

The Effect of COVID-19 Fear on Nutrition Awareness and Behaviors in Women: A Descriptive Study

Kadınlarda COVID-19 Korkusunun Beslenme Farkındalığına ve Davranışlarına Etkisi: Tanımlayıcı Bir Çalışma

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This study was presented as an oral presentation at the II. International, III. National Women's Health Nursing Congress held between December 21-23, 2023, Ankara, Türkiye.

ABSTRACT Objective: It was aimed to evaluate the effect of fear of coronavirus disease-2019 (COVID-19) on nutrition awareness and behaviors in women. **Material and Methods:** The descriptive study was conducted between April 2021-March 2022 in the obstetrics and gynecology outpatient clinic of a university hospital with 517 women volunteers. Data were collected using the "Descriptive Characteristics (socio-demographics such as education status, family type, income status) and Nutrition Behaviors (strengthening immunity, appetite status, etc.) Assessment Form", "COVID-19 Fear Scale", "Mindful Eating Questionnaire" and "Orthorexia Nervosa Scale". Descriptive statistics, Independent Groups t-test, One-Way analysis of variance and Pearson correlation tests were used to analyze the data. **Results:** The mean age of the women was 32.17±11.34 years, the mean score of the COVID-19 Fear Scale was 19.16±6.62 and the mean score of the mindful eating questionnaire was 101.74±15.14. According to the Orthorexia Nervosa Scale, 33.7% of women were found to be orthorectic. Obsession with healthy eating and emotional eating increased, and eating control decreased with fear of COVID-19 in women (p<0.05). **Conclusion:** The increasing fear of COVID-19 in women had preferred the choice of traditional foods in nutrition. During the pandemic, women have an increased tendency towards orthorexia nervosa. There is a need for accurate and reliable information on nutrition awareness and behaviors. Because the information source prioritized by women was the media-internet. Therefore, long-term studies on changes in nutrition awareness and behaviors in situations with psychological effects, such as fear of COVID-19, are recommended.

Keywords: Awareness; COVID-19; fear; nutrition; pandemic

ÖZET Amaç: Kadınlarda koronavirus hastalığı-2019 [coronavirus disease-2019 (COVID-19)] korkusunun beslenme farkındalığına ve davranışlarına etkisinin değerlendirilmesi amaçlanmıştır. **Gereç ve Yöntemler:** Araştırma tanımlayıcı tipte, Nisan 2021-Mart 2022 tarihleri arasında bir üniversite hastanesinin doğum ve kadın hastalıkları polikliniğinde gönüllü 517 kadın ile yapılmıştır. Veriler "Tanımlayıcı özellikler (eğitim durumu, aile tipi, gelir durumu gibi sosyodemografik özellikler) ve beslenme davranışları (bağışıklığın güçlendirilmesi, iştah durumu vb.) değerlendirme formu", "COVID-19 Korkusu Ölçeği", "Yeme Farkındalığı Ölçeği" ve "Sağlıklı Beslenme Takıntısı Ölçeği" ile toplanmıştır. Verilerin analizinde; tanımlayıcı istatistikler, bağımsız gruplarda t-testi, tek yönlü varyans analizi ve Pearson korelasyon testleri kullanılmıştır. **Bulgular:** Kadınların yaş ortalaması 32,17±11,34, COVID-19 Korkusu Ölçeği puan ortalaması 19,16±6,62 ve Yeme Farkındalığı Ölçeği puan ortalaması 101,74±15,14 olduğu belirlenmiştir. Sağlıklı Beslenme Takıntısı Ölçeği'ne göre kadınların %33,7'sinin ortorektik eğilim gösterdiği saptanmıştır. Kadınlarda COVID-19 korkusu ile sağlıklı beslenme takıntısının ve duygusal yemenin arttığı, yeme kontrolünün azaldığı saptanmıştır (p<0,05). **Sonuç:** Kadınlarda artan COVID-19 korkusu, beslenmede geleneksel besinlerin tercih edilmesine neden olmuştur. Pandemi sırasında kadınların ortoreksiya nervosa eğilimi artmıştır. Beslenme farkındalığı ve davranışları konusunda doğru ve güvenilir bilgiye ihtiyaç vardır. Bunun nedeni, kadınların öncelik verdiği bilgi kaynağının medya-internet olmasından dolayıdır. Bu nedenle, COVID-19 korkusu gibi psikolojik etkileri olan durumlarda beslenme farkındalığı ve davranışlarındaki değişikliklere ilişkin uzun vadeli çalışmalar yapılması önerilmektedir.

