EVALUATION OF SLIMMING DIETS, ORTHOREXIA NERVOSA AND QUALITY OF LIFE RELATIONSHIP OF FACULTY OF HEALTH SCIENCES STUDENTS

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ABSTRACT

Orthorexia Nervosa is a type of eating disorder that has recently affected especially students of university. According to some research, students studying health care are more at risk for Orthorexia Nervosa (ON). This study was carried out to evaluate dieting status, orthorexia nervosa (ON) and quality of life relationship in OKÜ, Faculty of Health Sciences students. In March 2021, 235 volunteer students from OKÜ Faculty of Health Sciences participated in the cross-sectional descriptive type of research. The data were collected by Sociodemographic Information Form, Orthorexia Nervosa Assessment Scale (ORTO-15) and Quality of Life Scale (SF-36). Chi-Square test and Independent Sample T-Test were used in statistical analyses and the value of signiability was considered $p<0.05$. It was found that 81.3% of students tended to be ON, 96.9% of male students showed an orthorectic trend, while 78.8% of girls showed an orthorectic trend. There was a significant difference between the sexes in terms of ORTO-15 score ($p<0.05$). There was a significant difference in ORTO-15 scores between students doing the diet on their own or with the help of a dietitian ($p<0.05$). SF-36 scale subheading scores were examined in students with and without ON tendencies and there was no statistically significant relationship. In our study, the proportion of students who tended to orthorexia was found to be high (81.3%) and students who dieted on their own tended to have higher orthorexia.

Keywords: Orthorexia nervosa, quality of life scale, nutrition, diet

SAĞLIK BİLİMLERİ FAKÜLTESİ ÖĞRENCİLERİNİN ZAYIFLAMA DİYETLERİ UYGULAMA DURUMU, ORTOREKSİYA NERVOZA VE YAŞAM KALİTESİ İLİŞKİSİNİN DEĞERLENDİRİLMESİ

ÖZ

Ortoreksiya Nervoza son zamanlarda özellikle de üniversite öğrencilerini etkileyen bir yeme bozukluğu türüdür. Bazı araştırmalara göre, sağlık eğitimi alan öğrenciler Ortoreksiya Nervoza (ON) açısından daha riskli olmaktadır. Amaç: Bu çalışma Osmaniye Korkut Ata Üniversitesi (OKÜ), Sağlık Bilimleri Fakültesi öğrencilerinde diyet yapma durumu, Ortoreksiya Nevroza ve yaşam kalitesi ilişkisini değerlendirmek amacıyla yapılmıştır. Kesitsel tanımlayıcı tipteki araştırmaya, Mart 2021 tarihinde Osmaniye Korkut Ata Üniversitesi Sağlık Bilimleri Fakültesi'nde öğrenim gören 235 gönüllü öğrenci katılmıştır. Veriler, sosyodemografik bilgi formu, Ortoreksiya Nevroza Değerlendirme Ölçeği (ORTO-15) ve Yaşam Kalitesi Ölçeği (SF-36) ile toplanmıştır. İstatistiksel analizlerde Ki-Kare testi ve Independent Sample T-Testi kullanılmıştır ve anlamlılık değeri $p<0,05$ olarak kabul edilmiştir. Öğrencilerin %81,3'ünün ON eğilimi gösterdiği saptanmış olup, erkek öğrencilerin %96,9' u ortorektik eğilim gösterirken, kızların %78,8'i ortorektik eğilim göstermektedir. Cinsiyetler arasında ORTO-15 puanı açısından anlamlı fark olduğu tespit edilmiştir ($p<0.05$). Öğrencilerin diyeti kendi kendine veya bir diyetisyen yardımıyla yapmaları arasında ORTO-15 puanları bakımından anlamlı bir fark bulunmuştur ($p<0.05$). ON eğilimi olan ve olmayan öğrencilerde SF-36 ölçeği alt başlıkları puanları incelenmiş ve istatiksel olarak anlamlı bir ilişki bulunmamıştır ($p>0.05$). Araştırmamızda Ortoreksiya eğilimi gösteren öğrencilerin oranı (%81,3) yüksek bulunmuş olup, kendi başına diyet yapan öğrenciler daha yüksek ortoreksiya eğilimi göstermiştir.

