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THE PREVALENCE OF ORTHOREXIA IN TOURISM EDUCATION ASSOCIATE DEGREE STUDENTS

TURİZM EĞİTİMİ ALAN ÖNLİSANS ÖĞRENCİLERİNDE ORTOREKSİYA PREVALANSI

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Abstract

Healthy eating is not a pathological situation, but when it becomes a long-term and excessive preoccupation and causes negativities in daily life, it can cause personality and behavioural disorders. The study is aimed to determine the prevalence of orthorexia among tourism students with and without a nutrition education background and to develop recommendations accordingly. The research population consists of tourism students in associate degree programs (from junior colleges) at various public and private universities and the sample group consists of 581 volunteers. The measurement scale is composed of five constituents, namely, the demographics, nutrition properties, eating under emotional conditions (emotional eating), eating attitudes test and orthorexia test. In the light of the findings it is concluded that the prevalence of orthorexia is higher among tourism students who have nutrition education than those who have not. Eating attitudes test results have shown that tourism students who get nutrition education are at a moderate level compared to those who do not.

Keywords: *Tourism, Tourism students, Nutrition, Orthorexia, Orthorexia Prevalence.*

Öz

Sağlıklı beslenme patolojik bir durum değildir, ancak uzun süreli ve aşırı bir meşguliyet haline gelip günlük hayatta olumsuzluklara yol açtığında kişilik ve davranış bozukluklarına neden olabilmektedir. Çalışma, beslenme eğitimi almış ve almayan turizm öğrencileri arasında ortoreksiya yaygınlığını belirlemeyi ve buna göre öneriler geliştirmeyi amaçlamaktadır. Araştırmanın evrenini çeşitli kamu ve vakıf üniversitelerinde önlisans programlarında turizm eğitimi alan öğrenciler, örneklemini ise 581 gönüllü oluşturmaktadır. Ölçümler için kullanılan ölçek beş bileşenden oluşmaktadır; yani demografik bilgiler, beslenme özellikleri, duygusal koşullar altında beslenme (duygusal yeme), yeme tutum testi ve ortoreksiya testi. Araştırmada, ortoreksiya test sonuçları beslenme eğitimi alan turizm öğrencilerinin almayanlara göre ortoreksiya yaygınlığının daha yüksek olduğu sonucuna ulaşılmıştır. Yeme tutum testi sonuçları; beslenme eğitimi alan turizm öğrencilerinin almayanlara göre daha ortada düzeyde olduğunu göstermektedir.

Anahtar Kelimeler: *Turizm, Turizm öğrencileri, Beslenme, Ortoreksiya, Ortoreksiya Yaygınlığı.*

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GENİŞLETİLMİŞ ÖZET

Giriş

Beslenme ve yaşam tarzı, sağlığın korunması ve sürdürülmesinde temel faktörlerden ikisi olarak belirtilmektedir. Sağlık, "kişinin fiziksel, zihinsel ve sosyal yönden tam bir iyilik halinde olması" olarak tanımlanabilir (WHO, 2017). Sağlıklı beslenme kesinlikle patolojik bir durum değildir, ancak bu rahatsızlık ortorektikte olduğu gibi uzun süreli ve aşırı bir meşguliyet haline geldiğinde ve bunun sonucunda günlük hayatta olumsuzluklara yol açtığında kişilik ve davranış boyutlarını da ilgilendiren bir rahatsızlık olarak değerlendirilebilir (Donini vd., 2004). Dikkat edilmesi gereken bir faktör olan sağlıklı beslenme alışkanlığı bir saplantıya dönüşerek fiziksel ve/veya ruhsal psikolojik sorunlara yol açabilmektedir (Orsel vd., 2004). İki kelimenin birleşimi olan ortoreksiya; Yunanca "uygun-doğru" anlamına gelen "orthos" ve "iştah" anlamına gelen "orexis" (Mathieu, 2005) ilk kez Bratman (1997) tarafından "sağlıklı yemek yeme saplantısı" olarak tanımlanmıştır. Saf ve sağlıklı gıdaya odaklanan bireylerin deneyimlediği davranış kompleksidir (Missbach vd., 2017; Strahler vd., 2018).

Materyal ve Yöntem

Bu çalışma, anket modelinin kullanıldığı betimsel bir çalışmadır. Araştırma, İstanbul ilinde faaliyet gösteren çeşitli kamu ve vakıf üniversitelerinde önlisans programları kapsamında beslenme ile ilgili ders alan/almayan turizm öğrencilerinde ortoreksiya yaygınlığının belirlenmesi amacıyla yapılmıştır. Tüm prosedürler, Türkiye Ulusal Araştırma Komisyonu tarafından belirlenen ve 1964 Helsinki Bildirgesi'ne ve sonraki revizyonlarına veya karşılaştırılabilir etik standartlara uygun olarak yürütülmüştür. Araştırmaya başlamadan önce alınan Necmettin Erbakan Üniversitesi Meram Tıp Fakültesi Etik Kurulu'nun 19 Haziran 2020 tarih ve 110 sayılı oturumunda 2020/2590 sayılı kararı ile çalışmanın etik ve bilimsel olarak yeterliliği kanıtlanmıştır. Bu doğrultuda çeşitli kamu ve vakıf üniversitelerinde turizm eğitimi veren bölümlerden "Aşçılık", "Otel, Restoran ve Tamamlayıcı Hizmetler" gibi beslenme ile ilgili dersler alan ve "Turizm ve Otel İşletmeciliği", "Seyahat, Turizm ve Eğlence Hizmetleri" gibi beslenme ile ilgili dersler almayan öğrencilerden araştırmaya katılmaya gönüllü olan 581 öğrenci araştırmanın örneklemini oluşturmuştur.

