Araştırma Makalesi/Original Article
Makale Dili "İngilizce"/Article Language "English"

Türk Hijyen ve Deneysel Biyoloji Dergisi

Assessment of the relationship between fear of COVID-19 and emotional eating behavior of healthcare professionals

Sağlık çalışanlarının COVID-19 korkusu ile duygusal yeme davranışları arasındaki ilişkinin değerlendirilmesi

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ABSTRACT

Objective: Negative situations experienced by healthcare professionals, such as the increased workload, the anxiety of being infected and infecting the individuals around them, have led to negative emotions such as fear and stress. In this study, it was aimed to evaluate the relationship between the fear of Novel Coronavirus Disease (COVID-19) and emotional eating behaviors of healthcare professionals.

Methods: This study was carried out between 01 June - 31 July 2022, with the participation of 200 volunteers, aged 19-64, work in a state hospital, Turkey. Questionnaire consisting of questions to define demographic information, health status, fear of COVID-19 scale, emotional eater questionnaire (EEQ) was applied to individuals and anthropometric measurements of individuals were taken.

Results: 62.0 % (n=132) of the participants were diagnosed with COVID-19. Fear of COVID-19 scale scores of participants who did not have COVID-19 were found to be statistically significantly higher than those diagnosed with COVID-19 ($p<0.001$). Fear of COVID-19 scale and EEQ

ÖZET

Amaç: Sağlık çalışanlarının iş yükünün artması, enfekte olma ve çevresindeki bireylere de bulaştırma endişesi gibi yaşadığı olumsuz durumlar, korku ve stres gibi olumsuz duyguların ortaya çıkmasına neden olmaktadır. Bu çalışmada sağlık çalışanlarının Yeni Koronavirüs Hastalığı (COVID-19) korkusu ile duygusal yeme davranışları arasındaki ilişkinin incelenmesi amaçlanmıştır.

Yöntem: Bu çalışma 01 Haziran - 31 Temmuz 2022 tarihleri arasında Türkiye'deki bir devlet hastanesinde çalışan 19-64 yaş arası 200 gönüllünün katılımıyla gerçekleştirilmiştir. Katılımcılara demografik bilgilerini, sağlık durumlarını ve beslenme alışkanlıklarını tanımlamaya yönelik sorulardan oluşan anket formu, COVID-19 korkusu ölçeği ve DYÖ (duygusal yeme ölçeği) uygulanarak bireylerin antropometrik ölçümleri alınmıştır.

Bulgular: Katılımcıların %62 (n=132)'si COVID-19 tanısı almıştır. COVID-19 almayan katılımcıların COVID-19 korkusu ölçeği puanları COVID-19 tanısı alanlara göre istatistiksel olarak anlamlı düzeyde

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Geliş Tarihi / Received : 26.12.2023
Kabul Tarihi / Accepted : 26.07.2024

DOI ID : 10.5505/TurkHijyen.2025.45466

Türk İM, Yeşil E. Assessment of the relationship between fear of COVID-19 and emotional eating behavior of healthcare professionals. Turk Hij Den Biyol Derg, 2025; 82(2): 257 - 266

scores of female healthcare professionals were higher than males (p=0.018; p=0.003). EEQ scores of those diagnosed with COVID-19 and those who did not were found to be similar (p>0.05). A low level, positive and significant relationship was found between the fear of COVID-19 scale and EEQ scores of healthcare professionals who diagnosed with COVID-19 (r=0.288; p<0.001). A moderate level, positive and significant relationship was found between the fear of COVID-19 scale and EEQ scores of healthcare professionals who did not diagnose with COVID-19 (r=0.316; p=0.005). No significant correlation was found between the fear of COVID-19 scale scores and age and BMI (respectively r=0.083; p=0.244; r=0.136; p=0.054). A positive and significant correlation was found between the EEQ scores and body mass index (BMI) values of all healthcare professionals participating in the study (r=0.159; p=0.024).

Conclusion: A positive and significant relationship was found between the fear of COVID-19 and EEQ scores of all healthcare professionals participating in the study. The fear of COVID-19 scale scores of healthcare professionals who diagnosed with COVID-19 are higher than those of healthcare professionals who did not.