Anahtar Kelimeler: Farkındalık; COVID-19; korku; beslenme; pandemi

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Quarantine and social isolation measures implemented during the coronavirus disease-2019 (COVID-19) pandemic affected individuals' lifestyles.¹ Staying at home for prolonged periods of time limits domestic physical activity, leading to an increase in sedentary behaviors.² Limited access to grocery shopping for nutrition has led to reduced access to foods that should be consumed fresh (fruits, vegetables, and fish, etc.). Increased consumption of processed foods such as snacks and junk food.³ Psychological and emotional reactions due to the COVID-19 pandemic contributed to the development of unhealthy nutrition behaviors. Home isolation has changed nutrition orientations as a way to escape the monotony of boredom due to the interruption of the daily routine of life.⁴ Individuals constantly reading or hearing about COVID-19 in the media have increased stress, leading to changes in appetite in the form of increased or decreased appetite.⁵

In the COVID-19 pandemic, individuals have been challenged to implement healthy lifestyles and maintain good health. In particular, individuals have been exposed to a lot of misinformation accessed through the internet and media.⁶ Within the scope of COVID-19 fear and disease prevention and protection, individuals resorted to practices such as unhealthy food intake, nutritional supplements, etc. to strengthen immunity. This has increased the tendency for the emergence of obsession with healthy eating, which is not yet recognized as a psychiatric disorder, such as Orthorexia Nervosa (ON).⁷ The ON is defined as an obsessive attitude towards healthy eating in individuals.⁸ Rather than being thin, the individual's goal is to reject unhealthy foods in favor of healthy ones. Excessive mental and behavioral focus on this goal may lead to obsessive-compulsive disorder.⁹ It is thought that the body image and nutrition awareness of the individual during the COVID-19 pandemic process may also contribute to the development of ON. The ON directly affects individuals' nutrition awareness and behaviors.¹⁰ Being a woman is a risk factor for ON tendency.^{11,12} The ON is a nutrition behavior disorder that is more common in women than in men.¹¹ The COVID-19 pandemic could further increase this risk.

Women's health is important for the well-being and general health of society. Psychological re-

silience is required to cope with the negative effects of the COVID-19 pandemic, as it causes stress, anxiety, and leads to long-term and wide-ranging changes in daily life.^{2,13} It is thought that women's increased burden of domestic care, stress, and anxiety due to lifestyle changes brought about by the COVID-19 pandemic and fear of COVID-19 transmission, and the increasing tendency to develop ON due to their gender may affect women's nutrition awareness and behaviors.^{11,14} The aim of this study is to evaluate the effect of fear of COVID-19 on nutrition awareness and behaviors in women.

Research Questions

- What is the level of women's fear of COVID-19 during the pandemic?
- What is the level of women's nutrition awareness during the pandemic?
- What are the orthorectic levels of women during the COVID-19 pandemic?
- How does the fear of COVID-19 affect women's nutrition behaviors?

MATERIAL AND METHODS

STUDY DESIGN

It was conducted as a descriptive study.

SAMPLE OF THE STUDY

The sample of the study consisted of women who visited the obstetrics and gynecology outpatient clinic of a training and research hospital between April 2021-March 2022. Using the G-Power Data Analysis (3.0.1.) (University of Düsseldorf, Germany) program and the mean scores of the nutrition models in the study of Weerasekara et al., the required sample size was determined as a minimum of 468 women based on 80% power, 0.05 significance level and the effect size of 0.28 in this study.¹⁵ During the data collection period of the study, 517 women were reached, and the study was completed. Women participating in the study who came for routine health checks. The inclusion criteria for the study were being over 18 years of age, volunteering to participate in the study and having no verbal barriers to communication. Exclusion criteria were use of psychiatric medication, being pregnant and having the COVID-19 disease.

INSTRUMENTS FOR COLLECTING STUDY DATA

Study data were collected using the “Descriptive Characteristics and Nutrition Behaviors Assessment Form”, “ON Scale”, “COVID-19 Fear Scale”, and “Mindful Eating Questionnaire”.