Anahtar Kelimeler: Ortoreksiya nervoza, yaşam kalitesi ölçeği, beslenme, diyet

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INTRODUCTION

The phenomenon of nutrition is the most important of the basic needs of individuals. On one side of nutrition there are biological requirement, while on the other side there are psychological factors. When the individual feels any pressure, his emotional state and eating behavior may be affected and may change (1). The term eating disorders (ED) includes various disorders characterized by abnormal eating behaviors related to emotional problems. Physical complications that may arise as a result of eating disorders are very diverse and may vary depending on the behavior of individuals with eating disorders and the history of eating disorders (2,3).

Orthorexia nervosa (ON) was first described by Dr. Steven Bratman in 1997 as an obsession with healthy foods. ON, which is composed of the Greek words 'orthos' (true) and 'orexia' (appetite), is a category that is emphasized on eating disorders. However, it is not yet included in the Diagnostic and Statisctical Manual of Mental Disorders of the American Psychiatric Association's DSM-V Diagnostic Criteria Reference Manual (4,5).

Orthorectic individuals are quite concerned about the methods and materials typically used in the preparation of food. These individuals avoid processed foods with insecticides and herbicides. Orthorectic individuals are not able to take full advantage of food groups due to all these concerns. Therefore, this situation leads to nutritional deficiencies (6). However, the main factor that distinguishes this category from other eating disorders is that the individual pays attention to the quality, not the amount of food intake. ON is similar to obsessive-compulsive disorder with a lot of behavioral and mental difficulties (7). Unhealthy dietary preferences and behaviors, body dissatisfaction, weight control and diet are common at all ages, but are especially common among university students. Factors such as high stress, low physical activity and nutritional changes that enter their lives with the transition to university life lead to pressure in individuals and impaired eating behavior (8,9).

The prevalence of ON is not completely known. Various results were found in the researches. According to research of dietitians by Asil and his colleagues, the prevalence rate is 41.9% (10); according to a research of university students studying in different departments, the prevalence rate is 59.8% (11); according to a research on female students studying nutrition and dietetics, the prevalence rate is 70.6% (12).

Studies have shown that ON is more common in dietitians, medical school students, doctors and people with anxiety and obsessive-compulsive disorder. In individuals, information learned about healthy eating can cause nutritional obsession (10,12). It has been stated that orthorexia nervosa is a common eating behavior disorder in female dietitians in Austria and therefore female prefer dietitian as a profession (13). Therefore, it is thought that dietetics students studying in the field of health and studying nutrition may be at risk for orthorexia nervosa tendencies (13).

This study was carried out cross-sectionally in order to determine the quality of life, frequency of ON, the state of application of weight-loss diets and ON relationship in the students of OKÜ Faculty of Health Sciences. At the same time, it is aimed to

determine whether the obsession with healthy eating occurs in students studying health and nutrition. Our study covers students from The Department of Nutrition and Dietetics, Department of Health Management and Department of Nursing within the Faculty of Health Sciences of OKÜ. The number of studies evaluating the relationship between orthorexia nervosa and quality of life on students working or studying in the field of health is limited. With this study, it is aimed to contribute to the literature.

MATERIALS AND METHODS

Research Type

It is a descriptive and cross-sectional type of research.

Research Population and Sampling

The population of the research consisted of 820 students studying at OKÜ Faculty of Health Sciences. Sampling method was not used in the study, it was tried to reach the entire universe. The questionnaire was applied to 235 students. Participants are students studying in the Department of Nutrition and Dietetics, Department of Nursing or Health Management at OKÜ Faculty of Health Sciences.