Key Words: Fear of COVID-19, emotional eating, fear

yüksek bulunmuştur (p<0,001). Kadınların COVID-19 korkusu ölçeği ve duygusal yeme puanları erkeklerden daha yüksek belirlenmiştir (sırasıyla p=0,018 ve p=0,003). COVID-19 tanısı alan ve almayanların DYÖ puanları benzer bulunmuştur (p= 0,237). COVID-19 tanısı alan katılımcıların COVID-19 korkusu ölçeği ile duygusal yeme puanları arasında düşük düzeyde pozitif ilişki saptanmıştır (r=0,288; p<0,001). COVID-19 tanısı almayan katılımcıların COVID-19 korkusu ölçeği ile duygusal yeme puanları arasında orta düzeyde pozitif ve anlamlı bir ilişki bulunmuştur (r=0,316; p=0,005). COVID-19 korkusu ölçeği puanları ile yaş ve beden kütle indeksi (BKİ) arasında anlamlı bir ilişki tespit edilememiştir (sırasıyla r=0,083; p=0,244; r=0,136; p=0,054). Katılımcıların DYÖ puanları ile BKİ değerleri arasında pozitif yönlü anlamlı bir ilişki tespit edilmiştir (r=0,159; p=0,024).

Sonuç: Çalışmaya katılan tüm sağlık çalışanlarının COVID-19 Korkusu ölçeği puanları ile duygusal yeme puanları arasında pozitif ve anlamlı bir ilişki bulunmuştur. COVID-19 tanısı alan sağlık çalışanlarının COVID-19 korkusu ölçeği puanları daha yüksek olduğu tespit edilmiştir.

Anahtar Kelimeler: COVID-19 korkusu, duygusal yeme, korku

INTRODUCTION

Researches on emotional eating have focused on the role of negative emotions, such as stress, in explaining binge eating (1, 2). In a study, it was reported that female college students believed that the trigger of their emotional eating behaviors was stress. It has been stated that higher stress levels are associated with higher food consumption (3). Chronic stress is associated with higher consumption of energy-dense foods, which are high in sugar and fat (4). Consuming certain foods might act as a distraction and therefore can be used to eliminate negative emotions or improve mood (5). In the COVID-19 pandemic, the combination of stress, anxiety and depression due to this unprecedented situation also affected eating behaviors (6). Studies have revealed that increased emotional eating behavior is significantly and directly related to negative emotions, and this is mediated by fear of COVID-19 and fear-related depression symptoms (7-9).

Fear is an adaptive defense mechanism that includes various biological readiness processes to respond to potentially threatening events such as

pandemics, which is a fundamental factor for survival (10). Neurobiologically, significant progress has been made in identifying fear mechanisms. Dysfunctions in these fear mechanisms can lead to chronic psychiatric disorders (11). Fear of contracting an illness can lead to psychiatric disorders as well as negative coping mechanisms. Having sufficient information about the feared disease can alleviate this fear (12).

A survey study suggested that emotions have different effects on the amount of food intake. In the study, participants were asked to imagine themselves in a number of emotional states and then reported how much they would eat in these emotional states. Higher food consumption has been reported during boredom, depression, and fatigue. Lower food consumption has been reported during fear, pain, and tension (13). Pak et al. (7) reported that there is no direct relationship between emotional eating and fear of COVID-19, there is a positive relationship between fear of COVID-19 and depression, and this relationship between fear of COVID-19 and emotional eating is mediated by depression.

In this study, it was aimed to evaluate the relationship between the fear of COVID-19 and emotional eating behaviors of healthcare professionals. In addition, it was aimed to compare individuals with and without a diagnosis of COVID-19 in terms of COVID-19 fear and emotional eating behaviors.

MATERIAL and METHOD

Participants and procedure

This study was carried out between 01 June-31 July 2022, with the participation of 200 volunteers, aged 19-64, work in Afyonkarahisar State Hospital. Based on percentage measurement values related to the methods to be studied in the literature, a 0.8 effect size, 80% power, and a 0.05 error margin were used with G-POWER to determine a total sample size of at least 180. Individuals who were previously diagnosed with eating disorders, individuals who follow a weight loss diet, pregnant and lactating individuals were not included in the study. All the information of the individuals included in the study was obtained by using the face-to-face interview technique by a dietician.