Araştırmanın veri toplama aracı olarak anket yöntemi kullanılmış ve önlisans programlarında turizm eğitimi alan 690 öğrenciye uygulanmıştır. Buna rağmen geri gönderilmeyen ve eksik madde içeren anketler uygun görülmemiş ve uygun bulunan 581 anket analize tabi tutulmuştur. Örneklem büyüklüğünün belirlenmesinde, evren büyüklüğünün 10.000' den büyük olması durumunda kullanılan sınırsız evren örnekleme formülü benimsenmiştir. Sonuç olarak, belirtilen örneklem büyüklüğünde %95 güven aralığında ve %5 örneklem hatası ile hesaplandığında gerekli örneklem büyüklüğünün 384 yanıtlayıcıya karşılık geldiği ortaya çıkmıştır (Ural ve Kılıç, 2013). Buna göre araştırmanın 581 gönüllü ile yeterli sayıda yanıtlayıcıya sahip olduğu ve güvenirlik ölçütlerini karşıladığı sonucuna varılmıştır.

Anket formu diğer çalışmalardan uyarlanmıştır (Orsel vd., 2004; Mathieu, 2005; Turner ve Lefevre, 2017; Barthes vd., 2018; Parra-Fernández vd., 2018). Araştırma verileri 5 bölümde toplanmıştır:

* demografik bilgiler (5 soru)

* beslenme özellikleri (4 soru, Cronbach α=0,635)

* duygusal koşullar altında beslenme (duygusal yeme) (5 soru, Cronbach α= 0,784)

* Yeme Tutum Testi (EAT) (40 soru, Cronbach α= 0,903)

* ORTO-15 Testi (15 soru, Cronbach α=0,724).

Ölçeklerin Cronbach alfa güvenirlik katsayıları yüksek bulunmuştur.

Araştırmanın verileri SPSS 15.0 istatistik paket programında (SPSS Inc., Chicago, IL, USA) uygulanarak betimsel analiz yapılmıştır. Verilerin frekans, yüzde, t-testi, ortalama ve standart sapması bir sonraki bölümde sunulmuştur.

Bulgular

Araştırmaya katılan öğrencilerin %57,1'inin kadın, %42,9'unun erkek olduğu saptanmıştır. Katılımcıların %55,1'i beslenme eğitimi almıştır (Tablo 1). Öğrencilerin %61,8'inin mevcut kilolarını idealin üzerinde buldukları tespit edilmiştir. Öğrencilerin %76,4'ü özel bir diyet uygulamadığı, %14,5'inin "kilo vermek için" özel bir diyet uyguladığı, %49,6'sının uyguladığı diyeti medyadan öğrendiği ve %37,2'sinin medyadaki reklamlardan etkilenip bunlara göre gıda alışverişi yaptığı belirlenmiştir (Tablo 2).

Araştırmada ORTO-15 testi sonuçlarına göre beslenme eğitimi alan öğrencilerde ortoreksiya yaygınlığının beslenme eğitimi almayanlara göre daha yüksek olduğu tespit edilmiştir Ayrıca beslenme eğitimi alan ve almayan öğrenciler arasında öğrencilerin ortoreksik davranışlarında istatistiksel olarak anlamlı bir fark gözlenmiştir ($p<0,01$) (Tablo 4). Beslenme eğitimi alan turizm öğrencilerinin EAT-40 puanlarının orta risk grubunda, beslenme eğitimi almayan turizm öğrencilerinin EAT-40 puanlarının düşük risk grubunda olduğu sonucuna varılmıştır. Elde edilen veriler incelendiğinde; öğrencilerin EAT-40 testinden aldıkları puan ortalamalarının gruplar arasındaki dağılımları arasında anlamlı farklılık bulunmuştur ($p<0,000$) (Tablo 4).

Sonuç ve Öneriler

ORTO-15 testi ve EAT-40 testi sonuçları ışığında beslenme eğitimi alan turizm öğrencilerinde ortoreksiya yaygınlığının daha yüksek olduğunu ortaya koyan bu çalışma, önceki araştırmaların sonuçlarını desteklemektedir. Ancak beslenme eğitimi alan öğrencilerde ortoreksiya riskini ve nedenlerini ortaya koyabilmek için farklı gruplar üzerinde ileri çalışmalar yapılmalıdır.

1. INTRODUCTION

Nutrition and lifestyle are stated as two of the main factors in maintaining and protecting and health. Health can be considered as "a state of complete physical, spiritual and social well-being" (WHO, 2017). Healthy eating is definitely not a pathological situation. However, when this condition becomes a long-term and excessive concern and causes negativities in daily life, as in orthorexics, it can be considered as a disorder that also concerns personality and behavioral dimensions (Donini et al., 2004).

1.1. Orthorexia Definition

Healthy eating habits are a factor that needs to be taken into consideration and when it turns into an obsession, it can lead to physical and/or psychological problems (Orsel et al., 2004). Orthorexia, which is the combination of two words; "*orthos*" which means "proper-correct" in Greek and "*orexis*" (Mathieu, 2005) refering to "appetite", was first defined by Bratman (1997) as "fixation on eating healthy food".

It is also defined as a behavioral complex (Missbach et al., 2017) that is experienced by individuals who are fixated on pure and healthy food (Strahler et al., 2018).

1.2. Healthy Eating and Orthorexia Relationship

There is a theoretical relationship between orthorexia and anorexia nervosa, as well as obsessive-compulsive disorder, which is defined as a new eating disorder in the literature (Dell'Osso et al. 2016).

Orthorexia does not present a "quantitative" condition as in anorexia and bulimia. But exhibits a "qualitative" situation (Brytek-Matera, 2012). Orthorexic people do not have the ambition to lose weight, as in bulimics, and they aim to achieve superior quality in nutrition (Mathieu, 2005), and it is stated that they generally have a strict attitude towards food (Zickgraf et al., 2019). They are also noted to have widespread concerns about certain dietary choices and health (Dell'Osso et al., 2018).

It was concluded that the prevalence of orthorexia is high in general population studies (Luck-Sikorski et al., 2019; Stochel et al., 2015; Turner & Lefevre, 2017). It is not considered an overt eating disorder in current diagnostic classification systems (Brytek-Matera, 2012). It is emphasized that this disorder deserves more extensive research (Missbach & Barthels, 2017).

