



# Healthy Eating Concern (Orthorexia Nervosa) and Related Factors in Women



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## Abstract

**Objective:** This study was conducted in order to evaluate healthy eating obsession-orthorexia nervosa and related factors in women.

**Method:** The study was carried out 132 volunteer women aged between 20-54 years. Demographic characteristics, health information were taken and orthorexia nervosa-15 (ORTO-15) was applied by researcher with face to face method. Anthropometric measurements were taken according to the rules. It was determined that ORTO-15 score  $\leq 40$  is orthorexic and  $>40$  is normal. Data was evaluated using chi-square, analysis of t-test and correlation analysis methods with SPSS16.0 program.

**Result:** It was found that 75.8% of women has less than 40 points from ORTO-15 test. There is a negative correlation between ORTO-15 score with age ( $r = -0.183$ ), body weight ( $r = -0.206$ ) and BMI ( $r = -0.199$ ) ( $p < 0.05$ ). It was seen that obsessional concerns such as choosing healthy food and this dietary pattern to be associated with physical appearance are common in orthorexic individuals.

**Conclusion:** It was found that orthorexia tendency of women has higher. It has been observed that orthorexic tendencies are increased in individuals with high body weight and BMI values. Determination of obsessional concerns of orthorexic individuals will be useful in the classification of the disease and development of diagnostic criteria.

**Keywords:** Orthorexia nervosa; Nutrition; Women

**Abbreviations:** ORTO-15: Orthorexia Nervosa-15; BMI: Body Mass Index

## Introduction

As the importance of nutrition is emphasized in the prevention and treatment of diseases and improvement of health, awareness of healthy nutrition is increasing in society. In orthorexia nervosa, individuals adopt a nutritional style for purposes such as protecting and improvement of health, treating disease or losing weight. However, this nutrition style affects the life of individuals and also it may trigger nutritional deficiencies that threaten health and even causing eating behaviour disorders [1-3].

Orthorexic individuals usually prefer healthy and pure nutrients and they care the quality of food rather than amount [4,5]. In addition, they also show anxious behaviors about food preparation and cooking techniques and sterilization of cooker. They don't consume food that is unfamiliar and unreliable [2]. Due to their obsession they often consume pure and additive-free foods, they tend to consume fruit and raw foods [6]. Orthorexic individuals who are struggling with healthy nutrition are often faced with severe weight loss and malnutrition as in other eating disorders [1,4-6]. But these individuals lose weight because of trying consume healthy foods and make their diet perfect mentally

and not to look better like anorexia nervosa and bulimia nervosa [7]. However, negative feelings such as regret and wanting to be extremely weak are not observed [3].

Along with the increasing interest in orthorexia nervosa, the number of studies for determining the prevalence orthorexia nervosahas also been steadily increasing. The prevalence of orthorexic tendency varies between 41% and 60% in studies conducted in Europe [1,4,8,9]. Studies conducted in the United States indicated that the prevalence of orthorexia varies between 69% and 82.8% [10,11]. These studies showed that orthorexia tendencies are common. This study was planned and conducted to determine the tendency of orthorexia nervosa in women.

## Material and Methods

This study was conducted with 132 volunteer women aged between 20-54 years in Ankara. Health related anxiety, appearance focused problems, being more relevant in nutrition knowledge than men may be major factors for the selection of women as a working group. The demographic characteristics of the individuals were recorded in the questionnaire by face-to-face method

and Orthorexia Nervosa-15 (ORTO-15) scale was applied and anthropometric measurements were taken by the researchers.

### Anthropometric Measurements

Anthropometric measurements, including weight, height, waist circumference were measured by well-trained investigators, using standard measurement protocols and body mass index (BMI) was calculated [12-15].

### Orthorexia Nervosa (ORTO-15)

The ORTO-15 questionnaire is a tool consisting of 15 items describing the intensification of the orthorexic behaviour. A 15-question likert type scale developed by Donini et al. [16] based on the questionnaire prepared by the first researchers Bratman & Knight [15]. The question of scale investigates the obsessive behavior of individuals in selecting, purchasing, preparing and

### Result

**Table 1:** Evaluation of general characteristics and anthropometric measurements of normal and orthorectic individuals.

