed using the SPSS (Statistical Package for the Social Sciences) 21.0 program.

The Results: Orthorexia Nervosa (ON) frequency was found to be 66.46% and the female / male ratio was 3:1 respectively. In the study group, obsessive-compulsive symptoms score were lower and self-esteem scores were higher (p <0.001). A significant negative correlation was observed between age and obsessive-compulsive symptom's test scores; and a significant positive relationship was observed between age and self-esteem test scores. Obsession score decreased, while self-esteem scores increased with increasing age.

Conclusion: In this study, ON incidence is affected by age, gender and vocational training. Orthorexic individuals are more interested in foods being pure, clean and natural, rather than body image and body weight. Therefore, unlike eating disorders, orthorexia is not associated with self-esteem. These results show that although, there are similar features between ON and eating disorders, ON might be more suited to obsessive-compulsive disorder criteria. However, comprehensive and more recent studies are needed.

Keywords: Orthorexia nervosa; eating disorders; self-esteem; obsessive symptoms; nutrition.

1. INTRODUCTION

Adolescence is a period when several developmental changes occur. During this period, adolescents' sensitivity to changes in themselves are known to increase. Adolescents, while trying to adapt to changes in their body on one side, also try to regulate their body development by changing their feed on the

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other side. Severity of developmental problems experienced by adolescents may result in a negative impact on self-esteem [1,2].

Self-esteem is a judgement format developed by assessing oneself and finding oneself successful and sufficient as a result of this assessment [3,4]. A high level of self-esteem positively affects psychological health while a low level of self-esteem affects psychological health negatively [5]. The period of Adolescence is considered a risky period in terms of self-esteem. The changes that occurred in an adolescent's body as well as the emotions have also changed the body image that is perceived until that day. Adolescents have experienced the harmony and complexity between the outer appearance and inner self image [3,6]. Therefore, the distorted thoughts and depressive feelings about body image as well as low self-esteem are seen more frequently during this period [7]. Studies show the relationship between low self-esteem and eating disorders, substance abuse, depressed mood, life dissatisfaction and the lack of general well-being [1,5,7].

Eating behavior is defined as behavioral responses related to eating style, food preferences, nutrition principles and methods [8]. This behavior is affected not only by social, demographic and cultural conditions, but also by an individual's perception and past experiences related to food and nutritional status. Eating behavior disorders are illnesses which emerge as a result of deterioration of an individual's body image and it was discovered that young women, especially adolescents are more susceptible to these disorders [9,10,11].

Orthorexia Nervosa (ON) has been described to express a pathological obsession related to healthy food consumption by Bratman for the first time [12]. Unlike other eating disorder, in orthorexia nervosa it is the foreground for the requests of consumption, pure and healthy foods [13]. This request is similar to obsessive-compulsive disorder by the direction to be overly busy of mind and behavior [13,14,15]. Orthorexics are more concerned about the foods being healthy and pure than its caloric value. As with other eating disorders, it has been reported that depression, anxiety, stress, obsessions and compulsions may accompany ON [15,16,17].

It is known that despite ON has not yet been accepted as a psychiatric disorder, it has overlapping features with Anorexia Nervosa (AN), Obsessive Compulsive Disorder (OCD) and even Obsessive-Compulsive Personality Disorder (OCPD). Some features of ON are also considered similar to health-related anxiety observed in somatoform disorders [17].

From previous studies, clear information is yet to be given regarding the prevalence of ON due to differences in methodologies and sample selection. Current studies have shown that the general population incidence of ON varied between 6.9 to 57.6% and in the specific groups may be as high as 81.8% [16,18,19].

In addition, it is not yet clear whether ON is more common in women or in men. Similar contradictions regarding the prevalence of ON have maintained the validity about the effects of age, educational status, BMI, situation of smoking and alcohol use [15,16,17]. It has been estimated that health professionals, artists and athletes are at higher risk in terms of ON due to their profession or education [16,18,20].

According to Diagnostic and Statistical Manual of Mental Disorders V (DSM-V), although, ON is yet to be a part of the classification of eating disorders, but is thought to be an obsessive-compulsive disorder [21].

As a result of the emotional, physical and behavioral characteristics of ON, the implementation of the scales of eating attitude, depression and obsessive compulsive behaviors with Orto 15 test to diagnose, has been suggested [17,18,20].