Data Collection Tools

The data of the study were collected by the researchers with "Socio-Demographic Survey", "ORTO-15 Scale" and "Quality of Life Scale (SF-36)". The students who voluntarily participated in our study were informed about the study with the informational text at the beginning of the survey and the participants who marked the tab volunteered for participate in the study were included in the study. Data collection tools were communicated to the participants with the survey prepared online via "Google form".

Socio-Demographic Questionnaire

This form, developed by researchers; it consists of 22 questions about the demographic characteristics of the participants, such as age, gender, educational status and whether they follow a weight-loss diet, the state of following the weight-loss diet (on their own or with the help of a dietitian) exercise status. Body weight (kg) and standing height (cm) data of the individuals participating in the study were taken on the basis of declaration. Body weight (kg)/standing height (m2) equation and Body Mass Index (BMI) value are calculated and evaluated according to world health organization classification. Accordingly, those between 18.5–24.99 kg/m2 are classified as normal, those between 25.0 and 29.99 kg/m2 are classified as overweight and those who are ≥30kg/m2 are classified as obese.

ORTO-15 Scale

The ORTO-15 scale consists of 15 items asked to evaluate the ON trend of individuals. The items are; examines people's obsessive actions regarding purchasing, selecting, preparing and consuming foods that are healthy according to the participants (14). Since ORTO-15 is intended to evaluate participants from a rational point of view when evaluating them emotionally; there are questions examining the "cognitive-rational area" (1, 5, 6, 11, 12, 14), "clinical area" (3, 7, 8, 9, 15) and "emotional field" (2, 4, 10, 13). "1" for the answers that pose a risk for orthorexia and "4" for the answers that do not tend to be ON and indicate the tendency to eat normally. The lowest 15 points can be scored on the scale, while the highest 60

points can be obtained. If the score from the ORTO-15 scale is ≤40, individuals are evaluated as orthorectric and >40 as individuals as normal (14).

In our study, individuals were divided into two subgroups and those who received 40 points or less from the ORTO-15 scale (orthorexic persons) were included in Group 1 (GI) (n=191), while those with 40 points or more (non-orthorectric) were included in Group 2 (GII) (n=44).

Short Form 36 (SF-36) Quality of Life Scale

Short form 36 (SF-36) Quality of Life Scale is a short but fairly comprehensive, suitable for use in clinical practice, evaluating the health status of participants in the last 4 weeks and a strong overall health scale in terms of many characteristics. The SF-36 Scale was first developed by Ware and his colleagues (Rand Corporation) in 1992 (15,16). Koçyiğit and his friends (17) onducted the Turkish validity and reliability study in 1999. The SF-36 Scale consists of 8 sub-dimensions and 36 substances. In our study, we evaluated 5 subheadings that we thought were associated with Orthorexia Nervosa. These subheadings include: physical function, general health, mental health, social function, vitality. These sub-dimensions rate participants' health from 0 to 100, and 0 points indicate that the current health condition is poor, while 100 points indicate that the current health is good (15,16,17).

Ethical Aspects of Research

Written permission was taken from the ethics committee of a university (Ethics committee decision no: 2021/5/2) and the related institution before the beginning of the study.

Statistical Analysis

Statistical Analysis was evaluated with the help of SPSS (Statistical Packet for The Social Science) 22.0 computer program. In the evaluation of the data obtained from the study result; from descriptive statistical methods; frequency (n), percentage (%), standard deviation ± average, min (minimum) – max (maximum) were used. For statistical signiation; Chi-Square test was used to compare qualitative data and Independent Sample T-Test was used to compare more than two groups.

Results was evaluated in the 95% confidence range and signibility at $p<0.05$.

RESULT

The sociodemographic characteristics of the 235 students who participated in the study were stated in Table 1. Of the students participating in this study, 86.4% are female and 13.6% are male. The participation of Nutrition and Dietetics, Nursing and Health Management departments in the study is listed as 68.1%, 21.7% and 10.2%. When the BMI values of the participants are examined; 15.3% were found to be underweight, 67.7% were normal and 17.0% were overweight (Table 1).