Descriptive Characteristics and Nutrition Behaviors Assessment Form: It was developed by the researchers in line with the literature.^{1,10,12,16} The form consists of a total of 20 questions, twelve related to women’s descriptive characteristics [socio-demographics such as education status, family type, body mass index (BMI), income status] and eight related to women’s nutrition behaviors in the COVID-19 pandemic (strengthening immunity, appetite status, etc.). In order to evaluate the appropriateness of the content of the form, expert opinion was obtained for the form items from ten nurse academicians who were not included in the study. The academicians were asked to mark each question as “1: Not applicable”, “2: Slightly applicable”, “3: Applicable” and “4: Very applicable”. Experts were then asked to provide suggestions for responses other than “Very applicable”. After incorporating expert opinions, the Scale Content Validity Index was calculated, resulting in a value of 0.92 (the minimum recommended score is 0.90).¹⁷ Based on this analysis, the form was found to be appropriate. Before the study started, a pilot study was conducted with thirty women who were not included in the study.

ON Scale: Donini et al. developed the scale to determine healthy nutrition obsession in individuals.⁸ Consisting of 11 items, the Turkish validity and reliability study of the scale was conducted by Arusoğlu et al. The scale is a four-point Likert scale ranging from “always to never”. The score range of the scale is 11-44. Low scores indicate orthorectic tendency. Cronbach alpha value of the scale is 0.62.¹¹ In this study, the Cronbach alpha value of the scale was calculated as 0.63. In this study, the ON tendency in women was categorized with the cut-off point determined by Arusoğlu et al.¹¹ Accordingly, as the women’s scores on the scale decreased, their ON tendency increased.

COVID-19 Fear Scale: Ahorsu et al. developed this scale to measure individuals’ COVID-19-in-

duced fear levels.¹⁸ Ladikli et al. conducted the Turkish validity and reliability study of the scale. The scale has seven items, a single factor, and a five-point Likert-type scale ranging from “strongly disagree to strongly agree”. The score range of the scale is 7-35. The higher the score on the scale, the higher the fear of COVID-19. The Cronbach Alpha value of the scale is 0.86.¹⁹ In this study, the Cronbach Alpha value of the scale was calculated as 0.83. Fear of COVID-19 was considered to be low (<average score) and high (≥average score).

Mindful Eating Questionnaire: Framson et al. developed the scale to determine the quality of attention given to nutrition in the general population.²⁰ Köse et al. conducted the Turkish validity and reliability study of the scale. The scale includes seven sub-dimensions. These are “disinhibition”, “emotional eating”, “eating control”, “mindfulness”, “eating discipline”, “conscious nutrition”, and “interference”. The score range of the scale is 30-150. A high score obtained from any sub-dimension of the scale indicates the individual’s characteristic related to that sub-dimension. Nutrition awareness total score is also calculated from the scale. As the total score increases, nutrition awareness increases. The Cronbach alpha value of the scale is 0.73.²¹ In this study, the Cronbach alpha value of the scale was calculated as 0.82.

DATA COLLECTION

The study was conducted between April 2021-March 2022 in the obstetrics and gynecology outpatient clinic of a training and research hospital. The researchers collected the study data through face-to-face interviews with the participants. The aim of the study was explained to all participants before data collection. The research was carried out on a voluntary basis, with the protection of confidentiality of personal data, and informed consent from all participants.

VARIABLES

In this study, the variables addressed to evaluate the impact of women’s fear of COVID-19 on nutrition awareness and behaviors; participants’ characteristics and nutrition behaviors were addressed with descriptive characteristics (socio-demographics such as

education status, family type, BMI, income status) and nutrition behaviors (strengthening immunity, appetite status, etc.). COVID-19 Fear Scale scores were used to determine women's fear of COVID-19, Mindful Eating Questionnaire scores for nutrition awareness, and ON Scale scores for levels of ON.

ETHICAL CONSIDERATION

Ethics committee approval was obtained from Dokuz Eylül University Non-Interventional Research Ethics Committee for this study (date: 18 January 2021; no: 2021/02-28). Institutional permission was obtained from the hospital where the study was conducted. The study was conducted in accordance with the ethical principles of the Declaration of Helsinki and informed consent was obtained from all participants. Permissions for the use of the data collection tools used in the study were obtained from the authors.