Orthorexia nervosa, which is known as healthy eating obsession [13-16], is believed to be more common in persons studying health education and health care professionals. Although, the effect of self-esteem in eating disorders has been investigated in several studies, there are no studies investigating the self-esteem in orthorexia nervosa. Therefore, our study was aimed to investigate the incidence of orthorexia nervosa among University students of health education and the effects of self-esteem in the development of orthorexia nervosa.

2. METHODOLOGY

The research is a descriptive cross-sectional study.

2.1 Population and Sampling

The population of the study consist of University students studying in the health field at a State University in Turkey. Students studying Nursing and Midwifery in Health School and in the 2nd grade (study group) and those studying Health Services in Vocational School and in the 2nd class (control group) who volunteered to participate, were included in the study. Volunteers' consent was given by all participants. The whole universe is targeted to be reached, however, a total of 165 students, including

85 in the study group and 80 in the control group who volunteered to participate in the study, were ready at the time of the study, though still studying in the University. While students included in the study group has mandatorily learned nutrition lessons at first in class and voluntarily in other classes during their undergraduate days; students in the control group have not been taught any nutrition lesson in any class prior to the training course. Therefore, the nutritional information of students used in the study group was assumed to be better.

2.2 Data Collection Techniques and Tools

The "personal information form" included questions about the demographic information of students, "ORTO-15 test and Maudsley Obsessive Compulsive Inventory" is needed to investigate the presence of orthorexia nervosa and "Coopersmith Self Esteem Inventory" to determine self-esteem levels are used in this study.

2.2.1 Personal information form

It contains questions pertaining to socio-demographic properties such as gender, age, height, weight, waist circumference, nutrition habits and place of residence of the students who participated in the study. The height, weight and waist circumference of students were measured by the researchers.

We measured body weight to the nearest 0.1 kg and height in light indoor clothes using a digital scale (model 763; Seca GmbH & Co, KG, Hamburg, Germany). Waist and hip circumference were measured on a horizontal plane at the level of the iliac crest using an Ergonomic Circumference Measuring Tape (model 201; Seca GmbH & Co, KG, Hamburg, Germany). Body mass index was calculated as weight in kilograms divided by the square of the height in meters.

2.2.2 Maudsley Obsessive- Compulsive Inventory (MOCI)

The original inventory developed for the assessment of the obsessive-compulsive symptoms by Hodgson and Rachman [22], contains 30 true-false items. The Turkish adaptation, validity and reliability study of inventory has been made by Erol and Savasır [23]. In the Turkish version, 7 items connected with ruminations (obsessional thinking) have been added to form 37-items inventory. The inventory has four subscales including control, cleanliness, slowness and doubts. The highest values are 37 for total obsession points, 9 for checking, 11 for cleaning, 7 for slowness, 7 for doubt. Receiving high scores from the test

indicates a high probability for obsessive compulsive disorder. This study did not calculate the cut off point. The inventory is recommended for use in comparative studies. The study by Erol and Savasır demonstrated that MOCI is a valid and reliable measure for the prevalence in samples of normal and psychiatric symptoms of obsessive-compulsive type in our country [23].

2.2.3 Ortho-15 scale

It has been developed by Donini et al. [24], that based on the 10 questions in the Orthorexia questionnaire of Bratman and Knight [25]. The original form of the ortho-15 test which is a scale consisting of 15 items for evaluating orthorexia nervosa, has been developed for the first time in Italy [24]. The Turkish validity and reliability study of the scale has been made by Arusoğlu et al. [26]. A 3-factor solution with varimax rotation explained 40.62% of the variance. When 4 items with factor loadings below ± 0.50 were eliminated from ORTO-15, the Cronbach's alpha coefficient was 0.62. The remaining 11 items were thought to have statistical satisfactory properties for the Turkish version of ORTO and were collectively referred to as ORTO-11.

The items are intended for research in persons to determine their obsessive behaviors in food consuming subjects such as selection of food, preparing and purchasing of food that are regarded as healthy [14,24]. Some items examine "cognitive-rational space", some of them examine clinical aspects and others the "emotional aspect". Each expression is evaluated using the 4-point Likert-type scale and is mostly graded with a score one of 1, 2, 3 and 4. Point increase in assessment of the scale indicates a reduction in the risk of having orthorexia nervosa [24,26]. Orto 15 test scores <40 indicates the presence of Orthorexic trend and increased risk in terms of ON [18,24,27].