Table 1. Distribution of participants by socio-demographic characteristics (n:235)

General Characteristics

		N	%
Gender	Woman	203	86.4
	Male	32	13.6
BMI	Weakly	36	15.3
	Normal	159	67.7
	Overweight	40	17.0
Departmen of Study	Nutrition and Dietetics	160	68.1
	Nursing	51	21.7
	Health Management	24	10.2

Footnote: N : Number, % : Percent, BMİ : Body Mass Index

When the orthorexia nervosa trends of the students who participated in the study according to ORTO-15 scale scores were examined, 81.3% of the students were highly prone to orthorexia nervosa, while 18.7% were not considered at risk for the tendency to orthorexia nervosa (Table 2).

Table 2. Distribution of students participating in the study by ORTO-15 cutting point

	N	%	Mean±SD (min-max)
Ortho-15 Score ≤40 (G1)	191	81.3	
Ortho- 15 Score >40 (G2)	44	18.7	
Total	235	100	37.0 ± 3.5 (29-48)

Footnote: G1 : Group 1, G2 : Group 2, N: Number, %: Percent SD: Standard Deviation, Min: Minimum, Max: Maximum, ORTO-15 : Orthorexia Nervosa Diagnostic Scale

Table 3. Classification of Students' ORTO-15 scores according to BMI

BMI Classification	G1 (n=191)		G2 (n=44)		Total (n= 235)		P Value
	S	%	s	%	N	%	0.012
Weakly	29	15.2	7	15.9	36	15.3	
Normal	136	71.2	23	52.3	159	67.7	
Overweight	26	13.6	14	31.8	40	17.0	

Pearson Ki Kare

Footnote: G1 : Group 1, G2 : Group 2, N: Number, %: Percent, BMI: Body Mass Index, ORTO-15 : Orthorexia Nervosa Diagnostic Scale

Table 3 shows the classification of students according to BMI values. The distribution of students with high ON tendency (ORTO-15 score ≤40) according to body mass index is as follows for underweight, normal and overweight students, respectively; 15.2%; 71.2% and 13.6%. On the other hand, the distribution of students with low ON tendency (ORTO-15 score >40) according to body mass index is as follows for underweight, normal, and overweight students, respectively;15.9%; 52.3% and 31.8%.

According to the ORTO-15 score of the students, there was a significant difference in BMI value between those with and without orthorexia ($p<0.05$).

When the departments were compared, it was seen that the students with the highest ON tendency were in the Department of Nutrition and dietetics, while the students with the lowest tendency were in the Department of Health management (Table 4). This difference between departments is not statistically significant ($p>0.05$).

Table 4. Comparison of ORTO-15 scores with the department in which students study

	Departmen of Study			
Ortho-15 Group	Nutrition and Dietetics	Nursing	Health Management	P Value
G1 (n/ %)	132 (69.1)	41 (21.5)	18 (9.4)	0.669
G2 (n/ %)	28 (63.6)	10 (22.7)	6 (13.6)	
Total	160 (68.1)	51 (21.7)	24 (10.2)	

Pearson Ki Kare

Footnote: G1 : Group 1, G2 : Group 2, N: Number, %: Percent, ORTO-15 : Orthorexia Nervosa Diagnostic Scale

Table 5. Distribution of GI and GII groups by gender

Gender	GI (n / %)	GII (n / %)	P Value
Woman	160 / %83.8	43 / %97.7	0.015
Male	31 / %16.2	1 / %2.3	

Pearson Ki Kare

Footnote: G1 : Group 1, G2 : Group 2, N: Number, %: Percent,

Table 5 shows the classification of orthorexia nervosa scores by gender. According to the table, the proportion of female students who scored ≤40 on the ORTO-15 scale was 83.8%, compared to

16.2% of male students. According to the scores obtained from the ORTO-15 scale, the rate of female students with >40 points is 97.7%, while the rate of male students is 2.3%. According to these results, 16.2% of male students show orthorexic tendency, while 83.8% of female students show orthorexic tendency. A statistically significant difference was found between gender variability and ORTO-15 scores. ($p<0.05$) (Table 5).