1.3. Characteristics of Orthorexia

Orthorexia, which typically begins with a certain diet, turns into problematic attitudes accompanied by negative effects such as lack of micro and macro nutrients (Brytek-Matera et al., 2017; Cena et al., 2019; Chard et al., 2019). Previous studies on this subject have revealed a behavioral and symptomatic relationship between orthorexia and obsessive-compulsive disorder and anorexia nervosa (Koven & Abry, 2015; Missbach et al., 2017).

In the case of orthorexia, which can be expressed as a pathological obsession with consuming healthy food that does not involve herbicides, pesticides, or artificial substances (Zamora et al., 2005; Moroze et al., 2014), people do not hesitate to go long distances in order to shop from markets that sell organic or healthy food. They care more about the quality of the food they consume rather than values, interpersonal relationships, social relationships and career plans (Arusoğlu, 2006; Ergin, 2014).

In this way, individuals with orthorexia who are considered to bring about a significantly negative effect to their life quality in the long run (Bratman & Knight, 2000; Donini et al., 2005; Mathieu, 2005) can lead themselves to starvation as well as bad nutrition and weight loss as it is usually the case in anorexia instead of ingesting foods that deteriorate their health (Bratman & Knight, 2000; Strand, 2004). Studies on the subject shed light on the dimensional nature of orthorexia, which is called interest in healthy eating (non-pathogenic) and emotional behavior (a protective factor against emotional distress) (Barrada & Roncero, 2018), the healthy-eating obsession termed as orthorexia nervosa as another dimension (a new irregular eating disorder) refers to a pathological condition (Barthels et al., 2019; Depa et al., 2019). This obsessive state causes individuals to follow strict rules regarding nutrition and give up essential nutrients, resulting in nutritional deficiencies. This situation, which pushes the individual into loneliness over time (Bosi et al., 2007), can lead to deterioration of physical health and academic and professional functions due to

malnutrition (Dunn and Bratman, 2016). In this context, this study aimed to determine the frequency of orthorexia in tourism students who receive or do not receive nutrition education and to develop recommendations accordingly.

1.4. Orthorexia Scale

Bratman is a physician and an expert in alternative therapy. In 1997, he used the term "Orthorexia Nervosa" to describe the condition he observed in some of his patients. He wrote his first article on this subject in the "The Alternative Medicine Sourcebook" and later published it in the October 1997 issue of "Yoga Journal" (Donini et al., 2004).

Bratman, who was the first to describe Orthorexia Nervosa, prepared the orthorexia test and its scoring for the American society (Bratman & Knight, 2000). Donini et al. (2005)'s ORTO-15 performance was developed based on Bratman's 10-item Orthorexia brief questionnaire. Some of Bratman's questions were removed and different questions were added instead. The final version of the ORTO-15 scale was first developed for Latinos in Italy by Donini (2005) by adapting Bratman's short questionnaire. This is a 15-item self-assessment process required to identify Orthorexia Nervosa.

Adaptation of the scale to Turkish and ensuring validity and security was done by Arusoğlu (2006). According to the test adapted by Arusoğlu, areas with scores of "33" and below are divided as "orthorexic", while the higher the score, the more normalizes the excessive deterioration of eating performance. In the literature, the relationship between total test scores has been examined, taking into account its relationship with the Eating Attitude Test (YAT), which evaluates eating disorders. The Orthorexia Nervosa Test Response Scoring is given in Table 1 (Arusoğlu, 2006).

Table 1. Orthorexia Nervosa Test Response Scoring

Scoring of ORTO-15 Test Response				
Questions	**Answers**			
	Always	**Often**	**Sometimes**	**Never**
2-5-8-9	4	3	2	1
3-4-6-7-10-11-12-14-15	1	2	3	4
1-13	2	4	3	1

2. MATERIALS AND METHODS

2.1. Research Aims and The Model

This study is a descriptive study in which the survey model is used. The research was conducted to determine the frequency of orthorexia in tourism students who do or do not take nutrition courses in the associate degree programs of various state and foundation universities operating in Istanbul.

All procedures do comply with those set by Turkish National Research Committee, and the 1964 Helsinki Declaration and subsequent revisions thereof, or comparable ethical standards. The study has been ethically and scientifically proven to be adequate by Necmettin Erbakan University Meram Medical Faculty Ethics Board in the session dated on 19 June 2020 and numbered 110 by the decision numbered 2020/2590.

2.2. Participant Characteristics

Students studying tourism in associate degree programs of universities in Istanbul constitute the population of the research. The sample of the research consists of 581 students studying in associate degree

departments of universities in Istanbul, taking nutrition courses or not, but volunteering to participate in the research.

2.3. Measures

The survey method was used as the data collection tool of the research. Surveys were administered to 690 students studying tourism in associate degree programs. However, surveys that were not returned and contained missing items were not deemed appropriate, and 581 surveys deemed appropriate were subjected to analysis. In determining the sample size, the unlimited universe sampling formula, which is used if the universe size is larger than 10,000, was adopted. As a result, when calculated with a 95% confidence interval and 5% sampling error in the determined sample size, it was revealed that the required sample size corresponded to 384 participants (Ural & Kılıç, 2013). Accordingly, it was concluded that the study had a sufficient number of participants with 581 volunteers and met the reliability criteria. Initially, a pilot study was conducted on 50 surveys to determine possible evaluation of the clarity of survey questions. Participants were informed about the purpose and subject of the study before starting the study.

Each adult respondent signed a voluntary participation form and filled in the form following the Declaration of Helsinki (World Medical Association).

Orthorexia nervosa has been defined as a pathologically healthy diet. Along with ritualized eating patterns, orthorexic eaters are characterized by a restrictive diet and strict avoidance of certain foods believed to be unhealthy or unclean (Dunn & Bratman, 2016; Vandereycken, 2011). Other eating disorders (eg anorexia nervosa) and psychiatric disorders can be seen in individuals with orthorexic tendencies (Koven & Abry, 2015).