Anthropometric measurements

The height, body weight, waist and hip circumference measurements of the individuals were measured by the researcher and recorded on the questionnaire. During the measurements, due to the severe acute respiratory syndrome corona virus-2 pandemic, necessary precautions were taken. Body weight and height were measured and BMI was calculated (14, 15).

Fear of COVID-19 scale

In this study, the fear of COVID-19 scale was used to measure the level of fear of COVID-19 in healthcare professionals. This scale was developed by Ahorsu et al. (16) to measure the COVID-19-induced fear levels of individuals. The Turkish validity and reliability study of this scale was made by Ladikli et al. (17). Their items of the scale were created based on a comprehensive review of existing scales on fear, expert assessments, and participant interviews. The scale has a single factor structure and consists of seven Likert-type (1 = strongly disagree; 5 = strongly agree) items. There is no reversed item in the scale. The internal consistency of the scale was 0.82 and the test-retest reliability was 0.72. A high score from the scale indicates a high fear of COVID-19 (17).

Emotional eater questionnaire

The emotional eater questionnaire was developed by Garaulet et al. (18). The questionnaire consists of 10 items and three sub-dimensions (disinhibition, type of food, guilt) and the questions are on a Likert-type scale with 4 options (“0” Never, “1” Sometimes, “2” Generally and “3” Always) is answered. There is no reverse item in the scale. The lowest “0” and the highest “30” points are taken from the scale. High scores from the scale indicate a high level of emotional eating behavior (19). In the exploratory factor analysis applied to examine the construct validity in

the development study of the questionnaire; Three factors, namely disinhibition, type of food, and guilt, explaining 60.4% of the total variance were obtained. The internal consistency coefficients of the questionnaire were 0.77 for the dimension of disinhibition, 0.66 for the type of food dimension, and 0.61 for guilt dimension. In the questionnaire, score between 0-5 defined as non-emotional eater. Score between 6-10 defined as low emotional eater. Score between 11-20 defined as emotional eater. Score between 21-30 defined as very emotional eater.

The validity and reliability study of the Turkish translation of the scale was made by Arslantaş et al. (19). The Cronbach's alpha internal consistency coefficient of the questionnaire was calculated as 0.84 (95% CI=0.82-0.86) (19).

Statistical analysis

The data collected during the research were recorded for analysis in the Statistical Package for the Social Sciences (IBM SPSS Statistics 22) program. Continuous variables obtained from the questionnaires were expressed as mean ($\bar{X}$), standard deviation (SD), and categorical variables as numbers (n) and percentage (%). The conformity of the data to the normal distribution was analyzed according to the skewness and kurtosis values. Independent groups t-test was used to analyze the significance between two groups in the data suitable for normal distribution, and one-way analysis of variance (ANOVA) test was used to analyze the significance between more than two groups. Pearson correlation test was used for normally distributed data to analyze the correlation between numerical measurements. The statistical significance level in the tests was evaluated as $p<0.05$.

This study was approved by Başkent University Institutional Review Board and Ethics Committee (Date:25.05.2022 and Number :E-85878037-604.01.02-131488) and supported by Başkent University Research Fund (Project no: KA22/101).

RESULTS

66.0% (132) of healthcare professionals were female; 34.0% (68) were male. 76.5% (153) of the participants stated that they are married and 23.5% (47) are single/divorced. 84.0% (168) of the healthcare professionals have bachelor's degree, 8.5% (17) have postgraduate degree and 7.5% (15) have high school degree (Table 1).

