Clinical and Experimental Health Sciences

Prevalence of Orthorexia Nervosa in Academicians and the Influencing Factors

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ABSTRACT

Objective: Orthorexia Nervosa/Healthy Eating Obsession is defined as a pathological obsession for consuming appropriate and healthy food. The aim of this study is to determine the prevalence of orthorexia nervosa in academicians working in a public university and the influencing factors.

Methods: This study was concluded between 01 January– 01 March 2020 to determine the prevalence of Orthorexia Nervosa and its correlation with influencing factors. The data of the study were collected using the Eating Attitude Test-40 (EAT-40) and the ORTO-11 along with the information form.

Results: In this study, it was observed that an advanced age caused a higher risk of eating disorder. In addition, the variables of being in the age range of 34-41 years, being female, and receiving undergraduate education were significant in terms of reducing the risk of Orthorexia Nervosa ($p>0.05$).

Conclusion: Factors such as industrialization, developments in the socio-economic structure, and mass media cause changes and new tendencies in dietary habits and food consumption. As it is believed that these conditions will become even more widespread in the future and affect all sections of society, including academicians who are accepted to be a risk group due to their perfectionist structure; it is of prime importance to raise awareness of society and inform individuals from a multidisciplinary approach including dieticians.

Keywords: Academician, Healthy Eating Obsession, Influencing Factors, Orthorexia Nervosa, Prevalence

1. INTRODUCTION

Orthorexia Nervosa (ON), also known as “healthy eating obsession”, was defined by Steven Bratman in 1997 for the first time to diversify Anorexia Nervosa (AN). Because “ortho” means “straight” and “truth”, Bratman used the term ON to define a pathological obsession related to consuming appropriate and healthy food (1). ON has not been included in the DSM-V (Diagnostic and Statistical Manual of Mental Disorders-V, 2013) of the American Psychiatric Association, yet (2).

ON has been included in the research objectives of clinicians in the world recently. The increasing prevalence of obesity and especially the increasing number of studies aiming to prevent obesity in the United States of America have attracted attention to the necessity of leading a healthy life from all aspects and have led individuals to suffer from healthy eating obsession (1). Healthy eating habits are not actually pathological. However, ON can be evaluated as a personality and behavioral disorder when it becomes excessive, lasts too long and causes negativities in daily life (3).

ON is a new category in which the researchers focus intensely and deliberately on whether it can be defined as a disorder or not (4). It also requires discussions regarding whether ON will be examined as a subset of Anorexia Nervosa or Obsessive Compulsive Disorder (OCD) or as a different disorder. Similar properties of ON and AN are perfectionism, constant high anxiety, intense effort for keeping the control, and significant weight loss. Orthorexic and anorexic individuals are success-oriented, consider a commitment to their diet as an indicator of self-discipline, and evaluate diversion from the diet as a failure of self-control (5). While eating disorders like AN and bulimia nervosa are expressed in a quantitative context in orthorexia (for example, the amount of food consumed), they are expressed in a qualitative context in ON (quality of food consumed) (6).

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It is indicated that patients with healthy eating obsession spend most of their time engaging in strict rules just like OCD patients and consequently their social functions may get damaged in the course of time (4). Extreme orthorexia cases state that they prefer making themselves starve instead of consuming "impure" food that harms their health (7). The obsessive situation drives individuals to follow a strict diet or exclude essential nutrients from their diet and thus, individuals with these properties suffer from poor nutrition and malnourishment (4). In other words, orthorexic individuals can be evaluated in the group with risk of malnutrition as they have a tendency to gradually restrict their diet due to their effort of reaching perfectionism (8).

The purpose of this study is to determine the prevalence of orthorexia nervosa in the academicians working in different departments of Bingol University and the influencing factors.

2. METHODS

This descriptive study was conducted with the academicians working in different departments of Bingol University between 01 January and 01 March 2020 to determine prevalence and correlation of orthorexia nervosa. The population of the study consisted of 606 academicians working in different departments. No sample selection was performed. The entire population was included in the study (560 people, Responsivity rate; 92.40%).

The data of the study were collected using the Eating Attitude Test-40 (EAT-40) and the ORHO-11, along with information form. The data were collected by a research associate using the face-to-face interview method in order to prevent any bias possibility.