STATISTICAL ANALYSIS

The data of the study were evaluated using IBM SPSS for Windows (Version 22.0) program (IBM, USA). The normality distribution of the study data was examined by the Kolmogorov Smirnov test and it was determined that the data were normally distributed. Descriptive characteristics (socio-demographic characteristics) of the women were given as numbers and a percentage. Age and BMI were presented as mean and standard deviation (SD) in addition to the number and percentage. Nutrition behaviors of women during the COVID-19 pandemic were given in numbers and percentages. In the evaluation of women's nutrition behaviors according to the mean score of the COVID-19 Fear Scale, Independent Groups t-test was used for two groups and One-Way Analysis of Variance (ANOVA) was used for groups of three or more. In the One-Way ANOVA, the "post-hoc" test with Bonferroni Correction was used to determine from which group the difference originated. The differences between the groups was shown with a three asterisk symbols as a superscript. The Mindful Eating Questionnaire, COVID-19 Fear Scale and ON Scale were presented using mean, standard deviation, minimum and maximum values. Number, percentage, mean, SD, minimum and maximum values are given in the presentation of ON categories of women according to ON Scale. The relationship of COVID-19 Fear Scale with Mindful

Eating Questionnaire and ON Scale was evaluated using Pearson Correlation analysis. Statistical significance level was accepted as 0.05.

RESULTS

The mean age of the women was 32.17 ± 11.34 years. Among the women, 53.8% were married, 60.6% had a bachelor's degree, 58.8% lived in the province center and 59.4% had middle income. The percentage of women who were not employed was 63.1%, 79.5% lived in nuclear families, 58.4% in the normal weight range, and the mean BMI was 24.45 ± 4.82 (Table 1).

Table 2 shows the difference between women's nutrition behaviors according to their mean COVID-19 fear scores. Fear of COVID-19 was higher in women who strengthen their immunity only "through nutrition" than in women who used "other methods in addition to nutrition (exercise, fluid intake, sleep patterns)" ($p=0.035$). Fear of COVID-19 was higher in the "traditional foods" and "vitamin supplements, regular sleep and fluid intake" groups compared to other groups. Besides, the mean COVID-19 fear score of the "traditional foods" group was higher than the "vitamin supplements, regular sleep and fluid intake" group ($p=0.018$). Women with "increased" appetite during the COVID-19 pandemic had a higher fear of COVID-19 than women with "unchanged" and "decreased" appetite ($p=0.000$). No significant difference was found between the fear of COVID-19 and "food groups mainly included in nutrition". No significant difference was found between the fear of COVID-19 and "receiving information on nutrition" ($p>0.05$). Fear of COVID-19 was higher in the "media-internet" group compared to other groups in terms of source of information on nutrition ($p=0.012$).

Table 3 presents the descriptive statistics of the scales. The mean total score of the COVID-19 Fear Scale was 19.16 ± 6.62 , the mean total score of the ON Scale was 26.46 ± 4.02 , and the mean total score of the Mindful Eating Questionnaire was 101.74 ± 15.14 .

In Table 4, according to the ON Scale, 33.7% of the women showed ON tendency. Women with ON tendency had a mean score of 21.09 ± 2.22 on the ON Scale, while healthy women had a mean score of 28.97 ± 2.75 .

TABLE 1: Socio-demographic characteristics of women (n=517, İzmir, 2022).

	n	%
Age (years)		
19-45 (youth)	410	79.3
46-63 (middle age)	107	20.7
Marital status		
Married	278	53.8
Single	239	46.2
Education status		
Primary school graduate	64	12.4
Secondary education graduate	140	27.0
Bachelor's degree	313	60.6
Place of residence		
Province center	304	58.8
District	182	35.2
Village	31	6.0
Income status		
Low income	113	21.9
Middle income	307	59.4
High income	97	18.7
Employment status		
Employed	191	36.9
Unemployed	326	63.1
Family type		
Nuclear family	411	79.5
Extended family	44	8.5
Living alone	62	12.0
Body mass index categories		
18.5-24.9: Normal weight	302	58.4
25.0-29.9: Overweight	145	28.0
30.0-34.9: 1st degree obesity	50	9.7
35.0-39.9: 2nd degree obesity	20	3.9
	X̄	SD
Age	32.17	11.34
Body mass index	24.45	4.82

SD: Standard deviation.