	Orthorexic (n:100) $\bar{x} \pm S$	Normal (n:32) $\bar{x} \pm S$	p
Age (year)	34.7±8.77	30.9±8.03	0.034*
Education duration (year)	16.2±2.70	17.0±2.88	0.218
Body weight (kg)	63.5±9.77	59.7±7.45	0.022*
Height (cm)	163.0±5.66	161.6±5.09	0.189
Waist circumference (cm)	80.7±10.51	78.7±8.98	0.298
BMI (kg/m <sup>2</sup> )	23.9±3.68	22.8±2.81	0.09
ORTO-15	36.1 ±2.85	42.7±1.84	0.000**

t test; \*p<0.05, \*\*p<0.01, ORTO-15:Orthorexia nervosa-15,BMI: Body mass index.

ORTO-15 ≤ 40: orthorexic, ORTO-15 >40: normal.

It was determined that 75.8% of the participants showed orthorectic tendency. Mean age, body weight, waist circumference, and BMI of individuals with orthorexic tendency were significantly higher than normal individuals and ORTO-15 scores were lower

**Table 2:** Evaluation of anthropometric measurements with ORTO-15 scores of individuals.

	ORTO-15	
	r	p
Age (year)	-0.183*	0.036
Education duration (year)	0.153	0.08
Body weight (kg)	-0.206*	0.018
Waist circumference (cm)	-0.134	0.126
Desired body weight (kg)	-0.179*	0.041
BMI (kg/m <sup>2</sup> )	-0.199*	0.022

Pearson correlation, \*p<0.05, BMI: Body mass index.

When the relationship between individual's ORTO-15 scores and anthropometric measurements was evaluated, age, body weight, desired body weight and BMI values were found to be negatively associated with ORTO-15 score (p <0.05) (Table 2).

consuming food that they perceive as healthy. At least 15 points and a maximum of 60 points can be taken from the scale. ORTO-15 scale score ≤40 orthorexia risk, >40 points were considered normal [16].

### Data Analysis

Statistical analysis was performed with version 16 SPSS. Mean and standard deviation values of quantitative data obtained from individuals were given in tables according to orthorexia tendency. Significance was assessed using t-test or chi-square test for parametric data and Mann-Whitney U test for nonparametric data. Correlation between ORTO-15 scores and certain anthropometric measurements and were calculated using Spearman/Pearson test. The difference between the groups in categorical variables (number and percentage) was evaluated by square test. Statistical significance was assessed at p <0.05 level

(p<0.05). The duration of education duration was lower in orthorexic and no statistically significant difference was found between the groups (p>0.05) (Table 1).

When the questions of the ORTO-15 test are examined; more than half of the orthorexic tendencies (52.9%; 69.0%) answered always for two questions: "Are you willing to spend more money to have healthier food?" and "Do you think that consuming healthy

food may improve your appearance?”. 33.0% of individuals with orthorectic tendency answered always and 34% of them answered often in the question:” Do you think that the conviction to eat only healthy food increases self-esteem?”. 33.0% of individuals with orthorectic tendency answered always in the question:”Do you feel guilty when you are fed unhealthy?” ( $p<0.05$ ) (Data not shown).

## Discussion

Orthorexia nervosa is a eating behavior disorder characterized by pathological obsessions to natural and healthy nutrition [17]. This situation is defined as anxiety about healthy eating and it causes emergence of orthorexic tendencies in individuals and pathological consequences such as eating behavior disorders progressively. Although orthorexia nervosa has not yet been categorized as a disease, it has attracted the attention of researchers working in this field because of the relationship with eating behavior disorders. But the investigations are mainly focused on non-clinical prevalence studies [2,18-25].

In our country, the prevalence of orthorexia changes between 41% and 46% in different age groups in different studies evaluating the tendency of orthorexia nervosa [4,9,17]. In this study, in which the female individuals were evaluated, it was seen that the prevalence of orthorexia (75.8%) was higher than the previous studies.

