

Cyberchondria and Factors Associated With Ortorexia Nervosa Symptoms

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Research Article

Keywords: Cyberchondria, orthorexia nervosa, adults, online health information seeking, compulsive health information seeking

Posted Date: October 16th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-11149034/v1>

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Additional Declarations: No competing interests reported.

Abstract

This study examined the relationship between orthorexia nervosa (ON) and cyberchondria and identified factors associated with ON. Using a descriptive and exploratory design, the study was conducted with 348 adults. Data were collected using a Demographic Information Form, the Cyberchondria Severity Scale Short Form and the Orthorexia Nervosa Test (TON-17). Pearson correlation, multiple linear regression and binary logistic regression analyses were performed. In multiple linear regression Model 1, cyberchondria ($\beta = 0.323$, $p < 0.001$), income level ($\beta = 0.134$, $p = 0.008$), father's education ($\beta = 0.133$, $p = 0.009$) and enjoyment of life ($\beta = 0.101$, $p = 0.047$) significantly predicted ON. In Model 2, ON was significantly associated with the cyberchondria compulsion subscale ($\beta = 0.237$, $p = 0.005$), income level, father's education and enjoyment of life. Logistic regression showed that cyberchondria increased ON risk in Model 1 (OR = 1.092, 95% CI: 1.061–1.124, $p < 0.001$), while compulsion increased ON risk in Model 2 (OR = 1.217, 95% CI: 1.041–1.423, $p = 0.014$). Findings indicate that cyberchondria, particularly compulsion, and selected demographic variables are significant predictors of ON.

INTRODUCTION

The compulsive searching for medical information online due to an individual's anxiety about their health has been defined as cyberchondria [1]. According to DataReportal figures, it is reported that approximately 73.2 per cent of the world's population uses the internet [2]. The widespread adoption of the internet and the increasing ease with which individuals can access health-related information online have begun to influence the way people make medical decisions. According to data from 2025, 60 per cent of individuals aged 16–74 in Europe search for health information online [3].

In Turkey, according to data from 2025, the internet usage rate among individuals aged 16–74 is 90.9 per cent [4]. Of those users who use the internet for specific purposes, 67.7 per cent have searched for health-related information online in the last three months [4].

The World Health Organisation has stated that individuals must be vigilant regarding information management to counter the dissemination of false and misleading information in the digital environment. It has been noted that misleading health-related information is particularly likely to spread and may lead individuals to make incorrect decisions [5]. Indeed, the prevalence of cyberchondria has been reported to range between 30.7 per cent and 55.6 per cent [6]. When searching for health information online becomes excessive and repetitive for an individual, and as anxiety levels continue to rise until the situation becomes pathological, this leads to cyberchondria [1, 7]. Significant associations have been found between searching for health information online, health anxiety and cyberchondria [7]. Searching for health-related information online can lead not only to cyberbullying but also to research into eating behaviours. The concept of orthorexia nervosa refers to an excessive mental preoccupation with healthy eating and rigid attitudes towards self-imposed dietary rules [8]. Individuals with orthorexia nervosa may become obsessively focused on healthy eating, avoid foods they consider unhealthy, and experience impaired functioning in social and occupational settings [9]. However, orthorexia nervosa is not yet a standardised psychiatric diagnosis [8].

It has been reported that orthorexia nervosa should not be viewed solely in terms of nutrition, but must be assessed from a broader psychological and behavioural perspective [4, 10]. Health anxiety, perfectionism, obsessive-compulsive traits and hypochondriasis have been identified as mental health issues that may be associated with orthorexia nervosa [8]. Similar issues may also lead to cyberchondria [1, 7]. Whilst orthorexia

nervosa manifests as a desire to protect or improve one's health, an intense mental preoccupation with the effects of food on health, and increasingly rigid dietary rules; cyberchondria may also arise from repetitive online information-seeking aimed at alleviating an individual's health-related anxieties [1, 8]. Therefore, it is likely that there are common psychological processes underlying both the transformation of health-related information-seeking into a compulsive pattern and the excessive control of eating behaviours.