Table 1. The demographic characteristics of the participants

	Person (n=200)	
Age (±SD) year	40.0±9.21	
	n	**%**
Sex		
Female	132	66.0
Male	68	34.0
Marital Status		
Married	153	76.5
Single/divorced	47	23.5
Educational Status		
High School	15	7.5
Bachelor's Degree	168	84.0
Postgraduate Degree	17	8.5

Table 1 (cont.). The demographic characteristics of the participants

	Person (n=200)	
Age (±SD) year	40.0±9.21	
	n	**%**
Sex		
Profession		
Doctor	6	3.0
Nurse	123	61.5
Healthcare Technician	57	28.5
Others (Medical secretary, Administrative staff)	14	7.0
Income Status		
Income less than expenses	57	28.5
Income equals expenses	106	53.0
Income more than expenses	37	18.5
Living Environment		
Alone	23	11.5
With spouse	23	11.5
With spouse and children	128	64.0
With parents and/or grandparents	15	7.5
Others (With children, with roommate)	11	5.5
Smoking Habits		
Yes	72	36.0
No	128	64.0
Amount		
±SD (pieces/day)	13.9±6.46	
Alcohol Consumption Habits		
Yes	17	8.5
No	183	91.5
Amount		
±SD (ml/week)	207.6±250.46	
Diagnosed with COVID-19		
Yes	124	62.0
No	76	38.0
Chronic Diseases		
Yes	55	27.5
No	145	72.5
Chronic Diseases*		
Diabetes	18	32.7
Hypertension	18	32.7
Chronic Respiratory Diseases (COPD, Asthma etc,)	10	18.2
Hypothyroidism	8	14.5
Others (Familial Mediterranean Fever, Ankylosing Spondylitis, Lipid Storage Myopathy, Gastric Cancer, Rheumatism, Sjogren's Syndrome)	13	23.6

Table 1 (cont.). The demographic characteristics of the participants

	Person (n=200)	
Age (±SD) year	40.0±9.21	
	n	**%**
Sex		
Vitamin/Mineral Consumption		
Yes	31	15.5
No	169	84.5
Frequency of Consumption		
Daily	6	19.4
5-6 times per week	1	3.2
3-4 times per week	5	16.1
1-2 times per week	14	45.2
2 times per month	1	3.2
Once in a month	4	12.9
Supplements		
Multivitamin	10	32.3
Vitamin C	7	22.6
Vitamin D	14	45.2

*P.S. = Participants selected more than one option

A significant difference was found between the fear of COVID-19 scale scores of healthcare workers who diagnosed COVID-19 (13.5±5.56) and those who did not (16.8±7.51) ($p<0.001$). The fear of COVID-19 scale scores of healthcare professionals who diagnosed with COVID-19 did not show a significant difference according to BMI groups and chronic disease status ($p=0.165$). However, it showed that female healthcare professionals who diagnosed with COVID-19 have higher fear of COVID-19 scale scores than males ($p=0.026$). The fear of COVID-19 scale scores of female healthcare professionals were significantly higher than those of their male counterparts ($p = 0.018$) (Table 2).

No significant difference was found between the EEQ scores of healthcare professionals who diagnosed with COVID-19 (10.9±6.33) and those who did not (9.9±5.79) ($p=0.237$). It was observed that female healthcare professionals who diagnosed with COVID-19 had higher EEQ scores ($p=0.012$). It was observed that all female healthcare professionals had higher EEQ scores ($p=0.003$) (Table 3).

A positive and significant relationship was found between the fear of COVID-19 scale and EEQ scores of healthcare professionals who diagnosed with COVID-19 ($r=0.288$; $p<0.001$). A positive and significant relationship was found between the fear of COVID-19 scale and EEQ scores of healthcare professionals who did not diagnose with COVID-19 ($r=0.316$; $p=0.005$). No significant correlation was found between the fear of COVID-19 scale and age and BMI (respectively $r=0.083$; $p=0.244$; $r=0.136$; $p=0.054$). A positive and significant relationship was found between the fear of COVID-19 scale and EEQ scores of all healthcare professionals ($r=0.264$; $p=0.005$). A significant correlation was found between the EEQ scores and BMI values of healthcare professionals who did not diagnose with COVID-19 ($r=0.227$; $p=0.048$). A positive and significant relationship was found between the EEQ scores and BMI values of all health professionals ($r=0.159$; $p=0.024$) (Table 4).