2.2.4 Coopersmith Self-Esteem Inventory

The scale developed by Stanley Coopersmith [28] is a measurement tool used to assess the attitude of oneself in various fields. The Turkish validity and reliability study of the scale has been made by Turan and Tufan [29]. The reliability study of the scale was performed by a group of 56 people within a 15 day interval and the correlation was found as r = .76 (p <.05). In a validity study of the scale, both the Rosenberg Self-Esteem Scale and the Coopersmith Self-Esteem Scale was applied to a group of 200 people and the correlation of r = .62 (p <.05) was found. Coopersmith Self-Esteem Scale consists of statements that can be checked as "like me" or "not like me". The short form of the scale is made up of

25-items and the long form of the scale comprises 58-items. When using the short form scale, scores has been graduated from 0 to 100 points by multiplying by 4. In this study, the long form generated 58-items of scale have been used. Inventory is composed of subscales including general self-esteem, social self-esteem, familial self-esteem and academic self-esteem. A total of 8 items in the scale are referred to as lie items. Lie items can not measure self-esteem, they only intend to determine to what extent it could advocate for a person. Therefore, the scores taken from the lie items are not included in the self-esteem scores. The self-esteem score of students who answered yes to five or more from 8 of the lie items cannot be processed, because the score doesn't reflect actual self-esteem. Therefore, a person's self-esteem score can be maximum 50 points or can be 50 x 2 = 100 as proposed by Coopersmith. The height of the scores indicates a higher self-esteem [29].

2.3 Body Mass Index (BMI)

It is an index indicating the ratio to height of the individual's weight and is used to determine the healthy limits of the body. Weight (kg) / height (m^2) is calculated according to the formula. It has been evaluated that "underweight" is less than 18.5 kg/m^2 BMI, "normal weight" from 18.5 to 25.0 kg/m^2 BMI, "overweight" from 25.0 to 29.9 kg/m^2 BMI, "obese" 30.0 kg/m^2 BMI and above [30].

2.4 Prosess

After obtaining permission from the Rector of the University and College used in this study, the scales have been applied to the students during their free periods. Students have been informed and verbal consent of the participants obtained by researchers before application which is for the purpose of research The survey was carried out under the supervision of researchers in the classroom and the application took about 30 minutes.

2.5 Statistical Analysis

The statistical analysis of data obtained have been performed using independent samples t-test, Mann-Whitney U, Chi-square, Kruskal-Wallis, Anova, Pearson's correlation test and Spearman correlation tests in SPSS 21.0 software package programme. Confidence intervals have been determined as p <0.05, 0.01,0.001 in the analysis process.

3. RESULTS

The average values for age, BMI, waist circumference and waist / height ratio were 20.37±1.75 years; 21.52±2.41 kg / m^2; 77.07±8.41 cm; and 0.46±0.04 respectively for all students who participated in the study.

After examining the BMI values of all students who participated in the study, it was found that 84.8% (n = 139) has normal BMI (18.5 to 24.9 kg / m^2), 5.4% (n = 9) underweight (<18.5 kg / m^2) and 9.8 % (n = 16) overweight (≥25,0 kg / m^2). There were no significant differences in the average scores received from all three tests according to BMI groups (p> 0.05).

Comparison based on test scores and anthropometric measurements according to the sex of the students are shown in Table 1.

From the comparison between the average values of BMI and waist circumference according to gender, it was discovered that female students have significantly lower values than men (p <0.001). There was no significant difference observed with regard to scores taken from Obsessive symptoms, Orto 15 and self-esteem test between both sexes. Groups were compared in terms of test scores in Table 2.

It was found that obsessive symptom scores of the control group were significantly higher than the study group, but the self-esteem scores were significantly lower (p <0.001).