Whilst research into cyberchondria focuses primarily on health anxiety, illness anxiety, reassurance-seeking, intolerance of uncertainty and obsessive-compulsive traits; research on orthorexia nervosa, on the other hand, has been examined more extensively in terms of eating disorder psychopathology, body image, dietary restrictions, perfectionism, exercise and social media use [7,10, 11,12]. Research into the direct relationship between cyberchondria and ON remains limited [13]. A previous study on this topic was conducted with healthcare professionals. According to this study, a low-level, statistically significant association was identified between cyberchondria and ON [13]. However, insufficient research has been carried out taking into account the general adult population and different demographic characteristics. This study aimed to determine the relationship between cyberchondria and symptoms of orthorexia nervosa in the adult population, as well as the socio-demographic and behavioural factors associated with ON symptoms. Furthermore, the relationships between the different subdimensions of cyberchondria and ON symptoms and ON risk were assessed.

H1: The level of cyberchondria is positively associated with symptoms of orthorexia.

H2: Cyberchondria is independently associated with symptoms of orthorexia after controlling for socio-demographic characteristics.

H3: The sub-dimensions of cyberchondria are significantly associated with symptoms of orthorexia nervosa and the risk of orthorexia nervosa.

METHOD

Design and Participants

This study was conducted in descriptive and exploratory design. This study was conducted using a questionnaire between 15 January 2025 and June 2026. A convenience sampling method was used in the study. During the data collection process, the questionnaire forms were distributed to participants online via Google Forms. The study population consisted of 348 adults aged between 18 and 65 who owned a smartphone. A priori power analysis was performed using the G Power software programme to examine the correlational relationship between variables; a two-tailed test with a significance level of 0.05 and a power level of 0.80, and using the correlation coefficient $r = 0.234$ from the study by Atsızata and Cangöl Söğüt as a reference, the minimum required sample size for the study was calculated as 142 participants [13]. During the data collection process, all adults who met the inclusion criteria were included in the study. A total of 364 individuals responded to the survey. However, the data from 16 respondents under the age of 18 were excluded. The study was completed with 348 participants. Reaching a sample size greater than the calculated minimum sample size enabled the simultaneous assessment of multiple independent variables in multivariate regression models.

Data collection tools

Data collection was carried out using the Informant Information Form, the Cyberchondria Severity Scale – Short Form and the Orthorexia Nervosa Test (TON-17)

Informative Questionnaire

It consists of 24 questions developed by researchers with reference to the relevant literature [13, 14].

Cyberchondria Severity Scale – Short Form (CSS-SF): McElroy and Shevlin (2014) developed the 33-item Cyberchondria Severity Scale. [15]. Subsequently, a short 12-item version of the same scale (SHS-SF) was developed by McElroy and colleagues (2019) [16]. The Cyberchondria Severity Scale – Short Form assesses the severity of symptoms in individuals who search for medical symptoms online. The scale consists of four sub-dimensions: excessiveness, distress, reassurance and compulsion. Items are scored using a five-point scale ranging from 1 (never) to 5 (always). The scale's rating categories are 'never, rarely, sometimes, often, always'. The total score that can be obtained from the scale ranges from a minimum of 0 to a maximum of 60. A higher total score indicates a higher level of cyberchondria severity.

The Short Form of the Cyberchondria Severity Scale was translated into Turkish by Selvi and colleagues [17]. The validity and reliability of the same scale were tested by Yam and colleagues (using confirmatory factor analysis [CFA]) and its reliability was assessed using Cronbach's alpha internal consistency coefficients [18]. The scale's Cronbach's alpha internal consistency coefficient was reported as 0.89, whilst those for the sub-dimensions were reported as: excessiveness (0.83), distress (0.79), assurance (0.70) and compulsion (0.80). In this study, the scale's Cronbach's alpha level was found to be 0.926.

Orthorexia Nervosa Test (TON-17): Following a critical literature review of existing scales for orthorexia nervosa, it was suggested that a new scale should be developed to identify and evaluate relevant qualitative data collection techniques, with a view to gaining insights into the reconceptualisation and diagnosis of orthorexia nervosa [19]. In line with the recommendations of Valente and colleagues, Rogowska and colleagues developed a new scale in 2021. The Orthorexia Nervosa Test-40 (TON-40), which initially comprised 40 items, was reduced to 17 items (the Orthorexia Nervosa Test-17 (TON-17)) following a factor analysis [20]. The TON-17 scale comprises three factors: control over food quality, focus on health and healthy eating, and symptoms of the disorder [20].