In the literature, two main assessment tools have been defined in the evaluation of orthorexia: Bratman Orthorexia Test (BOT) and ORTO-15. ORTO-15 was originally based on BOT. Both questionnaires are translated into several languages and used with appropriate samples. However, there is little reporting on the internal validity of the tools used in the literature (Missbach et al., 2004). Although BOT test is used in orthorexia studies (Bratman & Knight, 2000; Kinzl et al., 2006; Eriksson et al., 2008; Korinth et al., 2010), it is seen that ORTO-15 test is used more orthorexia studies (Brytek-Matera et al., 2014; Brytek-Matera et al., 2015; De Souza & Rodrigues, 2014; Dunn & Bratman, 2016; Segura-Garcia et al., 2015; Stochel et al.; 2015). However, it is claimed that the ORTO-15 test, despite its widespread use, is questionable due to the high percentage of false positive results (Niedzielski & Kaźmierczak-Wojtaś, 2021).

The questionnaire form was adapted from other studies (Orsel et al., 2004; Mathieu, 2005; Turner and Lefevre, 2017; Barthels et al., 2018; Parra-Fernández et al., 2018). Questionnaire form used in the study; "Nutritional properties" for determining the dietary habits of the participants; "Nutrition under emotional circumstances", since emotional changes also affect eating behaviors; It was composed of 5 sections, "Eating Attitude Test (EAT)" for the evaluation of eating behaviors and "ORTO-15 Test" for the prevalence of orthorexia. When the reliability level of the survey questions in terms of sections is evaluated;

a. A demographic section (5 questions)

b. Nutritional properties (4 questions, Cronbach's α=0.635)

c. Nutrition under emotional circumstances (emotional eating) (5 questions, Cronbach's α= 0.784)

d. Eating Attitude Test (EAT) (40 questions, Cronbach's α= 0.903)

e. ORTO-15 Test (15 questions, Cronbach's α=0.724)

Cronbach's alpha reliability coefficients of the scales were found high.

2.4. Statistical Analysis

By performing SPSS 15.0 statistical package programme (SPSS Inc., Chicago, IL, USA), descriptive analysis was conducted. Frequency, percentage, t-test, mean and standard deviation of the data are presented in the following section.

3. RESULTS

Individuals' gender, the environment they live in and the stress they experience on a daily basis directly affect their nutritional status and indirectly affect their family characteristics. Therefore, demographic information is important in determining eating habits. It was determined that 57.1% of the students participating in the research were female and 42.9% were male. 55.1% of the participants have received nutrition education. 42.7% of the students stayed with family/relatives throughout their education.

It was also determined that 75.9% of their mothers and 58.0% of their fathers were primary school graduates and 60.9% of the participants had stressful factors affecting their daily lives (Table 2).

Table 2. Demographic Properties

		With Nutrition Education		Without Nutrition Education		Total		t	p
		n	%	n	%	n	%		
Gender									
Female		182	31.3	150	25.8	332	57.1	0.144	0.885
Male		138	23.8	111	19.1	249	42.9		
Place of Residence									
With Family/Relative		162	28.0	86	14.7	248	42.7		
In Dormitory		88	15.1	76	13.1	164	28.2	-3.399	0.001
Other		70	12.0	99	17.1	169	29.1		
Family Educational Status									
Primary Education	(Mother)	242	41.7	199	34.2	441	75.9	0.523	0.051
	(Father)	188	32.4	150	25.8	337	58.0		
High School	(Mother)	63	10.8	54	9.4	117	20.1		
	(Father)	84	14.5	81	13.9	165	28.4		
Associate Degree/ Undergraduate	(Mother)	15	2.6	8	1.3	23	4.0		
	(Father)	48	8.2	30	5.2	79	13.5		
Stress Factors in Daily Life									
No		131	21.6	96	16.5	227	39.1	-2.097	0.036
Yes		189	33.5	165	28.4	354	60.9		

It was determined that 61.8% of the students found their current weight to be above ideal.

In relation to that, 76.4% did not follow any specific diet, 14.5% followed specific diet to lose weight, 49.6% learned about the diet which they followed from media, and 37.2% was influenced by it and made their purchases based on the food advertisements in the media (Table 3).

In previous similar studies, a relationship was found between orthorexia and emotional eating.

Table 3. General Nutritional Properties

	With Nutrition Education		Without Nutrition Education		Total		t	p
	n	%	n	%	n	%		
Weight Perceptions of the Students								
Under	69	11.9	65	11.2	134	23.1		
Above	201	34.6	158	27.2	359	61.8	0.671	0.502
Ideal	50	8.6	38	6.5	88	15.1		
Reason to Follow Diet								
No	231	39.8	213	36.7	444	76.4		
Weight loss diet	49	8.4	35	6.0	84	14.5	3.017	0.003
Vegetarian Diet	37	6.4	10	1.7	47	8.1		
Treatment of illness	3	0.5	3	0.5	6.	1.0		
Obtainment of the Diet Followed								
From Media	48	53.9	20	41.7	68	49.6		
From friends	17	19.1	13	27.1	30	21.9		
From health personnel	20	22.5	10	20.3	30	21.9	1.867	0.062
On their own	4	4.5	5	10.4	9	6.6		
Being Influenced by Food Advertisements in the Media								
No	42	7.3	25	4.3	67	11.5		
I become influenced yet I do not purchase	56	9.6	46	7.9	102	17.6		
I become influenced and try	115	19.8	81	13.9	196	33.7	2.297	0.022
I become influenced and purchase	107	18.4	109	18.8	216	37.2		

Emotional changes can change eating habits (Altınok, 2020). It was determined that there was no nutritional change for 47.5% of the students in the state of being tired and for 58.5% of the students in the state of feeling excited. 58.3% ate more food in the state of feeling joyful, 55.2% ate less food in the state of feeling unease, and 54.7% ate no food in the state of feeling sad (Table 4).