Table 5 shows the relationship of COVID-19 Fear Scale with Mindful Eating Questionnaire and ON Scale. A statistically significant low-level relationship was found between fear of COVID-19 and “emotional eating” in a positive correlation ($r=0.129$; $p=0.003$), “eating control” in a negative correlation ($r=-0.101$; $p=0.022$) and “interference” in a positive correlation ($r=0.194$; $p=0.033$). A statistically significant low-level positive correlation was found between fear of COVID-19 and “total mindful eating” ($r=0.114$; $p=0.010$). A statistically significant low-level negative correlation was found

between fear of COVID-19 and obsession with healthy eating ($r=-0.133$; $p=0.006$).

DISCUSSION

This study examined the impact of COVID-19 fear on nutrition awareness and behaviors in women. The COVID-19 pandemic has led to psychological distress, sedentary behaviors, sleep disturbance, and difficulty maintaining a healthy lifestyle, including making unhealthy nutrition behaviors.²² In the COVID-19 pandemic, many reasons such as family caregiving responsibilities, layoffs and economic loss, and limited access to health services have led to increased stress and anxiety in women.²³ In Al-Musharaf's study, it was reported that 40.4% of 638 women aged 18-39 years had “moderate” and 12.4% had “high” emotional eating during the COVID-19 pandemic. Depression was reported in 42.8%, anxiety in 27% and moderate stress in 71% of women.²⁴ Besides, during the COVID-19 pandemic, nutrition and eating pattern (eating out of control, eating more snacks and eating more frequently) became more unhealthy during the quarantine period.²⁵ Đogaš et al. examined the psychological and lifestyle changes of 189 women aged 30-49 years due to the COVID-19 pandemic. An increase in the level of anxiety, fear and sadness as well as weight gain was observed in women during the pandemic period. In addition, physical activity decreased in women.²⁶ In the study by Bolesławska et al., weight gain was found in approximately half of 200 women with a mean age of 40.6 ± 13.69 years. In women, an increase in the number of eating patterns and especially in the consumption of snacks was found during the COVID-19 pandemic. Consumption of potatoes, sweets, canned meat and eggs increased in women.²⁷ In our study, the majority of women were middle-income and their BMI's were in the normal range. They emphasized nutrition to strengthen their immunity. They preferred traditional foods (garlic, lemons, etc.) and a third of them had an increased appetite.

Herbal and vitamin supplements are commonly used to prevent transmission of COVID-19 infection.²⁸ The women in our study with high fear of COVID-19 chose the nutrition path to strengthen their immunity and preferred traditional foods. In ad-

TABLE 2: Evaluation of women's nutritional behaviors according to their mean scores on the COVID-19 Fear Scale (n=517, İzmir, 2022).

Nutrition behavior	n	%	COVID-19 Fear Scale total score		
			$\bar{X}\pm SD$	t/F	p value
Immune strengthening behavior (n=434)					
Through nutrition	218	50.2	19.57±6.73	2.167*	0.035
Other methods in addition to nutrition (exercise, fluid intake, sleep patterns)	216	49.8	17.33±5.76		
Methods to strengthen immunity (n=487)					
Vitamin supplements (vitamin C, vitamin D, etc.)	56	11.5	18.06±6.47	4.071**	0.018
Traditional foods (garlic, lemon, etc.)***	162	33.2	20.72±5.73		
Regular exercise	52	10.6	17.39±5.95		
Regular sleep and fluid intake	135	27.7	19.13±6.25		
Vitamin supplements, regular sleep and fluid intake	83	17.0	19.98±6.10		
Appetite status					
Unchanged	260	50.3	17.11±6.09	6.395**	0.000
Decreased	92	17.8	17.63±5.78		
Increased***	165	31.9	19.64±6.71		
Food groups mainly included in nutrition					
Protein sources such as milk, meat and/or products	68	13.2	18.89±7.26	0.152**	0.962
Carbohydrate sources such as legumes, cereals	86	16.6	18.86±6.54		
Vegetables and fruits (spinach, tomatoes, oranges, etc.)	189	36.6	19.20±6.23		
Junk food (chocolate, chips, etc.)	86	16.6	19.22±6.64		
A balanced diet including all food groups	88	17.0	19.55±7.11		
Receiving information on nutrition					
Yes	319	61.7	19.30±6.54	0.294*	0.769
No	198	38.3	19.10±6.67		
Source of information on nutrition (n=319)					
Media-internet***	168	52.7	19.57±6.73	4.071**	0.012
Health professionals	55	17.2	17.33±5.76		
Media-internet, health professionals, family members, and friends	96	30.1	17.13±6.01		