2.1. Information Form

It was prepared to determine some characteristics (age range, gender, marital status, educational level, title, perception of appearance, weight and height, state of having any health problem, the desire of eating according to mood, receiving any hormonal therapy, and doing physical activities regularly) of the participants. Body Mass Index (BMI) was calculated for the weight and height values reported based on personal statements of the participants (with the formula BMI: weight (kg)/ height (m^2)). The BMI classification was based on the criteria established by the World Health Organization and the weight of < 18.5 is classified as slim, the weight of 18.5-24.9 as normal, the weight of 25.0-29.9 as overweight and the weight of >30.0 as obese.

Waist and hip measurements of the individuals were measured with tape measure and recorded in the surveys. Waist circumference was measured with tape measure passing through the middle point by finding the region between lower rib and crista iliaca and the measurements were recorded by taking the circumference measurement from the highest point for the hip circumference.

2.2. Eating Attitude Test-40 (EAT-40)

The test was developed by Garner and Garfinkel (1979) to measure eating disorder symptoms. The Turkish validity and reliability study of the EAT-40 was conducted by Savaşır and Erol (1989) and its test-retest reliability was found to be 0.65 (9). The responses of this Likert-type scale consists of six stages range from "always" to "never". For the scale items 1, 18, 19, 23, 27, and 39; the option "sometimes" is evaluated as 1 point, "seldom" as 2 points, "never" as 3 points, and other options as 0 point. Total score of the scale ranges between 0 and 120. Higher scores signify that eating disorder pathology increased. A score of ≥30 points imposes a risk for an eating disorder (9).

2.3. Orthorexia-11 (ORTO-11) Scale

The scale was developed by Steven Bretmen in 2000 to determine orthorexia nervosa in individuals. It is a self-report scale. It was adapted into Turkish by Arusoglu in 2008 as ORTO-11. The scale is a 4-point Likert scale. Individuals rate the frequency of feeling the situations in the items with the options "always", "often", "sometimes" and "never". The cut-off point of the scale is 27 points and individuals receiving any value less than cut-off point are accepted as orthorexic. The Cronbach's Alpha value of the scale was reported to be 0.62. Higher scores signify the decreased risk of ON (4).

The limitation of the study is that only the academicians working in a public university in one geographical region in 2019 were included in the study and only cross-sectional design was used. In addition, it is an important limitation that the study was based only on the self-report of the participants.

Before starting the study, ethical approval from Bingol University Scientific Research and Publishing Ethics Committee and verbal consents from the participants were obtained (approval number: 2017-28, date: 07.11.2017). They were informed about the criteria of the Declaration of Helsinki in written and through an informed consent form.

2.4. Data Analysis

In the study, the data were evaluated using the SPSS-21 software package. Responses given by the participants to the questions in the information form were given as numbers and percentages in tables and they were accepted as the independent variables. In the distributions of EAT-40 and ORTO-11 scores of the participants; mean, standard deviation, standard error, minimum value, and maximum value were utilized and these scales were accepted as the dependent variables. The difference between the independent variables and dependent variables was evaluated with analyses of parametric conditions and also proper tests (T/U test, F/KW test) were used. Post-hoc analyses (Tukey HSD) were performed in case of difference

in multiple variables. Correlation analyses were performed to determine the correlation between the scale scores. In the study, the significance level was accepted as 0.05.

3. RESULTS

A great majority of the participants (45.7%) were in the age range of 34-41 years. 82.5% were male. 58.4% of the participants were married. The number of academics and research associates was more than the number of academic members (Table 1).

Mean and standard deviation in total scores of the quantitative data obtained in the study were 25.09±2.68 (15.67-34.72) in BMI, 142.67±9.43 (112-167) in EAT-40, and 25.51±4.06 (11-37) in ORTO-11.

As seen in Table 2, BMI mean rank was higher in those who were male, were at an advanced age, specified their marital status as other, had a higher level of education, had a higher title and did not do physical activities regularly. A statistical difference was observed in these variables ($p<0.05$). According to the table, it was also seen that the mean rank of the EAT-40 score was higher in those at an advanced age ($p<0.05$). In addition, the variables of being in the age range of 34-41 years, being female and having undergraduate education were significant in terms of reducing the risk of ON ($p>0.05$).

As seen in Table 3, it was determined that there was no correlation between the participants in terms of EAT-40, ORTO-11, BMI and waist circumference values.