The ORTO-11 scale is frequently used in studies conducted in Turkey to identify trends in orthorexia nervosa [21]. However, the results of these studies contain inconsistencies regarding validity and reliability, and it has been suggested that there are high rates of the condition [22].

Furthermore, the Orthorexia Nervosa scale has recently been adapted into Turkish by Kaya and colleagues, who have stated that it is a valid and reliable scale [23]. The scale developed by Kaya and colleagues consists of 24 items and has no cut-off point. Based on this, the Orthorexia Nervosa Test (TON-17) was developed by Yassibaş and colleagues in 2023 [22]. A reliability analysis was conducted for the scale, and confirmatory factor analysis was applied to test its construct validity. The Cronbach's α internal consistency coefficient for the scale was found to be 0.82. The Cronbach's alpha coefficients for the scale's sub-dimensions were found to be 0.68 for 'control over food quality', 0.64 for 'focus on health and healthy eating' and 0.73 for 'symptoms of the disorder'. The scale is rated on a 5-point Likert scale, where 1 = 'I strongly disagree' and 5 = 'I strongly agree'. The possible

score ranges from 17 to 85. There are no reverse-scored items on the scale. A higher score indicates a higher risk of orthorexia. In this study, the scale's Cronbach's alpha was found to be 0.919.

Data collection/ Procedure

This study was conducted between 15 January 2025 and June 2026 by sharing the survey link on online platforms. The data collection process took approximately 10–15 minutes. The data collection form was designed so that participants could begin completing the survey once they had given their ethical consent. Data was collected via a Google Forms survey link shared on social media. To prevent participant bias, only one survey response was accepted per device.

Data analysis

The data from the study were analysed using SPSS 27.0 (IBM Corp., Armonk, New York, USA). Frequency, percentage, mean and standard deviation (SD) were used to present descriptive statistics. The normality of the data set was assessed using skewness and kurtosis values (± 2), histograms and Q-Q plots. Skewness and kurtosis values falling within the ± 2 range were accepted as acceptable limits for a normal distribution [24]. A Pearson correlation analysis was conducted to determine the direction and strength of the relationship between cyberchondria and orthorexia nervosa symptoms. Correlations were assessed between the total scores and subscale means of the Cyberchondria Scale – Short Form and the total scores of the Orthorexia Nervosa Test (TON-17).

Multiple linear regression analysis was used to identify factors independently associated with the level of orthorexia nervosa symptoms. The variables to be included in the regression models were determined by taking into account the literature and the results of univariate analyses. To assess the relationship between total cyberchondria levels and symptoms of orthorexia nervosa, the total score on the Short Form of the Cyberchondria Severity Scale was included in Model 1, alongside relevant demographic variables. To assess the independent contributions of the different subscales of cyberchondria to the model, the total scores of the subscales of the Short Form of the Cyberchondria Severity Scale were included in the model in Model 2. Binary logistic regression analysis was applied to identify factors independently associated with the risk of orthorexia nervosa. The results of the logistic regression were reported as odds ratios (OR) and 95 per cent confidence intervals. Two-tailed tests were used in all analyses of the study, and a significance level of $p < 0.05$ was adopted.

Ethical dimension

Ethical approval was obtained from the university ethics committee (No. E-62310886-600-409060, dated 11 November 2024). Permission to use the scale employed in the study was obtained from the authors who established its validity and reliability. All stages of the study were conducted in accordance with the Declaration of Helsinki.

Participants were recruited using convenience sampling, and data were collected online via Google Forms. On the first page of the online form, participants were provided with information about the purpose of the study, the voluntary nature of participation, confidentiality, and their right to withdraw from the study. Participants were

required to indicate their agreement to participate by ticking the informed consent checkbox. Only those who provided electronic informed consent were able to proceed to the questionnaire.

RESULTS

Table 1
Individual characteristics of adults (n = 348)

Features		n	%
Gender	Female	266	76.4
	Male	82	23.6
Age	Under 35	253	72.7
	35 and over	95	27.3
Marital Status	Single	254	75.9
	Married	94	24.1
Income Level	Average and below	273	78.4
	Above average	75	21.6
Place of Longest Residence	City centre	306	87.9
	Rural	42	12.1
Your Educational Background	Secondary school and below	32	9.2
	University and above	316	90.8
Mother's Educational Level	Secondary school and below	286	82.2
	University and above	62	17.8
Father's Educational Level	Secondary school and below	248	71.3
	University and above	100	28.7
Level of enjoyment of life	Yes	264	75.9
	No	84	24.1

n: number, %: per cent

Of the adults who took part in the survey, 76.4 per cent were women, 72.7 per cent were aged 35 or under, 75.9 per cent were single, 78.4 per cent had an average or below-average income, 87.9 per cent lived in city centres, 90.8 per cent had a university or higher level of education, 82.2 per cent had a mother and 71.3 per cent had a father with a secondary school or lower level of education, and 75.9 per cent enjoyed life (Table 1).