Table 1. Comparision of BMI, Waist circumference, Waist/Height ratio, and tests scores according to the sex of the students

	Female (n=127)		Male (n=38)		p
	X	SS	X	SS	
BMI (kg/m^2)	21,16	2,30	22,72	2,44	0,000*
WC (cm)	75,24	7,74	83,13	7,76	0,000**
Waist /Height ratio	0,46	0,04	0,47	0,04	0,127
MOCI test score	14,64	6,43	15,13	8,31	0,867
Orto 15 scale score	38,07	3,49	37,92	3,23	0,813
Self – esteem test score	40,30	5,36	41,95	4,66	0,073

*p<0.001 (Independent sample T test),
**p< 0.001 (Mann whitney U test)

The students have stayed 39.0% with their family, 30.5% in dorm and 30.5% with friends. When compared with the scores taken from the tests according to shelters, no significant differences have been revealed between the groups for each of the three test scores (p> 0.05).

When BMI values were compared in relation to shelters; median BMI value for students who stay at student home (21.78±3.32 kg/m^2) and at home with their family (22.07±3.91 kg/m^2) was found to be significantly higher than staying in a dorm (20.77±2.93 kg/m^2) (p <0.05). No significant difference have been found between the BMI values of students staying at home with their family and at student homes.

The percentage of Orto- 15 test scores <40 is 66.46% (n = 109), the female / male ratio is about 3: 1. The distribution of the students having Orto- 15 test scores <40 according to gender is shown in Table 3.

The percentage of orthorexic prone female students (75.2%) has been found significantly higher than the percentage of male students (24.8%) (p <0.001).

The percentage of Orto 15 test scores <40 is 52.3% in the study group (n = 57) and 47.7% in the control group (n = 52), significant differences has not been found between groups (p> 0.05).

When Orto 15 test score of students having <40 and ≥40 are compared with waist circumference and BMI values, no significant difference was found (p> 0.05).

When Orto 15 test score of students having <40 and ≥40 are compared with obsessive symptoms and self-esteem test scores, no significant differences was found (p> 0.05).

Correlation of the age, BMI and waist circumference values with test score are shown in Table 4.

A significant negative correlation between age and obsessive-compulsive symptoms (MOCI) scores (r = - 0.175; p = 0.025), and a significant positive correlation between self-esteem test scores with age (r = 0.206; p = 0.008) have been observed. As the age increase, self- esteem score has a corresponding increase, while the obsessive symptoms score decreased. No significant relationship was found between BMI and waist circumference test scores.

Table 2. Comparision of the groups in terms of test scores

Tests	Groups	N	Mean	Standard deviation	p
Orto 15	Study	85	37,83	3,46	
	Control	80	38,24	3,39	0,542
MOCI	Study	85	12,78	6,01	
	Control	80	16,73	7,18	0,000*
Self esteem	Study	85	41,98	4,90	
	Control	80	39,39	5,27	0,001*

p<0.001 (Mann whitney U test)

Table 3. Distribution of the students having Orto 15 scale scores <40 according to sex

Orto 15 scale score		N	%	p
<40 (Having ON risk)	Male	27	24,8	0,000*
	Female	82	75,2	
	Total	109	100,0	

p<0.001

Table 4. Correlations of age, BMI and waist circumference with tests scores

Parameters		Orto 15	MOCI	Self esteem
Age (year)	r	-0,071	-0,175	0,206
	p	0,071	0,025*	0,008*
BMI (kg/m^2)	r	0,007	-0,117	0,045
	p	0,934	0,137	0,570
Waist circumference (cm)	r	0,016	-0,020	0,020
	p	0,840	0,803	0,797

p<0.05

No significant correlation was found between Orto-15 test score and obsessive symptoms test score. Similarly, No significant correlation was found between Orto-15 test score and test scores of self-esteem.

4. DISCUSSION

ON is a nutrition behavior obsession whose occurrence is increasing nowadays and it affects groups of higher level especially certain professional groups. It has been reported that the prevalence of health workers accepted as high-risk groups ranges from 35.0 to 57.8% [31,32].

In the study of medical doctors carried out by Bağcı Bosi [33], it has been reported that 45% of them had ortho-15 test scores below 40 which indicates an orthorectic behavior tendency. The prevalence of ON was found to be 43.6% in another study carried out on medical students [34]. In a study conducted with students at German Universities, it was discovered that there was no difference between students of nutrition section and students from other parts in terms of showing ON symptoms [35]. It has been found that the frequency of ON symptoms was 81.9% in the study with Brazilian dietitians by Alvarenga [36].