Table 1. *Distribution of the Participants According to Some Characteristics (N=560)*

Variable	Characteristics	Number (n)	Percentage (%)
Age	18-25 years	14	2.5
	26-33 years	182	32.5
	34-41 years	256	45.7
	42-50 years	80	14.3
	51-60 years	28	5.0
Gender	Female	98	17.5
	Male	462	82.5
Marital status	Married	327	58.4
	Single	221	39.5
	Other	12	2.1
Education level	Undergraduate	15	2.7
	Postgraduate	234	41.8
	Doctorate	311	55.5
Present title	Professor	31	5.5
	Assoc. Prof. Dr.	26	4.6
	Asst. Prof.	173	30.9
	Research Assoc.	192	34.3
	Instructor	138	24.6
Health problem	Available	125	22.3
	N/A	435	77.7
The emotional condition causing to eat more	Excitement	135	24.1
	Sadness	160	28.6
	Stress	126	22.5
	Happiness	139	24.8
Have received any hormonal therapy?	Yes	108	19.3
	No	452	80.7
Doing physical activities regularly	Yes	255	45.5
	No	305	54.5
BMI (n=532)	Slim	2	0.4
	Normal	294	55.3
	Overweight	206	38.7
	Obese	30	5.6

Table 2. *Distribution of the BMI, EAT-40 and ORTO-11 Scale Scores of the Participants According to Some of Their Characteristics (N=560)*

		n	BMI	Test value	EAT-40	Test value	ORTO-11	Test value
			Mean Rank		Mean Rank		Mean Rank	
Age	18-25 years	14	175.67		143.79		208.79	
	26-33 years	182	249.94	KW=17.794	291.94	KW=11.25	288.85	KW=19.27
	34-41 years	256	274.53	**p=0.001**	278.94	**p=0.024**	296.98	**p=0.001**
	42-50 years	80	299.74		287.60		257.90	
	51-60 years	28	354.50		268.50		176.00	
Gender	Female	98	254.98	U=19822.0	272.70	U=21874.0	325.52	U=18226.0
	Male	462	275.06	p=0.254	282.15	p=0.599	270.95	p=**0.002**
Marital status	Married	327	291.92		293.33		278.04	
	Single	221	236.95	KW=20.04	261..58	KW=5.08	281.31	KW=1.338
	Other	12	363.67	**p=0.001**	279.17	p=0.079	332.67	p=0.512
Education level	Undergraduate	15	182.97		228.83		379.57	
	Postgraduate	234	247.11	KW=16.616	287.98	KW=2.149	293.98	KW=9.964
	Doctorate	311	294.22	**p=0.001**	277.36	p=0.341	265.58	**p=0.007**
Present title	Professor	31	280.40		294.37		206.76	
	Assoc. Prof. Dr.	26	271.21	KW=24.302	260.12	KW=2.750	259.58	KW=7.545
	Asst. Prof.	173	319.15	**p=0.001**	274.96	p=0.601	286.34	p=0.110
	Research Assoc.	192	239.40		273.66		285.35	
	Instructor	138	256.88		297.70		286.94	
Health problem	Available	125	284.15	U=24481.0	303.64	U=24295.5	282.84	U=26895.5
	N/A	435	267.71	p=0.303	273.85	p=0.069	279.83	p=0.854
The emotional condition causing to eat more	Excitement	135	252.95		291.89		282.78	
	Sadness	160	268.73	KW=3.217	264.29	KW=6.564	278.54	KW=1.131
	Stress	126	282.63	p=0.359	305.67	p=0.087	291.33	p=0.770
	Happiness	139	282.82		265.28		270.72	
Have received any hormonal therapy?	Yes	108	276.26	KW=2263.0	302.47	KW=22035.0	291.44	KW=23226.0
	No	452	270.34	p=0.727	275.25	p=0.116	277.88	p=0.432
Doing physical activities regularly	Yes	255	255.69	U=32446.5	269.29	U=36029.5	272.87	U=36942.5
	No	305	284.06	**p=0.036**	289.87	p=0.134	286.88	p=0.306

Table 3. *Correlation between the Body Mass Indices, Waist Circumferences, Eating Attitudes and Orthorexic Scores of the Participants* (N=560)*

		EAT-40	ORTO-11	BMI	Waist Circumference
EAT-40	Rho	1			
	p	-			
ORTO-11	Rho	-0.040	1		
	p	0.343	-		
BMI	Rho	-0.023	0.059	1	
	p	0.590	0.172	-	
Waist Circumference	Rho	0.035	-0.071	-0.009	1
	p	0.409	0.094	0.843	-

**Spearman's correlation analysis*

4. DISCUSSION

ON is accepted as important because of pathological efforts made by individuals. It is believed that these individuals experience emotional displeasures and social isolations (10). In the literature, it is stressed that ON can turn a personality and behavioral disorder after a certain time (11). This study was conducted to determine the prevalence of ON (orthorexia nervosa) in the academicians working in different departments of Bingol University and the influencing factors.