Table 2
Mean Total and Subscale Scores on the Cyberchondria and Orthorexia Nervosa Scales for Adults (n = 348)

	Minimum	Maximum	$\bar{X}$	SD
Cyberchondria Scale	12	60	30.69	10.98
Excessiveness Subscale	3	15	8.85	3.01
Distress Subscale	3	15	7.26	3.16
Reassurance Subscale	3	15	7.81	3.10
Compulsion Subscale	3	15	6.19	2.98
Orthorexia Nervosa Scale	17	85	47.94	14.17
$\bar{X}$:Mean, SD: Std. Deviation				

The mean total score on the Adult Cyberchondria Scale was found to be 30.69 ± 10.98 (12–60). The mean score for the ‘excessiveness’ subscale of the Cyberchondria Scale was 8.85 ± 3.01 (3–15), the mean for the ‘distress’ subscale was 7.26 ± 3.16 (3–15), the mean score for the reassurance subscale was 7.81 ± 3.10 (3–15), and the mean score for the compulsion subscale was 6.19 ± 2.98 (3–15). The mean total score on the Orthorexia Nervosa Scale was found to be 47.94 ± 14.17 (17–85) (Table 2).

Table 3
Correlations between Study Variables (n = 348)

Variables	1	2	3	4	5	6
1. Orthorexia nervosa	1					
2. Cyberchondria	0.310**	1				
3. Excess	0.145**	0.736**	1			
4. Distress	0.115**	0.809**	0.633**	1		
5. Reassurance	0.182**	0.766**	0.706**	0.638**	1	
6. Compulsion	0.200**	0.788**	0.543**	0.781**	0.591**	1
**p < 0.01						

An analysis of Table 3 revealed a positive and significant correlation between the cyberchondria score and the total orthorexia nervosa score ($r: 0.310, p < 0.001$). A positive and significant correlation was found between all cyberchondria subscale scores and the total orthorexia nervosa scores ($r: 0.115\text{--}0.200, p < 0.001$). It was found that the correlation coefficients ranged from weak to moderate (Table 3).

Table 4
Multiple Linear Regression Analysis of Factors Associated with the Orthorexia Nervosa Score (n = 348)

Independent variables	Model 1 B	SE	β	t	p	Model 2 B	SE	β	t	p
Constant	25.381	3.266		7.772	< 0.001	29.909	3.571		8.376	< 0.001
Marital Status (Ref: Married)	0.905	1.636	0.028	0.553	0.580	1.246	1.706	0.039	0.730	0.466
Income Level (Ref: Above average)	4.617	1.742	0.134	2.650	0.008	4.254	1.814	0.124	2.345	0.020
Father's Educational Level (Ref: University and above)	4.148	1.580	0.133	2.626	0.009	4.083	1.633	0.131	2.500	0.013
Enjoyment of Life (Ref: No)	3.352	1.681	0.101	1.994	0.047	3.445	1.745	0.104	1.974	0.049
Cyberchondria	0.416	0.065	0.323	6.382	< 0.001	-	-	-	-	-
Excess	-	-	-	-	-	0.217	0.370	0.046	0.586	0.558
Distress	-	-	-	-	-	-0.608	0.413	-0.136	-1.472	0.142
Reassurance	-	-	-	-	-	0.484	0.364	0.106	1.331	0.184
Compulsion	-	-	-	-	-	1.128	0.402	0.237	2.805	0.005
Model 1	Model 2									
R ²	0.145	0.102								
Adjusted R ²	0.133	0.081								
F	11.638	4.832								
p	< 0.001	< 0.001								
Durbin-Watson	1.849	1.875								

*p<.05. Notes. CI, confidence interval; SE, standard error; β , standardized regression coefficients.