*=Independent Groups t-test; **F=One-way Analysis of Variance; In the One-Way Analysis of Variance, the "post-hoc" test with Bonferroni Correction was used to determine from which group the difference originated. The differences between the groups was shown with a three asterisk symbols as a superscript (***).
 COVID-19: Coronavirus disease-2019; SD: Standard deviation.

TABLE 3: Descriptive statistics of Mindful Eating Questionnaire, COVID-19 Fear Scale and Orthorexia Nervosa Scale (n=517, İzmir, 2022).

	$\bar{X}\pm SD$	Minimum	Maximum
Mindful Eating Questionnaire			
Disinhibition	19.96±4.08	6	25
Emotional eating	16.81±5.35	5	25
Eating control	15.23±3.80	4	20
Mindfulness	16.10±2.28	8	23
Eating discipline	12.90±3.09	4	20
Conscious nutrition	16.36±2.79	6	25
Interference	7.34±1.73	2	10
Mindful eating questionnaire total score	101.74±15.14	60	138
COVID-19 Fear Scale total score	19.16±6.62	7	35
Orthorexia Nervosa Scale total score	26.46±4.02	16	39

COVID-19: Coronavirus disease-2019; SD: Standard deviation.

dition, their source of COVID-19-related information has been the media-internet. In the study of Lawrence et al., the psychological health and nutrition behaviors of 510 women, most of whom were between the ages of 20-29 (47.6%), were examined. In the study, psychological symptoms of lack of concentration (47.6%), lack of communication with family members (47.6%), anxiety (45.4%), weight gain (49.6%), and sadness (10.3%) were found in women during the COVID-19 pandemic. In terms of nutrition behaviors, 69.4% of the women reported changes in their eating patterns, such as vitamin-rich diets, and 52.2% used vitamin supplements to strengthen their immunity.²⁹ Musoke et al. evaluated the use of herbal supplements with media influence due to fear of

TABLE 4: Orthorexia nervosa categories of women according to Orthorexia Nervosa Scale (n=517, İzmir, 2022).

Cut-off score	n	%	Orthorexia Nervosa Scale total score		
			$\bar{X}\pm SD$	Minimum	Maximum
Orthorexia tendency (≤ 24 puan)	174	33.7	21.09 \pm 2.22	10	24
Healthy (>24 puan)	343	66.3	28.97 \pm 2.75	25	39

*Orthorexia nervosa tendency in women was categorized with the cut-off point determined by Arusoglu et al.¹¹; SD: Standard deviation.

TABLE 5: The relationship of COVID-19 Fear Scale with Mindful Eating Questionnaire and Orthorexia Nervosa Scale (İzmir, 2022).

Mindful Eating Questionnaire	COVID-19 Fear Scale total score	
	*r value	p value
Disinhibition	-0.066	0.222
Emotional eating	0.129	0.003
Eating control	-0.101	0.022
Mindfulness	-0.081	0.066
Eating discipline	-0.048	0.273
Conscious nutrition	-0.053	0.226
Interference	0.194	0.033
Mindful Eating Questionnaire total score	0.114	0.010
Orthorexia Nervosa Scale total score	-0.133	0.006

*Pearson Correlation $p < 0.05$; COVID-19: Coronavirus disease-2019.