In addition, in our study, 36% of the students who stated that they had diet at least once before, stated that they were on a diet with a dietitian, and 64% stated that they dieted on their own. Students who show orthorectric tendency in the ORTO-15 scale; while 29.9% of them were on a diet with the help of a dietitian, 70.1% of them stated that they dieted on their own. A statistically significant difference was found between the ON tendency to diet with the help of a dietitian or diet alone ($p<0.05$).

Table 6. Comparison of ORTO-15 score with SF-36 score

Quality of Life	ORTHO-15 Score ≤40 G1 (n: 191)		ORTHO-15 Score >40 G2 (n:44)		
	Mean	Std. Deviation	Mean	Std. Deviation	P Value
General Health Perception	55.62	17.02	57.72	15.19	0.453
Physical Function	84.29	21.79	89.65	15.03	0.123
Social Function	57.87	25.34	58.23	22.28	0.931
Mental Function	51.29	19.36	54.72	16.36	0.277
Vitalite	46.02	23.17	49.54	16.94	0.344

Footnote: G1 : Group 1, G2 : Group 2, N: Number, %: Percent, ORTO-15 : Orthorexia Nervosa Diagnostic Scale

The relationship between ORTO-15 score and quality of life scores of the individuals who participated in the study was examined and it was determined that there was no statistically significant relationship ($p>0.05$).

DISCUSSION

ON is a type of eating disorder that is not yet included in the DSM-V diagnostic criteria. Orthorectic individuals may experience nutrient deficiencies by paying attention to the quality of the food, not the quantity (6). This extremely important eating disorder is more common in university students. Therefore, the prevalence of ON in students is increasing and this situation endangers public health (8,9).

It is known that the prevalence of Orthorexia Nervosa is constantly increasing in university students. When the literature was examined, the study conducted by Donini and his colleagues in 2004 (18) found the lowest prevalence of ON prevalence with 6.9%. In a study conducted by Souza and his colleagues at Vale University in 2014, the highest prevalence was found with 88.7% (19). Studies conducted after 2016 show that the prevalence of ON is 50% or higher (20-22). In addition, 128 students were included in the study conducted by Malmborg and his colleagues (2017) at Halmstad University in Sweden, and 82% of the students were found to be ON trend (23). In our study, 191 people (81.3%) scored ≤40 on the ORTO-15 scale, while 44 (18.7%) scored >40 on the ORTO-15 scale. Accordingly, 81.3% of the students who participated in our study show an orthorectic tendency. This value is high compared to many studies in the literature and proves the need to investigate the factors associated with Orthorexia nervosa in students.

When the literature is examined, it is determined that the majority of the researches are carried out on university students and it is seen that the prevalence ON is constantly increasing. Positive or negative health messages, emphasis on food quality can lead to the developmalet of a healthy eating obsession in young people

due to misconception (24). In addition, it is thought that the tendency to orthorexia nervosa has increased as the nutrition and dietetic students who participated in our research received nutrition training that may constitute a healthy eating obsession.

86.4% (N: 203) of the students who participated in our study were female and 13.6% (n: 32) were male. According to the scores obtained from the ORTO-15 scale, the rate of female students with >40 points is 97.7%, while the rate of male students is 2.3%. According to these results, 16.2% of male students show orthorexic tendency, while 83.8% of female students show orthorexic tendency. A statistically significant difference was found between gender variability and ORTO-15 scores ($p<0.05$). There are different related opinions between gender and orthorexia in the literature (21,25). It can be concluded that students in both sex groups who participated in our study may have ON tendencies due to their education in health (nutrition education is only given to dietetic students). In addition, due to the greater number of female students in the dietetics department at the university, the findings should be noted.

When the literature is examined, it is determined that there is a relationship between dieting and orthorexia (26). According to a study conducted by Arusoglu (2006), those who received any dietary treatment or had taken it at least once before had a statistically significantly higher tendency towards orthorexia ($p<0.05$) (14). Unlike studies in the literature, in our study, there was no significant difference in ON tendency between students who were on a diet and those who did not ($p>0.05$).