Upon examination of Table 4, Model 1 was constructed by creating a multiple linear regression table relating the mean total cyberchondria scores to demographic variables. Model 1 was found to be statistically significant ($F = 11.638$, $p < 0.001$, $R^2 = 14.5$ per cent, Adjusted $R^2 = 13.3$) and explained 14.5 per cent of the variance in orthorexia nervosa. The results indicated that adults' income level ($B = 4.617$, $\beta = 0.134$, $p = 0.008$), father's educational level ($B = 4.148$, $\beta = 0.133$, $p = 0.009$), life satisfaction ($B = 3.352$, $\beta = 0.101$, $p = 0.047$) and cyberchondria ($B = 0.416$, $\beta = 0.323$, $p < 0.001$) are significant predictors of orthorexia nervosa. Accordingly, it was found that those with average or below-average income, those whose fathers had a high school education or below, those who enjoy life, and those who suffer from cyberchondria had higher levels of orthorexia nervosa. Model 2, on the other

hand, was constructed by incorporating the sub-dimensions of cyberchondria alongside demographic variables. Model 2 was found to be statistically significant ($F = 4.832$, $p < 0.001$, $R^2 = 10.2$ per cent, Adjusted $R^2 = 8.1$) and explained 10.2 per cent of the variance in orthorexia nervosa. In Model 2, income level ($B = 4.254$, $\beta = 0.124$, $p = 0.020$), father's educational level ($B = 4.083$, $\beta = 0.131$, $p = 0.013$), enjoyment of life ($B = 3.445$, $\beta = 0.104$, $p = 0.049$) and the compulsion subscale ($B = 1.128$, $\beta = 0.237$, $p = 0.005$) were found to be significant predictors of orthorexia nervosa. Accordingly, it was found that those with an average or below-average income, those whose father's educational attainment was at secondary school level or below, those who derived enjoyment from life, and those scoring higher on the compulsion subscale had higher levels of orthorexia nervosa (Table 4).

Table 5

Binary Logistic Regression Analysis of Factors Associated with the Orthorexia Nervosa Score (n = 348)
Dependent Variable: Risk of orthorexia nervosa (0 = GF score < 61, 1 = GF score > 61)

Independent variables	Model 1 B	SE	OR (%95 GA)	p	Model 2 B	SE	OR (%95 GA)	p
Marital Status (Ref: Married)	-0.107	0.370	0.899 (0.435/1.858)	0.774	-0.295	0.365	0.745 (0.364/1.524)	0.420
Income Level (Ref: Above average)	-1.571	0.513	0.208 (0.076/0.568)	0.002	-1.527	0.511	0.217 (0.080/0.532)	0.003
Father's Educational Level (Ref: University and above)	-0.550	0.367	0.577 (0.281/1.185)	0.134	-0.597	0.364	0.550 (0.269/1.124)	0.101
Enjoyment of Life (Ref: No)	-0.436	0.372	0.647 (0.312/1.341)	0.241	-0.523	0.370	0.593 (0.287/1.225)	0.158
Cyberchondria	0.088	0.015	1.092 (1.061/1.124)	< 0.001	-	-	-	-
Excess	-	-	-	-	-0.085	0.078	0.919 (0.788/1.071)	0.277
Distress	-	-	-	-	0.031	0.085	1.031 (0.874/1.218)	0.715
Reassurance	-	-	-	-	0.121	0.074	1.128 (0.976/1.305)	0.103
Compulsion	-	-	-	-	0.197	0.080	1.217 (1.041/1.423)	0.014
Model Fit Statistics								
Statistics	Model 1				Model 2			
-2 Log Likelihood	276.056				287.870			
Omnibus χ^2	59,083 (< 0.001)				47,270 (< 0.001)			
Nagelkerke R ²	0.253				0.205			
Hosmer–Lemeshow p	0.378				0.446			
Correct classification (%)	84.2				83.6			

B: Regression coefficient; SH: Standard error; OR: Odds ratio; GA: Confidence interval.