Table 4. Nutritional Changes Observed in Emotional States

	With Nutrition Education		Without Nutrition Education		Total		t	p
	n	%	n	%	n	%		
In Tired States								
Eats no food	63	10.8	54	9.3	117	20.1	0.805	0.421
Eats less food	73	12.6	74	12.7	147	25.3		
Eats more food	31	5.4	10	1.7	41	7.1		
No change	153	26.3	123	21.2	276	47.5		
In Excited States								
Eats no food	39	6.7	27	4.6	66	11.4	-0.098	0.922
Eats less food	55	9.5	49	8.4	104	17.9		
Eats more food	37	6.4	34	5.9	71	12.2		
No change	189	32.5	151	26.0	340	58.5		
In Joyful States								
Eats no food	11	1.9	7	1.2	18	3.1	-1.951	0.052
Eats less food	45	7.8	22	3.8	67	11.5		
Eats more food	181	31.2	158	27.2	339	58.3		
No change	83	14.2	74	12.7	157	27.0		
In Uneasy States								
Eats no food	49	8.4	38	6.5	87	15.0	0.288	0.774
Eats less food	168	28.9	153	26.3	321	55.2		
Eats more food	48	8.3	19	3.3	67	11.5		
No change	55	9.5	51	8.8	106	18.2		
In Sadness States								
Eats no food	169	29.1	149	25.7	317	54.7	1.920	0.055
Eats less food	69	11.9	67	11.5	136	23.4		
Eats more food	35	6.0	17	2.9	52	9.0		
No change	47	8.1	28	4.8	75	12.9		

According to the prevalence analysis, orthorexia symptoms were expected to be experienced at a level of 25.0% at and below the cut-off point. As a result of the validity test carried out for the ORTO-15 test, those who scored "33 points" and below were defined as "orthorexic" while it was determined that the eating behavior moved toward the normalcy from over-sensitivity as the score increased (Arusoğlu, 2006). According to the ORTO-15 test results in the study, the prevalence of orthorexia in students with nutrition

education (HRCS: 31.69±4.79, Culinary: 25.74±3.68) was higher than those who were without nutrition education (THA: 38.21±3.35, TTES: 38.59±3.99) (Table 5).

Table 5. Min, Max, $\bar{X}$ ± SD Values According to the Scales Applied

	Nutrition Education Positive		Nutrition Education Negative		F	p
	Culinary	HRCS	THA	TTES		
ORTO-15						
Min	15	0	30	25		
Max	36	39	46	48	7.698	0.001
$\bar{X}$ ± SD	25.74±3.68	31.69±4.79	38.21±3.35	38.59±3.99		
EAT-40						
Min	0	1	0	1		
Max	83	77	68	63	8.740	0.000
$\bar{X}$ ± SD	29.92±10.45	27.38±11.53	18.84±13.84	12.57±10.67		

THA: Tourism and Hotel Administration
HRCS: Hotel, Restaurant and Complementary Services
TTES: Travel, Tourism and Entertainment Services

Additionally, a statistically significant difference was observed in orthorexic behavior between students who received nutrition education and those who did not *(p<0.01*) (Table 5).

In the EAT-40 risk profiles, the total score of 21 and below was determined as low risk, scores between 21-30 as moderate risk, and 30 and above as high risk. 30 points and above were significant and the total score was considered directly related to the level of psychopathology (Ünalan et al., 2009). In this study, it was concluded that the EAT-40 scores of tourism students with nutrition education were in the moderate-risk group (HRCS: 27.38±11.53, Culinary: 29.92±10.45) whereas the EAT-40 scores of tourism students without nutrition education were in the low-risk group (THA: 18.84±13.84, TTES: 12.57±10.67). When the data obtained were analyzed, the distributions of the mean scores that the students collected from the EAT-40 test differed significantly according to their nutrition education status (*p<0.000*) (Table 5).

Table 6. ORTO-15 Test Risk Levels According to Nutrition Education

ORTO-15 Test Risk	Nutrition Education Positive		Nutrition Education Negative		t	p
	n	%	n	%		
With Risk	176	55.0	26	10.0	10.899	0.000
Without Risk	144	45.0	235	90.0		

According to ORTO-15 test results, it was revealed that 55.0% of tourism students who received nutrition education were at risk of orthorexia, while 66.2% of tourism students who did not receive nutrition education were not at risk of orthorexia. A statistically significant difference was observed between the groups (*p<0.001*) (Table 6).

Table 7. EAT-40 Test Risk Levels According to Nutrition Education

EAT-40 Test Risk	Nutrition Education Positive		Nutrition Education Negative		t	p
	n	%	n	%		
Low Risk	38	11.9	199	76.3		
Moderate Risk	249	77.8	32	12.3	8.725	0.000
High Risk	33	10.3	30	11.5		

According to the EAT-40 test results, it was put forth that 77.8% of tourism students with nutrition education were at the moderate risk level, and 76.3% were at the low-risk level. The findings revealed that there was a statistically significant difference between the groups ($p<0.001$) (Table 7).

4. DISCUSSION

People give great importance to healthy nutrition in order to live a healthy life. However, eating disorders are increasing in all countries in our day and age. Countries are taking a number of measures and developing various programs in order to increase the awareness of societies about healthy nutrition and to ensure the implementation of healthy nutrition.

In this study, it is determined that 55.1% of the students receive nutrition education, 57.1% are female, 61.8% perceive their weight above the ideal, 76.4% do not follow any specific diet, 14.5% follow a weight-loss diet, 49.6% have learned about the diet they follow from media, and 37% make purchases under the influence of food advertisements in the media. In studies carried out on similar subjects, it was revealed that female students compared to male ones, students following a diet compared to those who do not, students with social sciences education compared to others (Sünbül, 2009), students with nutrition and/or health education compared to those without (Ünalan et al., 2009; Korinth et al., 2010; Tremelling et al., 2017) carry more orthorexia risk. However, Turner and Lefevre (2017) emphasize in their study that orthorexic eating behavior is not observed in women who follow different diet types and social media.