In a study in which students studying in nutrition and dietetics departments and other departments of universities in Germany were evaluated in terms of orthorexic behavior tendencies, it was reported that there was no difference between departments (30). On the other hand in our study, it was determined that students in the Nutrition and Dietetics department had a higher ON tendency than the other departments. However, this difference is not significant ($p>0.05$).The lack of an equal number of participants from the departments may have contributed to this result .

In our study, 70.1% of students who showed orthorectic tendencies according to ORTO-15 score dieted on their own, while 29.9% dieted with the help of a dietitian is doing it. It was determined that there was a statistically significant relationship between dietary practice and ON trend ($p<0.05$).

According to some studies, health education is considered a risk factor for orthorexia nervosa (20,31). While all the students included in our study receive health education, only dietetic students receive nutrition training. In our study, the ON trend was high in the general participant population and it was found that nutrition and dietetics students had a higher ON trend than other students. According to other studies conducted in our country and Poland, although there is no statistically significant relationship between occupational groups, dietitians are in the more risky group for ON. Therefore, more ON should be studied on dietitians (10,32). Another study on dietitians in the United States reported that 49.5% of participants on the ORTO-15 scale were at risk for ON (33). There are also studies that, unlike the literature, reported a low rate of eating

behavior disorders in participants of both sexes studying in the Department of Nutrition and Dietetics (34,35).

Although there are contradictory results in the literature, the majority of the group with a high ON trend in our study was nutrition and dietetic students and no statistically significant difference was found between the departments.

In our study, it was determined that students in the normal BMI group had a higher tendency to orthorectics behavior ($p<0.05$). A study by Gezer and Kabaran reported that students in the weak BMI group had a higher tendency for orthorectic behavior (34). Another study found that university students in the slightly overweight group had a higher propensity for orthorectic behavior than students in other groups (35). In addition, according to the results of a study conducted by Arusoglu et al. orthorexic tendencies increase as BMI increases (14).

According to our study, students with normal BMI values tend to have a higher ON. It is believed that as you move away from the normal BMI value, the predisposition to other nutritional disorders increases instead of ON.

When the scores of the students who participated in the study were examined on the SF-36 scale: The quality of life scale consists of 8 subheadings and 5 subheadings that are thought to be related to ON in our study; general health perception, physical function, social function, mental new studies should be carried out with the larger universe in order to draw more attention to this issue and to increase the awareness levels of university students studying in the field of health.

function and vitality were examined. In our study, quality of life and ON tendencies was compared and no significant relationship was found between them. When the literature was scanned, a similar study was reported that there was no significant relationship between ON and quality of life (23).

The number of studies similar to our study in the literature has been found very few, and it was aimed to contribute to the literature with this study. There was no relationship between ON and quality of life in our study and more studies are needed.

CONCLUSIONS

According to the results of our study, orthorexia nervosa is quite common in university students studying in the field of health. However, students who are on a diet without the support of a dietitian are also in the risk group for ON. In addition, it was determined that there was no statistically significant relationship between the ORTO-15 score and the quality of life scores of the individuals participating in the study. Students of the department of nutrition and dietetics receive a detailed nutrition education in accordance with their profession. It is recommended that other health departments also receive healthy eating education. In addition, it is recommended that each university has a dietitian staff and ensure that university students receive free services. In this way, students can be prevented from dieting on their own. In line with the aim of the study,

Limitations of Our Research

The limitation of our research is that it is carried out only with students of OKÜ Faculty of Health Sciences, a state university located in Osmaniye province.

Therefore, the findings cannot be generalized to all health students in Turkey. There is gender inequality in our study. In addition, anthropometric measurements were taken on a statement basis as the data was collected online.

Competing Interests

The authors declare no competing interests.