In Table 5, Model 1 and Model 2 were constructed using binary logistic regression analysis. In Model 1, the binary logistic regression model was found to be statistically significant overall (Omnibus $\chi^2=59.083$, $p < 0.001$). The Hosmer–Lemeshow goodness-of-fit test indicated that the model fitted the data well ($p = 0.378$). The model explained 25.3 per cent of the variance (Nagelkerke R² = 0.253) and correctly classified 84.2 per cent of the

cases. In Model 1, when demographic variables and the total cyberchondria score were included in the model, a significant association was found between income level and the risk of orthorexia nervosa. A medium/low income level was found to be significantly associated with the risk of orthorexia nervosa compared with a high income level (OR = 0.208, 95% CI: 0.076–0.568, $p = 0.002$). Furthermore, a significant association was found between cyberchondria and the risk of orthorexia nervosa. A 1-unit increase in the total cyberchondria score was found to be associated with a 9.2 per cent increase in the risk of orthorexia nervosa (OR = 1.092, 95 per cent CI: 1.061–1.124, $p < 0.001$). In Model 2, the binary logistic regression model was found to be statistically significant overall (Omnibus $\chi^2 = 47.270$, $p < 0.001$). The Hosmer–Lemeshow goodness-of-fit test indicated that the model fitted the data well ($p = 0.446$). The model explained 20.5 per cent of the variance (Nagelkerke $R^2 = 0.205$) and correctly classified 83.6 per cent of the cases. In Model 2, after the cyberchondria subscales were added to the model, income level continued to show a significant association with the risk of orthorexia nervosa (OR = 0.217, 95% CI: 0.080–0.532, $p = 0.003$). Furthermore, a significant association was found between the compulsion subscale and the risk of orthorexia nervosa. It was determined that a 1-unit increase in the total score for the compulsion subscale was associated with a 21.7 per cent increase in the risk of orthorexia nervosa (OR = 1.217, 95 per cent CI: 1.041–1.423, $p = 0.014$) (Table 5).

DISCUSSION

The ease of accessing health information online also carries the risk that individuals may make incorrect medical decisions without being able to discern the accuracy of the information [5]. Searching for health information online includes information on the diagnosis of diseases, treatment processes, complications, as well as information on healthy living, nutrition and weight loss [25]. The obsessive searching for health information online due to concerns about one's health is defined as cyberchondria [1]. Orthorexia nervosa is a condition characterised by an individual's adherence to excessively strict rules they have adopted regarding healthy eating, and the subsequent onset of physical, mental and behavioural problems arising from these rules [8]. This study was conducted to investigate the relationship between levels of cyberchondria and orthorexia nervosa in adults, as well as the demographic factors associated with orthorexia nervosa levels. The study found a positive correlation between levels of cyberchondria and orthorexia nervosa. Significant positive correlations were found between the total cyberchondria score and the total orthorexia nervosa score, as well as between the cyberchondria subscales and orthorexia nervosa. Although cyberchondria and ON are distinct concepts, it can be argued that they may share common characteristics in terms of excessive mental preoccupation and behavioural control processes related to health [6, 8]. Another study on cyberchondria and ON also reported an association between cyberchondria and ON amongst nurses [13]. The difference between this study and the one conducted with nurses is that it was carried out with the general population and that the cyberchondria scale and its sub-dimensions were examined using multivariate models alongside demographic variables. It is thought that this will provide additional insight into the relationship between cyberchondria and ON.

Cyberchondria, Online Health Information Search, Health Anxiety, Orthorexia Nervosa

It is thought that the relationship between cyberchondria and ON stems from common characteristics shared by both concepts, such as health-related anxiety, excessive mental preoccupation with health threats, and a desire for control. In cyberchondria, the behaviour of searching for medical information online, which begins with the

aim of reducing health-related uncertainty and anxiety, can become difficult to control [26]. Whilst health-related anxiety triggers online searches for medical information, the information obtained as a result of these searches can increase the individual's anxiety levels, leading to a continuous cycle [7]. In a systematic review and meta-analysis investigating the relationship between health anxiety, online searching and cyberchondria, it was found that there is a moderate positive association between health anxiety and the search for health information online, and a strong association between health anxiety and cyberchondria. According to the study, it can be said that cyberchondria, health anxiety and online health information searches are closely interrelated [7]. It has been reported that, in the case of ON, an individual's views on healthy eating may gradually evolve into rigid dietary attitudes and excessive preoccupation with the effects of diet on health [8]. The ON consensus identified hypochondria, anxiety and the need for control as potential risk factors associated with ON [8]. Based on this, common psychological processes may explain the relationship between health anxiety, the search for health-related information online, the need for health-related control, cyberchondria and orthorexia nervosa.