It was reported that orthorexia nervosa correlates with gender [1,7,22,23], education level [5,8], body weight [11] and BMI [5,8,18,23-25] in different studies. There was conflicting conclusion about relationship between tendency of orthorexia nervosa and gender. Studies have shown that prevalence of orthorexia nervosa is higher in men [5,18] but recent studies has shown that the tendency of orthorexia especially is more in women in recent years [1,7,22,23] and it was shown that 2.5 times more than men [23]. In this study, it is suggested that research population consists of women and this may effective to be higher of the prevalence of orthorexia (75.8%).

Although Arusoglu et al. [1] stated that age did not have effect on the orthorexia tendency but other studies [5,9,18] found a negative relationship between ORTO-15 score and age and reported that advancing age may be effective in increasing orthorexia tendencies. Similar to other studies, correlation was found between low ORTO-15 scores and high age ( $p<0.05$ ) in this study,

According to the researches, the relationship between the orthorexia tendency of individuals and the duration of education is contradictory. Donini et al. [5] showed that the orthorexic tendency was high in low levels of education with individuals. However, in some studies has been reported that educational status is not effective alone on orthorectic tendency [16,26]. In this study, although education duration of orthorectic individuals was lower than normal individuals, the difference was not statistically significant between groups ( $p>0.05$ ).

It was stated that orthorexic individuals limit their choice of nutrients for healthy nutrition and this situation cause weight loss [3]. In this study, mean body weights of individuals with orthorexic tendency were found to be higher than normal individuals ( $p<0.05$ ) (Table 1). In addition, body weight they wanted to be was questioned and found to be negatively correlated with ORTO-15 scores (Table 2). This result suggests that being overweight and obese may be a trigger for a healthy nutritional obsession in increasing orthorexic tendencies. The weakness that emerges as orthorexic obsessions progress will be a consequence of this advancing process.

In some studies, it has been suggested that body mass index may be an indicator predicting orthorexic behavior [18,24,25]. Especially it has been reported that high BMI values are associated with low ORTO-15 scores [4,18,26]. However, it was showed that no relationship between ORTO-15 score and BMI values in some studies [1,23,27]. There was a significant negative correlation between ORTO-15 score and also BMI values and those with low ORTO-15 scores had higher BMI values ( $r:-0.199$ ;  $p:0.022$ ) in this study. For this reason, it is possible to say that being normal body weight and maintaining it can protect against orthorexic tendencies or as increased body weight increases tendency of orthorexia.

When general nutritional behavior of orthorexic tendency is examined, they are obsessed with the quality of the food than quantity. They have label reading habits when purchasing any food and also they prefer pure and additive-free food and not the presence of additives and carcinogens in the food [5]. In this study, more than half of the individuals with orthorexic tendency (52.9%) stated that they always “like to spend more money to buy healthier foods”. Although it was reported that they have no fears about body perceptions and obesity. 69% of individuals with orthorexic tendency always think that consuming healthy food may improve their appearance. Healthy nutritional obsession can have negative effects on the body sensation in the future and desiring to make the physical appearance better prone to health problems such as energy and nutrients deficiencies and malnutrition.

## Conclusion

It was determined that orthorexia nervosa was remarkably high in this cross-sectional study. It has been observed that orthorexic tendencies are increased in individuals with high body weight and BMI values. Orthorexic individuals significantly differ from normal individuals and they are very sensitive some topics; they are more anxious about foods, they feel guilty when they consume the foods that they think are unhealthy, they are ready to pay more money to buy healthy food and also they believe that healthy eating may affect their physical appearance. Determination of obsessional concerns of orthorexic individuals will be useful in the classification of the disease and development of diagnostic criteria.

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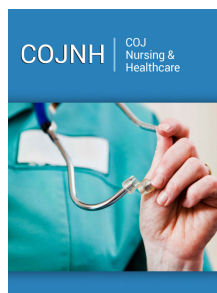
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