REFERENCES

1. Akdevelioğlu Y, Gümüş H. Eating Disorder and Body İmage Perception Among Univeristy Students. Pak J Nutr. 2010; 9(12): 1187-1191.
2. Chaki B, Pal S, Bandyopadhyay A. Exploring scientific legitimacy of orthorexia nervosa: a newly emerging eating disorder. J Hum Sport Exerc. 2013; 8(4): 1045– 53.
3. Parra-Fernández ML, Rodríguez-Cano T, Onieva-Zafra MD, Perez-Haro MJ, Casero-Alonso V, Fernández-Martinez E, et al. Prevalence of orthorexia nervosa in university students and its relationship with psychopathological aspects of eating behaviour disorders. BMC Psychiatry. 2018;18(1):364.
4. Erbay L. G, Seçkin Y. Eating disorders. Curr Gastroenterol Rep. 2016; 20(4): 473-477.
5. Köroğlu E. American Psychiatric Association. Diagnostic and statistical manual of mental disorders (DSM-5®). 1th Edition, HYB Ltd, Ankara 2018.
6. Yılmaz H, Karakuş G, Tamam L, Demirkol M. E, Namlı Z, Yeşiloğlu C. Association of orthorexic tendencies with obsessive-compulsive symptoms, eating attitudes and exercise. Neuropsychiatr Dis Treat. 2020; 16: 3035.
7. Dunn T. M, Bratman S. On orthorexia nervosa: A review of the literature and proposed diagnostic criteria. Eat Behav. 2016; 21: 11-17.
8. Dalğa D, Öngün Yılmaz H. The effect of nutrition education given to healthcare personnel on orthorexia nervosa. Prog Nutr. 2021; 23(2): e2021057.
9. Cuzzolaro M, Donini LM. Orthorexia nervosa by proxy?. Eat Weight Disord. 2016; 21: 549–551.
10. Asil, E, Sürücüoğlu, MS. Orthorexia nervosa in Turkish dietitians. Ecol Food Nutr .2015; 54(4): 303-313.
11. Sanlier N, Yassibas E, Bilici S, Sahin G, Celik, B. Does the rise in eating disorders lead to increasing risk of orthorexia nervosa? Correlations with gender, education, and body mass index. E Ecol Food Nutr .2016; 55(3): 266-278.
12. Agopyan A, Kenger E B, Kerman S, Ulker M T, Uzsoy M A, Yetgin M K. The relationship between orthorexia nervosa and body composition in female students of the nutrition and dietetics department. Eat Weight Disord-Studies on Anorexia, Bulimia and Obesity (EWD). 2019; 24(2): 257-266.
13. Dittfeld A, Gwizdek K, Koszowska A, Nowak J, Brończyk-Puzoń A, Jagielski P, et al. Assessing the Risk of Orthorexia in Dietetic and Physiotherapy Students Using the BOT (Bratman Test for Orthorexia). Ocena ryzyka ortoreksji wśród studentów dietetyki i fizjoterapii z użyciem BOT (Bratman Test for Orthorexia). Pediatr Endocrinol Diabetes Metab. 2016;22(1):6-14.
14. Arusoğlu G, Kabakçi E, Köksal G, Merdol T K. Turkish Adaptation Study of Orthorexia Nervosa and Orto-11. Turk Psikiyatri Derg. 2008; 19(3): 283-91.
15. Ware JE Jr, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. Med Care. 1992;30(6):473-483.
16. Demiral Y, Ergor G, Unal B, et al. Normative data and discriminative properties of short form 36 (SF-36) in Turkish urban population. BMC Public Health. 2006;6:247.
17. Koçyigit H, Gülseren S, Erol A, Hizli N, Memis A. The reliability and validity of the Turkish version of Quality of Life Questionnaire of the European Foundation for Osteoporosis (QUALEFFO). Clin Rheumatol. 2003;22(1):18-23.
18. Donini LM, Marsili D, Graziani MP, Imbriale M, Cannella C. Orthorexia nervosa: a preliminary study with a proposal for diagnosis and an attempt to measure the dimalesion of the phenomenon. Eat Weight Disord (EWD). 2004;9(2):151-157.
19. Souza Q. J. O. V. D, Rodrigues A M. Risk behavior for orthorexia nervosa in nutrition students. J Bras Psiquiatr. 2014; 63(3): 200-204.
20. Ermumcu M. Ş. K, Nilufer A.C. A. R. Healthy Eating Anxiety in Health Professionals: Orthorexia Nervosa (ON). Journal of Veterans Health Sciences. 2016; 1(2): 59-71.
21. He J, Ma H, Barthels F, Fan X. Psychometric properties of the Chinese version of the Düsseldorf Orthorexia Scale: Prevalence and demographic correlates of orthorexia nervosa among Chinese university students. Eat Weight