The Relationship Between Cyberchondria and Orthorexia Nervosa

In this study, Model 1—which explains the relationship between cyberchondria and ON—assessed demographic variables and the total cyberchondria score together. According to Model 1, the total ON score explained 14.5 per cent of the variance. In Model 1, cyberchondria is a significant and positive predictor of ORN levels. A one-unit increase in the total cyberchondria score in Model 1 was found to be associated with a 9.2 per cent increase in the odds ratio for ORN. The ON consensus states that ON may be associated with anxiety, obsessive-compulsive traits and various other factors [8]. It is considered that this study, like the ON consensus study, supports the multifactorial nature of ON.

Cyberchondria: Compulsion Sub-dimension

In this study, all sub-dimensions of cyberchondria were found to be significantly associated with ON levels. Furthermore, it has been reported that potential risk factors associated with social media also influence eating behaviours and are considered among the characteristics that may be associated with ON [8]. In this study, it was determined that demographic variables and total cyberchondria scores accounted for 14.5 per cent of the variance in ON. In the model, the total cyberchondria score was found to be significantly and positively associated with the level of ON. According to Model 2, which was developed by incorporating the sub-dimensions of cyberchondria and demographic variables into the model, the model explained 10.2 per cent of the variance in ON. In particular, the model identified that the 'compulsivity' sub-dimension predicted the level of ON. This finding from the study suggests that the relationship between cyberchondria and ON may be associated not only with online search behaviour but also with the repetition of the same behaviour and the development of a pattern that is difficult to control. Indeed, a systematic review and meta-analysis conducted by Khazaal et al. (2021) also found that cyberchondria is associated with compulsive health-related internet use [26]. In the present study, it was determined that the compulsion dimension retained its significance in both linear and logistic regression analyses. A one-unit increase in the compulsion score was found to be associated with a 21.7 per cent increase in the odds ratio in the binary outcome constructed for ON. It is considered that this finding from the study supports the existing literature.

Demographic Factors and Certain Psychological Factors

The level of ON was also found to be associated with certain demographic and psychological factors. According to the results of the linear regression analysis in Model 1, it was determined that income level, father's educational level and enjoyment of life also predict the level of ON. In Model 2, which was constructed using the sub-dimensions of cyberchondria, it was found that income level, father's educational level and enjoyment of life were associated with ON levels.

In this study, the findings regarding the relationship between income level and ON differ across the two models. It is thought that this may stem from the fact that differences in ON levels were assessed both continuously and categorically. According to the multiple linear regression analysis, participants with an income level above the mean were found to have higher ON scores than those with an income at or below the mean. However, in contrast, according to the logistic regression analysis, in which ON status was assessed as a binary outcome variable, participants with an income level at or below the mean were found to have lower odds of having ON. In other words, whilst participants with average or below-average income levels exhibited higher values on the continuous ON scale, when classified into ON categories based on a defined cut-off point, those in the high-income group were found to have higher ON odds. This difference may be related to the fact that evaluating ON symptoms using a continuous score yields different statistical patterns compared to categorising them based on a specific cut-off point. Whilst continuous score analysis assesses differences in overall ON levels between groups, logistic regression analysis evaluates the probability distributions of participants according to a specified cut-off point. This finding offers a possible explanation as to why the relationship between income level and ON has not yielded consistent results. Previous studies have found that participants with lower socio-economic income are associated with higher levels of ON symptoms [27] whilst other studies have found no significant association between income level and ON levels [28, 29]. It is thought that these differences may stem from variations in the sample, the method of assessing socio-economic status, and the measurement tools used to assess ON. The findings of this study suggest that the relationship between income level and ON should not be assessed in a simplistic and unidirectional manner, and that this relationship may vary depending on the structure of the measure used.

The father's educational attainment significantly predicted the ON level in both models. A study conducted with university students reported that the father's educational level did not make a difference in terms of the ON level [30]. However, differences in the instruments used to measure the ON level and in the samples make it difficult to compare findings relating to demographic variables.

In the present study, the ability to enjoy life was found to be significant in both linear models. It is thought that this finding is related to the context of ON within the broader psychological factors. Whilst it has been reported that obsessive-compulsive disorder (OCD) is underpinned by obsessive beliefs, perfectionism and a need for control [31], another study has also reported that OCD is associated with eating disorders [32]. Indeed, the consensus on ON also states that the emotional distress, anxiety and guilt associated with ON may lead to negative consequences for individuals in terms of their education, work and social life [8]. It is considered that the findings obtained in this study relate to the outcomes concerning ON in terms of quality of life and psychosocial well-being, and that they are consistent with previous studies.