Table 2. Comparison of fear of COVID-19 scale scores in terms of some demographic characteristics of individuals according to their COVID-19 status

Fear of COVID-19 scale scores	Diagnosed with COVID-19 (n=124)	Did not diagnose with COVID-19 (n=76)	Total (n=200)
	x±SD	x±SD	x±SD
BMI			
Underweight	17.5±14.84	13.5±9.19	15.5±10.34
Normal Weight	13.7±5.53	15.9±7.11	14.5±6.19
Overweight	12.5±4.53	17.1±7.19	13.9±5.81
Obese	15.5±7.05	17.8±8.47	16.8±7.87
p[b]	0.165	0.751	0.133
Chronic Diseases			
Yes	14.3±5.81	17.7±7.85	15.8±6.95
No	13.2±5.49	16.3±7.38	14.3±6.37
p[a]	0.348	0.473	0.142
Sex			
Female	14.2±5.70	17.7±6.90	15.5±6.36
Male	11.9±4.97	15.1±8.34	13.2±6.71
p[a]	***0.026**	0.145	***0.018**

*: p<0.05, BMI: Body Mass Index, a: Independent Groups t-Test, b: One-Way ANOVA

Table 3. Comparison of individuals' EEQ scores in terms of some demographic characteristics according to their COVID-19 status

EEQ scores	Diagnosed with COVID-19 (n=124)	Did not diagnose with COVID-19 (n=76)	Total (n=200)
	x±SD	x±SD	x±SD
BMI			
Underweight	7.0±5.65	8.0±2.82	7.5±3.69
Normal Weight	10.3±6.19	8.6±5.67	9.7±6.03
Overweight	11.1±5.62	10.2±6.26	10.9±5.79
Obese	12.4±8.61	11.2±5.59	11.7±7.00
p[b]	0.521	0.441	0.249
Chronic Diseases			
Yes	11.0±6.30	11.2±6.05	11.1±6.13
No	10.9±6.38	9.2±5.61	10.3±6.15
p[a]	0.922	0.162	0.412
Sex			
Female	11.9±6.53	10.6±6.15	11.4±6.40
Male	8.9±5.43	8.6±4.95	8.7±5.20
p[a]	***0.012**	0.136	***0.003**

*: p<0.05, BMI: Body Mass Index, a: Independent Groups t-Test, b: One-Way ANOVA

Table 4. The relationship between the fear of COVID-19 scale and the EEQ according to individuals' COVID-19 Status

	Fear of COVID-19 Scale						Emotional Eater Questionnaire					
	Diagnosed with COVID-19 (n=124)		Did not diagnose with COVID-19 (n=76)		Total (n=200)		Diagnosed with COVID-19 (n=124)		Did not diagnose with COVID-19 (n=76)		Total (n=200)	
	r	p	r	p	r	p	r	p	r	p	r	p
Fear of COVID-19 scale	-	-	-	-	-	-	0.288	*0.001	0.316	*0.005	0.264	*0.000
Emotional eater questionnaire	0.288	*0.001	0.316	*0.005	0.264	*0.000	-	-	-	-	-	-
Age (years)	0.011	0.905	0.073	0.865	0.083	0.244	-0.113	0.212	-0.020	0.865	-0.100	0.158
BMI (kg/m²)	0.045	0.616	0.175	0.131	0.136	0.054	0.137	0.131	0.227	*0.048	0.159	*0.024

BMI: Body Mass Index, *: p<0.05, r=Pearson Correlation

DISCUSSION

Negative emotions are associated with emotional eating. An increase in negative emotions causes an increase in emotional eating (9). The increase in negative emotions triggers emotional eating and causes the individual to view eating as a temporary distraction and emotional relief. This momentary sense of relief after eating alters the individual's ability to learn and apply adaptive strategies to cope with negative emotions in the long run, which may lead to the continuation of the emotional eating cycle (20). Studies show that COVID-19 causes negative emotions such as stress, fear, and depression, and these negative emotions mediate the relationship between COVID-19 and emotional eating (7, 9).

Consumption of supplements has increased during the pandemic. Although most individuals state that they take supplements to strengthen their immune system, it is known that the supplements used do not prevent COVID-19. However, it has been stated that the use of vitamin D, vitamin C, zinc and selenium supplements may be beneficial, especially in those diagnosed with malnutrition and those with upper respiratory tract infections (21). In this study, 15.5% of healthcare professionals stated that they use vitamins/minerals. Considering the supplements, 32.3% of the vitamin/mineral users use multivitamins, 22.6% use vitamin C and 45.2% use vitamin D (Table 1). Using vitamin D supplements reduces the risk of infection in viral diseases such as COVID-19 (22). The reason why 45.2% of healthcare professionals who use supplements prefer vitamin D supplements may be their awareness of this issue.