Disord-Studies on Anorexia, Bulimia and Obesity (EWD). 2019; 24(3): 453-463.
22. Dell'osso L, Abellı M, Carpıta B, Massımettı G, Pını S, Rıvettı L. et al. Orthorexia nervosa in a sample of Italian university population. Riv Psichiatr. 2016;51(5): 190-196.
23. Malmborg J, Bremander, A, Olsson M. C, Bergman S. Health status, physical activity, and orthorexia nervosa: A comparison between exercise science students and business students. Appetite. 2017; 109: 137-143.
24. Demir H.P, Virgo C. A. N, Tezel M.C. Comparison of eating habits, orthorexia nervosa scores and body mass ındexes of university students studying in different departments. Int. J Glob Warm. 2020; 4(3): 233-243.
25. Öcal E. E, Ünsal A, Demirtaş Z, Emiral G. Ö, Arslantas D. Evaluation of orthorexia nervosa and social appearance anxiety in research assistants. Cumhur Medical J. 2020; 5(2): 49-59.
26. Brytek-Matera, A. Interaction between vegetarian versus omnivorous diet and unhealthy eating patterns (orthorexia nervosa, cognitive restraint) and body mass index in adults. Nutrients. 2020; 12(3): 646.
27. Brytek-Matera, A. Vegetarian diet and orthorexia nervosa: A review of the literature. Eat Weight Disord-Studies on Anorexia, Bulimia and Obesity. 2021;26(1): 1-11.
28. Kadioglu M, Ergun A. Eating attitude, self-effectiveness and influencing factors of university students. Clin Exp Health Sci (Online). 2015; 5(2): 96-104.
29. Hunter J.D, Crudo D.F. Unintended consequences of restrictive diets: two case reports and a review of orthorexia. Clinical pediatrics. 2018; 57(14): 1693-1695.
30. Korinth A, Schiess S, Westenhoefer J. Eating behaviour and eating disorders in students of nutrition sciences. Public Health Nutr. 2010;13(1): 32-37.
31. Aktürk Ü, Gül E, Erci B. The effect of orthorexia nervosa levels of nursing students and diet behaviors and socio-demographic characteristics. Ecol Food Nutr. 2019; 58(4): 397-409.
32. Brytek-Matera A, Donini L.M, Krupa M, Poggiogalle E, Hay P. Orthorexia nervosa and self-attitudinal aspects of body image in female and male university students. J Eat Disord. 2015;3(1): 1-8.
33. Tremelling K, Sandon L, Vega G. L, McAdams C. J. Orthorexia nervosa and eating disorder symptoms in registered dietitian nutritionists in the United States. J Acad Nutr Diet. 2017;117(10): 1612-1617.
34. Gezer C, Kabaran S. Risk of orthorexia nervosa among girls in the department of nutrition and dietetics. Süleyman Demirel Univ Tıp Fak Derg (Online). 2013;4(1): 14-22.
35. Alkan Ş.B, Left-handed R, Gürbüz E, Özcan B, Özkan H, Dikici Z. Z, et al. Department of nutrition and dietetics students eating behavior disorder and body perception: a cross-sectional study. Necmettin Erbakan Univ Tıp Fak Derg. 2019;2(2): 38-44.