Although the quality and weight loss rather than the amount of food seem unacceptable in orthorexic individuals (Barthels et al., 2018) it is emphasized in the studies conducted with university students in Spain (Parra-Fernández et al., 2018) and the USA (Hayles et al., 2017) that orthorexia is correlated with body perception in students. In another study conducted with university students in Italy, it is revealed that orthorexia symptoms are observed to a greater extent (Dell'Osso et al., 2018) in female students. In the current study, it is concluded that tourism students with nutrition education have higher orthorexia prevalence compared to those without nutrition education according to the ORTO-15 test results (Table 6) and that the scores of the students with nutrition education are at the moderate risk level compared to those without nutrition education, according to the EAT-40 test results (Table 7). Similar studies have concluded that orthorexia prevalence is high in women (Donini et al., 2004; Strahler et al., 2018), college students (Missbach et al., 2017; Stochel et al., 2015; Lucka et al., 2019), university students (Dell'Osso et al., 2016; Dell'Osso et al., 2018; Sünbül, 2019; Parra-Fernández et al., 2018; Hayles et al., 2017), students sportspeople (Bóna et al., 2019), medicine students (Ünalan et al., 2009) and dieticians (Tremelling et al., 2017; Korinth et al., 2010).

Among several studies conducted on the prevalence of orthorexia, Missbach et al. (2015) state that the orthorexia prevalence in Germany is 69.1%, Stochel et al. (2015) indicate that the prevalence in Poland is 13.7%, Turner and Lefevre (2017) state the prevalence in 40 countries' social media users is 49%, Varga et al. (2013) conclude that general orthorexia is at quite a high rate with 6.9% and that this involves high-risk groups such as dieticians and other health-care workers in which the prevalence changes between 35%-57.8%. In prevalence studies conducted on student groups, Lucka et al. (2019) state that the prevalence in students between 13-30 is 27% and Dell'Osso et al. (2018) indicates that the prevalence among university students is 34.9%. In the current study, it is observed that 55.0% of tourism students with nutrition education have orthorexia risk and that 90.0% do not have orthorexia risk according to the ORTO-15 test results, that 77.8% of tourism students with nutrition education are in the moderate risk group and that 76.3% of tourism students without nutrition education are in the low-risk group according to the EAT-40 test results. In the studies revealing the risk factors for orthorexia, a correlation exists between orthorexic behavior and vegetarianism, veganism, or diet-following behavior (Barthels et al., 2018). In similar studies conducted, it is stated that those who follow a vegetarian diet exhibit more orthorexic behavior compared to those who do

not (Brytek-Matera, 2019) and that they have higher risk of developing orthorexia (Parra-Fernandez et al., 2020).

5. CONCLUSION AND SUGGESTIONS

In the light of the ORTO-15 test results, this study has revealed that the prevalence of orthorexia is higher in tourism students with nutrition education, which supports the results of prior studies by concluding that this group is in the moderate-risk group according to the EAT-40 test. However, further studies should be carried out on different groups to reveal the orthorexia risk and causes in students with nutrition education.

Limitations

Our study results reveal the relationship between orthorexia nervosa among some tourism students studying nutrition. The study was conducted on tourism students only, so the results cannot be generalized to all students. The data obtained in the study are based on the participants' own statements.

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Informed Consent

All participants included in the study were informed and their consent was taken before filling the questionnaire.

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The study has been ethically and scientifically proven to be adequate by Necmettin Erbakan University Meram Medical Faculty Ethics Board in the session dated on 19 June 2020 and numbered 110 by the decision numbered 2020/2590.

Notes on the Article

The article has been meticulously crafted in adherence to the principles of research and publication ethics. There is no conflict of interest among the authors.

In the conducted study, each author contributed equitably to all stages and processes of the research, signifying equal and shared involvement in the project's execution.

REFERENCES

Altınok, M. (2020). *Yeme tutumları, duygusal yeme, farkındalıkla yeme ve ortoreksiyanın metakognisyonlar açısından incelenmesi* [Yayımlanmamış Yüksek Lisans Tezi]. Fatih Sultan Mehmet Vakıf Üniversitesi.

Arusoğlu, G. (2006). *Sağlıklı beslenme takıntısı (ortoreksiya) belirtilerinin incelenmesi, Orto-15 ölçeğinin uyarlanması* [Yayımlanmamış Yüksek Lisans Tezi]. Hacettepe Üniversitesi.

Barrada, J. R. and Roncero, M. (2018). Bidimensional structure of the orthorexia: development and initial validation of a new instrument. *Anales de Psicologia, 34*(2), 283–291.

Barthels, F., Meyer, F. and Pietrowsky, R. (2018). Orthorexic and restrained eating behaviour in vegans, vegetarians, and individuals on a diet. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity, 23*(2), 159-166. https://doi.org/10.1007/s40519-018-0479-0

Bóna, E., Szél, Z., Kiss, D. and Gyarmathy, V.A. (2019). An unhealthy health behavior: Analysis of orthorexic tendencies among Hungarian gym attendees. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity, 24*(1), 13–20. https://doi.org/10.1007/s40519-018-0592-0

Bosi, A. T. B., Çamur, D. and Güler, Ç. (2007). Prevalence of orthorexia nervosa in resident medical doctors in the Faculty of Medicine (Ankara, Turkey). *Appetite, 49*(3), 661–666.

Bratman, S. and Knight, D. (2000). *Health food junkies: Overcoming the obsession with healthful eating*. Broadway Books.

Bratman, S. (1997). The health food eating disorder. *Yoga Journal*, 42-50.