In our study, the percentage of Orto 15 test score <40 is 66.46%. This rate has been determined as 52.3% in the study group and 47.7% in the control group; however, it is slightly above the values obtained from similar studies. But the majority of previous studies was done with medical students, medical doctors and dietitian or students undertaking dietetic education, studies in health education has been encountered outside this group.

In a study carried out with Turkish dietitian, 41.9% of ON prevalence and greater obsessive symptom score (MOCI) under 40 of their Orto-15 scores (p<0,05) was found. Furthermore, a negative correlation has been observed between BMI values and Orto 15 scores [27].

Orto-15 test scores of the group which is overweight (≥ 25.0 kg / m^2) according to the BMI values (38,19±4,04) is higher than Orto-15 test scores of underweight (38.10±3.32) and normal weight (36.78±3.93) BMI groups in our study. no significant relationship was found between Orto-15 test scores and BMI (p <0.05). In support of our study, and from the study made by Aksoydan [18] et al. there is no statistical significance between Ortho-15 scores according to BMI (p> 0.05). In addition, there was no

significant relationship between BMI and orthorexic tendency in the study carried out by Arusoğlu [26] and Donini et al. [24]. Similarly, in Varga's [32] study, no statistical significance between ON score and BMI was found. These results are confirmatory qualification, that Orthorexic individuals are more concerned with food which is pure, clean and natural rather than with body image or body weight.

In a study investigating the ON risk on girls studying Nutrition and Dietetics education [37], test scores taken from Orto 11 test have shown significant increase as BMI value increases; but no relationship between test scores and waist circumference has been found. In our study, significant relationship between groups are yet to be seen in terms of BMI, waist circumference and waist / height ratio, which are anthropometric indicators of nutritional status (Table 1).

A study investigating the effect of eating habits and education on food choice in students taking nutrition education in Germany has shown that even intensive nutrition education has only a moderate and limited effect on the food choice. Although, the nutrition department students are more prone to regulate food intake for the purpose of controlling their body weight, when compared with other students, results showed that they had less eating disorders. It has been reported that the findings from this study the idea about focusing too much on healthy diet which can lead to eating behavior disorder [35].

In our study, the ratio of participants' risk in terms of ON is 52.3% for the group who received health education and nutrition lessons; although, this ratio is negligible, it was found to be higher than the group (47.7%) who did not receive nutrition lessons. However, no difference has been indicated between the groups in terms of BMI and waist circumference. Similarly, the study investigating the ON risk and diet quality in female students receiving nutrition and dietetics education has concluded that ON risk is affected by the received education and also orthorexic individuals cannot get the recommended amount of nutrients and are undernourished despite exhibiting healthy nutrition obsession [37].

It has been reported that the important factors are education, choice of profession, socio-economic situation and internalization of social ideals in ON development; whereas, decisive variables are not gender, age and body mass index [31]. The disorders related to eating, obsessive-compulsive characteristics and high socioeconomic level have been estimated among risk factors [32].

The findings from studies related to the effect of gender on the ON frequency are often contradictory. It has been reported that orthorexic tendency in male students is higher than in female in some studies [38], while in other studies, orthorexic tendency is higher in females than in male students [26]. A study carried out on both male and female students aged between 18 and 25 years, it has been reported that there is no difference between male and female in terms of orthorexic behavior [39]. It has been reported that such factors as methodology of the studies, size of sampling and the age group affects the results. In a study which examined the ON frequency of the general population and its relationship with eating disorder and the obsessive-compulsive disorder [19], it has been found that the prevalence of ON is 57.6%, and female / male ratio 2:1.

Our study, when compared with the average of Ortho-15 test points according to gender, the average of Ortho-15 test points in male (37,92±3,23) students was found to be lower than the average of Ortho-15 test points in female (38,07±3,49) students. There is no significant difference between gender and average test scores of Ortho-15 (p> 0.05). However, the ratio of Ortho-15 test score <40 which is the threshold value for the diagnosis has been found as 75.2% in girls and 24.8% in boys (p <0.001). Furthermore, while the prevalence of ON (66.46%) in our study is similar to other studies conducted among university students, girl/boy ratio (3:1) is higher. In conclusion, the students participating in our study are of more favorable age for ON development and they live in different conditions rather than living in accustomed conditions due to their University education.