Extraordinary situations such as pandemics can cause fear in many people. This fear has caused individuals to commit suicide because they think they have COVID-19. Autopsy reports were examined in studies, and COVID-19 was not found in individuals who committed suicide due to this disease (23, 24). There is a positive relationship between fear, depression, anxiety and stress (23). In this study, a significant difference was found between the COVID-19 Fear scale scores of healthcare workers who diagnosed with COVID-19 and those who did not (p<0.001) (Table 2). Healthcare professionals who did not diagnose with COVID-19 have more fear of COVID-19 than healthcare professionals who diagnosed with COVID-19. It is thought that reasons such as the feeling of uncertainty, excessive exposure to media, and the anxiety caused by the news about COVID-19 may be related to the higher scale scores of healthcare professionals who did not diagnosed with COVID-19.

In studies conducted with the Fear of COVID-19 Scale, it was observed that females scored higher on the scale than males, that is, their fear of COVID-19 was higher (25-27). Similarly, in this study, female healthcare professionals had higher fear of COVID-19 scale scores than males (p=0.018) (Table 2). Women work under intense stress have difficulty in balancing

their home and work life due to their traditional roles in society. In addition to the fact that this situation is related to the issue of gender inequality, it is thought that the increase in female employment in recent years may cause negative emotions such as fear and stress to be felt more intensely.

In a study, it was observed that women were more prone to emotional eating than men (28). Similarly, in this study, it was observed that the EEQ scores of female healthcare professionals were higher (p=0.003) (Table 3). Although individuals who diagnosed with COVID-19 had a slightly higher EEQ scores than individuals who did not diagnose with COVID-19, no significant difference was found between these scores (p>0.05). The effects of negative emotions such as fear and stress on eating behavior have been shown in many studies (1, 2, 7). It is an important limitation of the study that individuals with asymptomatic progressing COVID-19 disease are considered as not having the disease in this study. The fact that the statistical difference between the groups was not significant may be related to this situation.

In a study, Geliebter and Aversa (29) observed that individuals with high BMI values tend to emotional eat more when they are in negative emotions compared to individuals with normal and low BMI values. In another study, a positive and significant relationship was found between BMI and emotional eating (30). In this study, a positive and significant relationship was found between EEQ scores and BMI values of all healthcare professionals (r=0.159; p=0.024) (Table 4).

In a study conducted in Türkiye, a positive relationship was found between fear of COVID-19 and emotional eating (7). No direct link has been found between fear of COVID-19 and emotional eating. However, it has been observed that there is a direct link between negative emotions and emotional eating. Fear is an emotion that can cause negative emotions such as depression. Negative emotions are also thought to mediate the relationship between fear of COVID-19 and emotional eating (7, 9). In this study, a positive and significant relationship was found between the COVID-19 fear scale and EEQ scores of all healthcare professionals participating in the study (r=0.264; p=0.005) (Table 4).

This study has some limitations. The easing of the COVID-19 pandemic and the reduced uncertainty faced by healthcare professionals compared to the early months of the pandemic may have led to a decrease in the number of individuals experiencing fear. On the other hand, cases that progressed asymptomatically were accepted as individuals who did not have the disease in this study.

In conclusion, a positive relationship was found between fear of COVID-19 and emotional eating behavior. The fear of COVID-19 scale scores of healthcare professionals who diagnosed with COVID-19 were higher than those of workers who did not diagnosed. Female healthcare professionals scored higher on the fear of COVID-19 scale and the EEQ. A positive and significant relationship was found between the fear of COVID-19 and EEQ scores of all healthcare professionals participating in the study. More studies are needed to evaluate the relationship and mediating mechanisms between fear and emotional eating.

ETHICS COMMITTEE APPROVAL

* The study was approved by Başkent University Institutional Review Board and Ethics Committee (Date:25.05.2022 and Number:E-85878037-604.01.02-131488).

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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