Brytek-Matera, A. (2019). Vegetarian diet and ortorexia nervosa: a review of the literature. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity, 26*(1), 1-11. https://doi.org/10.1007/s40519-019-00816-3

Brytek-Matera, A., Fonte, M. L., Poggiogalle, E., Donini, L. M. and Cena, H. (2017). Orthorexia nervosa: Relationship with obsessive-compulsive symptoms, disorderd eating patterns and body uneasiness among Italian university students. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity, 22*(4), 609–617. https://doi.org/10.1007/s40519-017-0427-4

Brytek-Matera, A., Donini, L. M., Krupa, M., Poggiogalle, E. and Hay, P. (2015). Orthorexia nervosa and self-attitudinal aspects of body image in female and male university students. *Journal of Eating Disorders, 3*(1), 1-8. http://dx.doi.org/10.1186/s40337-015-0038-2

Brytek-Matera, A., Krupa, M., Poggiogalle, E. and Donini, L. M. (2014). Adaptation of the Ortho-15 test to Polish women and men. *Eating and Weight Disorders Studies on Anorexia, Bulimia and Obesity, 19*(1), 69-76. http://dx.doi.org/10.1007/s40519-014-0100-0

Brytek-Matera, A. (2012). Orthorexia nervosa—an eating disorder, obsessive–compulsive disorder or disturbed eating habit. *Archives of Psychiatry and Psychotherapy, 1*(1), 55–60.

Cena, H., Barthels, F., Cuzzolaro, M., Bratman, S., Brytek-Matera, A., Dunn, T., Varga, M., Missbach, B. and Donini, L. M. (2019). Definition and diagnostic criteria for orthorexia nervosa: A narrative review of the literature. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity, 24*(2), 209–246. https://doi.org/10.1007/s40519-018-0606-y

Chard, C. A., Hilzendegen, C., Barthels, F. and Stroebele-Benschop, N. (2019). Psychometric evaluation of the English version of the Düsseldorf Orthorexie Scale (DOS) and the prevalence of orthorexia nervosa among a US student sample. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity, 24*(2), 275–281. https://doi.org/10.1007/s40519-018-0570-6

De Souza, Q. J. O. V. and Rodrigues, A. M. (2014). Risk behavior for orthorexia nervosa in nutrition students. *Revista Chilena de Nutricion, 63*(3), 200-204. http://dx.doi.org/10.1590/0047-2085000000026

Dell'Osso, L., Abelli, M., Carpita, B., Massimetti, G., Pini, S., Rivetti, L., Gorrasi, F., Tognetti, R., Ricca, V. and Carmassi, C. (2016). Orthorexia nervosa in a sample of Italian university population. *Rivista di Psichiatria, 51*(5), 190–196. https://doi:10.1708/2476.25888

Dell'Osso, L., Carpita, B., Muti, D., Cremone, I.M., Massimetti, G., Diadema, E., Gesi, C. and Carmassi, C. (2018). Prevalence and characteristics of orthorexia nervosa in a sample of university students in Italy. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity, 23*(1), 55–65. https://doi.org/10.1007/s40519-017-0460-3

Depa, J., Barrada, J. R. and Roncero, M. (2019). Are the motives for food choices different in orthorexia nervosa and healthy orthorexia?. *Nutrients, 11*(3), 1–14. https://doi.org/10.3390/nu11030697

Donini, L. M., Marsili, D., Graziani, M.P., Imbriale, M. and Cannella, C. (2005). Orthorexia nervosa: Validation of a diagnosis questionnaire. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity*, *10*(2), e28–e32.

Donini, L.M., Marsili, D., Graziani, M.P., Imbriale, M. and Cannella, C. (2004). Orthorexia nervosa: A preliminary study with a proposal for diagnosis and an attempt to measure the dimension of the phenomenon. *Eating Weight Disorders-Studies on Anorexia, Bulimia and Obesity*, *9*(2), 151-7. https://doi.org/10.1007/BF03325060

Dunn, T. M. and Bratman, S. (2016). On orthorexia nervosa: A review of the literature and proposed diagnostic criteria. Eating Behaviors, 21, 11-7. https://doi.org/10.1016/j.eatbeh.2015.12.006

Ergin, G. (2014). *Sağlık personeli olan ve olmayan bireylerde ortoreksiya nervoza sıklığı araştırması* [Yayımlanmamış Yüksek Lisans Tezi]. Başkent Üniversitesi.

Luck-Sikorski, C., Jung, F., Schlosser, K. and Riedel-Heller, S.G. (2019). Is orthorexic behavior common in the general public? A large representative study in Germany. *Eating Weight Disorders-Studies on Anorexia, Bulimia and Obesity*, *24*(2), 267-273. https://doi.org/10.1007/s40519-018-0502-5

Hayles, O., Wu, M.S., De Nadai, A.S. and Storch, E.A. (2017). Orthorexia nervosa: An examination of the prevalence, correlates, and associated impairment in a university sample. *Journal of Cognitive Psychotherapy, 31*(2), 124–135. https://doi.org:10.1891/0889-8391.31.2.124

Korinth, A., Schiess, S. and Westenhoefer, J. (2010). Eating behaviour and eating disorders in students of nutrition sciences. *Public Health Nutrition, 13*(1), 32-37. https://doi.org/10.1017/S1368980009005709

Koven, N.S. and Abry, A.W. (2015). The clinical basis of orthorexia nervosa: Emerging perspectives. *Neuropsychiatric Disease and Treatment*, 385-394. https://doi.org/10.2147/NDT.S61665

Lucka, I., Domarecki, P., Janikowska-Holowenko, D., Plenikowska-Slusarz, T. and Domarecka, M. (2019). The prevalence and risk factors of orthorexia nervosa among school-age youth of Pomeranian and Warmian-Masurian voivodeships. *Psychiatria Polska, 53*(2), 383-398. https://doi.org/10.12740/PP/OnlineFirst/90633

Mathieu, J. (2005). What is orthorexia?. *Journal American Dietetic Association, 105*(10), 1510-2. https://doi.org/10.1016/j.jada.2005.08.021

Missbach, B. and Barthels, F. (2017). Orthorexia nervosa: moving forward in the field. *Eating and Weight Disorders, 22*, 1-1. https://doi:10.1007/s40519-017-0365