Integrated Interpretation of the Regression Models

The fact that Model 1, which utilises the total cyberchondria score, explains 14.5 per cent of the variance in ON, whilst Model 2, which assesses the sub-dimensions, explains 10.2 per cent, indicates that the models need to be

evaluated from different perspectives. Whilst Model 1 assesses the relationship between general cyberchondria and ON, Model 2 reveals which sub-dimension of cyberchondria is more closely associated with this relationship. According to Model 2, the compulsion sub-dimension is the most prominent.

The total cyberchondria score highlights the importance of the general cyberchondria structure in relation to ON, whilst the prominence of the compulsion sub-dimension provides insight into its behavioural mechanism. Indeed, the findings regarding compulsion are consistent with Khazaal's study [26].

Strengths and Limitations

One of the study's strengths is the assessment of the relationship between cyberchondria and ON in the general adult population. In addition to the correlation between ON and cyberchondria, the fact that the total cyberchondria score and its sub-dimensions were assessed in separate models has enabled the findings to be tested using different statistical methods. The fact that the compulsion finding was significant in both linear and logistic regression enhances the consistency of the results.

Convenience sampling method was used in this study. The use of convenience sampling in the study increases the risk of selection bias and limits the generalisability of the study to the adult population. The fact that the study data were collected online via Google Forms and were self-reported may have led to social desirability bias. The online collection of data may have resulted in individuals who actively use digital devices being over-represented in the sample.

In this study, certain variables that could contribute to the relationship between synchondria and ON—such as obsessive-compulsive traits, health anxiety, intolerance of uncertainty and social media use—were not directly assessed. It is considered that assessing these variables in future research could be beneficial.

ON remains conceptually and diagnostically unclear. Therefore, the findings obtained in this study should be interpreted not as a clinical diagnosis of ON, but as the level of ON assessed using the TON-17.

Implications for Clinical Practice and Research

When assessing ON, it may be useful to consider not only individuals' attitudes towards nutrition but also their online health information-seeking behaviours. In particular, the finding of an association between compulsive health information-seeking behaviour and ON levels suggests that ON requires a more systematic assessment. The results obtained in this study are insufficient to conclude that cyberchondria is a cause of ON or a clinical risk factor.

Longitudinal studies are expected to be conducted to determine the temporal dimension of the causal and possible relationship between cyberchondria and ON. Furthermore, the mediating or moderating roles of variables such as health anxiety, intolerance of uncertainty, compulsive behaviours, e-health literacy and exposure to health/nutrition content on social media should also be analysed.

CONCLUSION

This study found a statistically significant positive association between cyberchondria and ON, and that this association persisted even when demographic data were taken into account. It was determined that the total cyberchondria score is a predictor of ON, with each one-unit increase in the total score being associated with a

9.2 per cent increase in the odds of a binary ON outcome. When the subscales of cyberchondria were evaluated separately, the compulsion subscale emerged as particularly significant. This subscale was found to be significant in both linear and logistic regression analyses. It was determined that a one-unit increase in the compulsion subscale was associated with a 21.7 per cent increase in the risk of orthorexia nervosa.

The findings from this study suggest that, in the relationship between cyberchondria and ON, it is not only online search behaviour but also repetitive and uncontrollable health information-seeking behaviour that may play a significant role.

The fact that income level, the father's educational status and the ability to derive pleasure from life also significantly predict ON levels suggests that ON should also be assessed within demographic and psychosocial contexts. In future studies, it is recommended that the findings be validated through longitudinal and mechanism-focused research, and, in particular, that the potential mediating or moderating roles of health anxiety, intolerance of uncertainty, compulsive information-seeking and exposure to online health and nutrition content be investigated.

DECLARATIONS

Author Contribution

SÇY, contributed to the study conception and design. Material preparation and data collection were performed by BE and SÇY. Data were analyzed and interpreted by BE. The article was drafted by BE and SÇY. Critical revision of the article was performed by BE and SÇY. All authors read and approved the final version to be submitted.

Acknowledgments

The authors would like to thank all participants who voluntarily contributed to this study.

Data Availability

The datasets used or analyzed during the current study are available from the corresponding author on reasonable request, in accordance with institutional data sharing policies.

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