Mean and standard deviation values in EAT-40 and ORTO-11 scores of the participants were 142.67±9.43 (112-167) and 25.51±4.06 (11-37), respectively; whereas, the mean and standard deviation in BMI was 25.09±2.68 (15.67-34.72). In the study by Yeşil, it was determined that the ORTO-11 mean score was 26.3±3.61 in women and 26.9±3.85 in men (10). It is known that although orthorexic individual aims to protect her/his health, his/her self-limiting behavior will show differences in terms of many variables. In this study, the BMI mean rank was higher in those who were male, were at an advanced age, specified their marital status as other, had a

higher level of education, had a higher title and did not do physical activities regularly. These conditions are important in terms of statistical difference. In the study, it was observed that being at an advanced age led to a higher risk of eating disorder. In addition, the variables of being in the age range of 34-41 years, being female and having undergraduate education were significant in terms of reducing the risk of ON ($p>0.05$). In the study by Atmaca and Durat, the EAT-40 mean score was found to be 21.0000±20.00 in women and 21.0000±16.00 in men (12).

In the study conducted by Öztürk and Yabancı Ayhan with individuals in the age range of 18-25 years, they determined that the participants' age did not create a difference in terms of the ORTO-11 scores (13). The study was conducted in a narrow age range like 18-25 years; therefore, it is expected that this result was different from the result of this study. Hence the fact that the ORTO-11 score was remarkable at an advanced age in this study was significant.

Likewise, the literature emphasizes that eating disorders are encountered in women more frequently (1). In the study, being female was found to be an important variable in terms of the risk of ON. There are studies indicating that orthorexic tendency is higher in women (10,14,15). Other studies also indicate that it is higher in men (16-18). These differences between the studies are associated with cultural differences of study groups and study designs.

In this study, it was found that the variable of marital status caused no difference in terms of being orthorexic, which shows parallelism with other studies in the literature (10, 19). In a study conducted on adults in Italy, orthorexia nervosa tendencies of singles were found to be higher than the others (20).

In the study, it was observed that individuals with undergraduate education were more orthorexic than those with higher education in terms of educational level. The result in the study by Arusoglu et al., is compatible with the result of the present study (4). In the study of Oktay (21) on university students, it was stated that 19.40% of those whose fathers were literate and primary school graduates, 16.30% of those who graduated from high school, and 12.50% of those who graduated from university showed orthorexic tendency but reported no statistically significant difference.

BMI is an important variable in terms of eating disorders (10). No correlation was determined between the participants in terms of the EAT-40, ORTO-11, BMI and waist circumference values in this study. Likewise, Öztürk and Yabancı Ayhan found no correlation between the BMI and ORTO-11 scores in their study (13). However, some studies obtained different results. For example, in their study, Fidan et al., determined that there was a reverse correlation between the BMI and orthorexic scores (17). In another study conducted in 2017, it was determined that there was a negatively weak correlation between being orthorexic and eating attitude scores, which shows contradistinction to this study (12). In a study, it was stressed that orthorexic individuals faced problems such as malnutrition, hypoproteinemia, B12 vitamin deficiency and emphysema more frequently and they even become bedridden as a result of routinized nutrition (22). In this study, it was concluded that the participants' ORTO-11 scores were not correlated with their eating attitude scores. In the literature, it is pointed out that eating disorders are common among models, dancers, yogi, sportsmen, and medical personnel (23-25). In this study, it was determined that there was a significant difference between occupations, eating attitudes, and orthorexia scores of the participants working as academicians.

5. CONCLUSION

In the study, it was determined that the BMI mean rank average was higher in those who were male, were at an advanced age, specified their marital status as other, had a higher level of education, had a higher title and did not do physical activities regularly. Being at an advanced age led to a higher risk of eating disorder. In addition, the variables of being in the age range of 34-41 years, being female and having undergraduate education were significant in terms of reducing the risk of ON ($p>0.05$).

Consequently, factors such as industrialization, changes and developments in the socio-economic structure, opening to the western culture, the desire of living a long healthy life, mass media and advertisements today cause changes and new tendencies in dietary habits and food consumption. As it is believed that these conditions will become even more widespread in the future and affect all sections of society, including academicians who are accepted to be a risk group due to their perfectionist structure, it is of prime importance to raise awareness in society and inform individuals from a multidisciplinary approach including dieticians.

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