In our study, a significant negative relationship between obsessive-compulsive symptom point and age has been found (r = -0.175, p = 0.025); as age increases, obsessive-compulsive symptoms decreases (Table 4). There is an inverse relationship between age and Ortho-15 test scores, however, it is not significant. Contrary to studies which stated that age and gender are not important factors for ON development [31,32], findings from our study have confirmed that age and female gender are important factors in the development of related obsessive symptoms, ON and the adolescence period is a more risky period similar to the other eating disorders.

When the obsessive symptom scores of the control group with the study group was compared, it was found that the control group has significantly higher scores (Table 3). On the other hand, the average self-esteem score of the study group (41.98±4.90) was found to be significantly higher than the scores of the control group (39.39±5.27). Although, the proportion of students who are prone to orthorexic behaviour in the study group (52.3%) is higher than the control group (47.7%); it has been thought that the self-esteem being higher in the study group may be effective in coping with obsessive symptoms.

The self-esteem, which is defined as the degree of perceiving oneself as capable, significant, successful and as a valuable individual, begins develop right from infancy and continues to develop all through one's lifetime. In this development process, the self-esteem gained by an individual is influenced by many factors. In the studies, it has been seen that factors such as family, teachers, achievement, appearance, environment, socio-cultural level are effective for the individual's self-esteem development [2,3,4,40].

The children who have low self-esteem and see themselves as inadequate and worthless, are easily affected by the environment, have more difficulty in coping with difficulties faced in daily life and controlling their emotions. It has been reported that these children are generally shy, timid or extremely quiet in their social situations, or vice versa; they can exhibit too aggressive or overbearing behaviors [40].

Studies has demonstrated that depression, phobias, anxiety, obsessive-compulsive symptoms, body image dissatisfaction, and the low self-esteem are among the predisposing causes of eating disorders and this situation is a more powerful determinant of eating disorders particularly in women [11,41,42].

Gender play an important role among factors which affect the self-esteem of adolescents. In some researches, it was discovered that self-esteem scores for boys are higher than for girls [3,7,8,42].

In our study, although, self-esteem scores (41.95±4.66) for male students are higher than female students' score (40.30±5.36), significant difference (p <0.05) has not yet been determined. However, when compared with the average self-esteem test scores of the groups (Table 3); it was discovered that the score of the control group (39.39±5.27) is significantly lower than the study group (41.98±4.90) (p <0.05). The relationship between age and self-esteem scores has been investigated with Pearson correlation and a significant relationship has been found in the same direction (p <0.05). As age increases, the self-esteem scores also increase. In our study, the average age of the control group is significantly higher than the study group, however, the average self-esteem score of the control group was found to be significantly lower than the study group. In addition to this result are the variables that have an impact on self-esteem except for the age.

5. CONCLUSION

In our study, ON prevalence was found to be 66.46% among University students studying health education and girl/boy ratio is 3:1. In various studies, although, it has been reported that gender and age are not determinants of ON development, it was discovered that age and gender are important factors as with the other eating disorders. In addition, it has been thought to increase the professional education tendency of ON in the health field, and also added nutrition knowledge, may be triggered in susceptible individuals. A low self-esteem has been considered among the predisposing factors responsible for eating disorders such as AN and BN related to body image. In this first study, investigating the effect of self-esteem in ON development, and due to the absence of a significant relationship between orthorexic tendency with self-esteem, it has been discovered that orthorexic individuals are extremely interested in pure, clean and healthy food but they are not interested in body image. It has been verified by findings that no association between BMI and ortho 15 score was found. Although, ON is similar to other eating disorders in terms of age, gender, profession and nutritional features, the real problem of ON is not body weight or body image, rather, the real problem is that they are extremely busy with natural, healthy and safe food selection in mind. ON, with these features, seem much closer to the diagnostic criteria of obsessive-compulsive disorder rather than an eating disorder. However, there is need for new comprehensive studies in order to take a final decision in this regard. In addition, in accordance with the results of this study, it can be said that studies designed to raise the self-esteem of adolescents and to win healthy eating habits will be useful.

ETHICAL APPROVAL

Ethical approval was taken by the decision of the Clinical Researchs Ethics Committee of Ondokuz Mayis University with the number; OMU KAEK 2015/344.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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