Missbach, B., Dunn, T.M. and König, J.S. (2017). We need new tools to assess orthorexia nervosa. A commentary on prevalence of orthorexia nervosa among college students based on Bratman's test and associated tendencies. *Appetite, v108*(1), 521-4. https://doi.org/10.1016/j.appet.2016.07.010

Missbach, B., Hinterbuchinger, B., Dreiseitl, V., Zellhofer, S., Kurz, C. and König, J. (2015). When eating right, is measured wrong! A validation and critical examination of the Orto-15 questionnaire in German. *PLoS ONE, 10*(8), 1-15. https://doi.org/10.1371/journal.pone.0135772

Moroze, R. M., Dunn, T. M., Holland, J. C., Yager, J. and Weintraub, P. (2014). Microthinking about micronutrients: a case of transition from obsessions about healthy eating to near-fatal orthorexia nervosa and proposed diagnostic criteria. *Psychosomatics, 56*(4), 397–403. https://doi:10.1016/j.psym.2014.03.003

Niedzielski, A. and Kaźmierczak-Wojtaś, N. (2021). Prevalence of orthorexia nervosa and its diagnostic tools—A literature review. *International Journal of Environmental Research and Public Health, 18*(10), 5488. https://doi.org/10.3390/ijerph18105488

Orsel, S., Canpolat, B.I., Akdemir, A. and Özbay, H. (2004). Comparison of body-image self perception and BMI of dieting adolescents with those of non-dieters. *Türk Psikiyatri Dergisi, 15*(1), 5-15. PMID: 15095111.

Parra-Fernández, M.L., Rodríguez-Cano, T., Onieva-Zafra, M.D., Perez-Haro, M.J, Casero-Alonso, V., Fernández-Martinez, E., et al. (2018). Prevalence of orthorexia nervosa in university students and its relationship with psychopathological aspects of eating behaviour disorders. *BMC Psychiatry, 18*(1), 1-8. https://doi.org/10.1186/s12888-018-1943-0

Parra-Fernandez, M.L., Manzaneque-Canadillas, M., Onieva-Zafra, M.D., Fernandez-Martinez, E., Fernandez-Munoz, J.J., Prado-Laguna, M.D.C. and Brytek-Matera, A. (2020). Pathological preoccupation with healthy eating (orthorexia nervosa) in a Spanish sample with vegetarian, vegan, and non-vegetarian dietary patterns. *Nutrients, 12*(12), 3907. https://doi:10.3390/nu12123907

Segura-García, C., Papaianni, M. C., Caglioti, F., Procopio, L., Nistico, C. G., Bombardiere, L. and Capranica, L. (2012). Orthorexia nervosa: A frequent eating disordered behavior in athletes. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity, 17*(4), 226-233. http://dx.doi.org/10.3275/8272

Stochel, M., Janas-Kozik, M., Zejda, J., Hyrnik, J., Jelonek, I. and Siwiec, A. (2015). Validation of Orto-15 questionnaire in the group of urban youth aged 15–21. *Psychiatria Polska, 49*(1), 119–134. https://doi.org/10.12740/PP/25962

Strahler, J., Hermann, A., Walter, B. and Stark, R. (2018). Orthorexia nervosa: a behavioral complex or a psychological condition?. *Journal of Behavioral Addictions, 7*(4), 1143–1156. https://doi.org/10.1556/2006.7.2018.129

Strand, E. (2004). An eating disorders?. *Psychology Today, 37*(5), 1-3.

Sünbül, Ş. (2019). *Üniversite öğrencilerinin yeme tutumu ve ortoreksiya nervoza eğilimlerinin belirlenmesi* [Yayımlanmamış Yüksek Lisans Tezi]. Selçuk Üniversitesi.

Tremelling, K., Sandon, L., Vega, G.L. and McAdams, C.J. (2017). Orthorexia nervosa and eating disorder symptoms in registered dietitian nutritionists in the United States. *Journal of the Academy of Nutrition and Dietetics, 117*(10), 1612–1617. https://doi.org/10.1016/j.jand.2017.05.001

Turner, P.G. and Lefevre, C.E. (2017). Instagram use is linked to increased symptoms of orthorexia nervosa. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity, 22*(2), 277–284. https://doi:10.1007/s40519-017-0364-2

Ural, A. and Kılıç, İ. (2013). *Bilimsel araştırma süreci ve SPSS ile veri analizi*. Detay Yayıncılık.

Ünalan, D., Öztop, D.B., Elmalı, F., Öztürk, A., Konak, D., Pırlak, B. and Güneş, D. (2009). Bir grup sağlık yüksekokulu öğrencisinin yeme tutumları ile sağlıklı yaşam biçimi davranışları arasındaki ilişki. *İnönü Üniversitesi Tıp Fakültesi Dergisi, 16*(2), 75-81.

Vandereycken, W. (2011). Media hype, diagnostic fad or genuine disorder? Professionals' opinions about night eating syndrome, orthorexia, muscle dysmorphia, and emetophobia. *Eating Disorders, 19*, 145-155.

Varga, M., Dukay-Szabó, S., Túry, F. and Van Furth, E.F. (2013). Evidence and gaps in the literature on orthorexia nervosa. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity, 18*(2), 103–11. https://doi.org/10.1007/s40519-013-0026-y

World Health Organization. (2017). *Maternal, Newborn, Child and Adolescent Healthy.* http://www.who.int/maternal_child_adolescent/epidemiology/adolescence/en/.

Zamora, M. L. C., Bonaechea, B. B., Sanchez, F. G. and Rial, B. R. (2005). Orthorexia nervosa. A new eating behavior disorder?. *Actas Esp Psiquiatr, 33*(1), 66-68.

Zickgraf, H.F., Ellis, J.M. and Essayli, J.H. (2019). Disentangling orthorexia nervosa from healthy eating and other eating disorder symptoms: Relationships with clinical impairment, comorbidity, and self-reported food choices. *Appetite,134*, 40–49. https://doi.org/10.1016/j.appet.2018.12.006