COVID-19 in 273 women. The authors stated that the use of herbal supplements due to fear of COVID-19 has increased in women and that the media is the main source of information on the use of herbal supplements.²⁸ Ismail et al. examined the nutrition and lifestyles of 2,126 women during the COVID-19 pandemic. The study found that during the COVID-19 pandemic, women experienced physical fatigue, emotional fatigue, irritability, tension, and also increased weight gain. The authors stated that physical activity was insufficient in women during the COVID-19 pandemic period and that the most frequently used source of nutrition information during this period was social media. In addition, the study found that the consumption of junk food (sweets, chips, etc.) increased along with fruit consumption in nutrition in women.³⁰ In our study, women consumed mainly vegetables and fruits in their nutrition. This may be related to the belief that vegetables and fruits are immune- strengthen nutrients in our country.

In our study, according to the mean scores of the sub-dimension and total scores of the Mindful Eating

Questionnaire during the COVID-19 pandemic, women's nutrition awareness is high, and according to the highest sub-dimension scores, disinhibition, emotional eating and interference show higher characteristics in women. Emotional eating is common among women.²⁴ In the study by Madalı et al., the mean age, BMI values and the rates of increase in appetite in the COVID-19 pandemic in 1,131 women were similar to our study. In the study, it was stated that emotional eating increased in women during the pandemic period to cope with negative emotions such as depression, anxiety and stress.³¹ In our study, although the majority of women were at normal BMI, 33.7% were found to be prone to ON due to fear of COVID-19. Besides, as the fear of COVID-19 increases, ON tendencies also increase. In the women in our study, total nutrition awareness and emotional eating increased with fear of COVID-19, while eating control decreased. In the study of Gobin et al. (2021), nutrition, body image and social media usage of 143 women aged 17-73 were examined during the COVID-19 pandemic period. The authors found that as ON tendency increased in women, body image deteriorated, weight gain due to emotional eating increased, and feelings of pressure to lose weight increased. They also found that women who used social media felt more pressure to lose weight and exercise.⁷ Women with ON are more affected than women without ON in terms of decreased quality of life, decreased satisfaction with life and increased stress levels.¹² In the study conducted by Berber and Kılıçalp Kılınç with 767 women, it was reported that the majority of women showed ON tendency in the COVID-19 pandemic. In the study, ON tendency was seen more in those who used social media.³² In our study, more than half of the women reported media-internet as their source of information on nutrition. Therefore, women's ON tendencies may have increased through media-internet during the COVID-19 pandemic period.

LIMITATIONS OF THE STUDY

This research has some limitations. The study was conducted with women who applied to a single center for routine health checks between certain dates. Therefore, the results obtained during the research process cannot be generalized to all women. The data were collected based on women's self-report. For this reason, it required women to remember their recall bias. The relationship between exposure and outcome has not been evaluated according to the design of the study.

RECOMMENDATIONS

The results we obtained indicate that the COVID-19 pandemic is important in terms of nutritional awareness and behaviors. The effectiveness of the preferred methods to strengthen immunity in nutrition is a matter of public health concern. In particular, the COVID-19 pandemic has directed nutrition awareness and behaviors through social media. However, the evidence on the accuracy and reliability of information on social media is insufficient. Therefore, access to accurate information is very important for extraordinary situations such as the COVID-19 pandemic. The situation is even more sensitive in situations such as ON that affect nutrition awareness and behaviors. The COVID-19 pandemic is a factor affecting human health in terms of psychological effects and the choice of ON and other nutrition behaviors (nutritional supplements, traditional foods, etc.). Because the choice of nutrition behaviors with unclear reliability may negatively affect health. In future studies, it is recommended to conduct more studies on the role of psychological influences such as fear on nutrition awareness and behaviors.

CONCLUSION

This study found that the COVID-19 pandemic had led to changes in women's nutrition awareness and

behaviors. In women with high fear of COVID-19, nutrition as a method to strengthen immunity was found to be more common than other methods (vitamin supplements, exercise, etc.). To strengthen their immunity, women preferred traditional foods more. Their appetite increased and their preferred media-internet as a source of information on nutrition. A tendency towards ON was found in one third of women. COVID-19 fear-related emotional eating increased, eating control decreased, interference, and total nutrition awareness increased. It was determined that the tendency to ON increased as the fear of COVID-19 increased.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: Hülya Özberk, Dilek Bilgiç, Büşra Çap; **Design:** Hülya Özberk, Dilek Bilgiç, Büşra Çap; **Control/Supervision:** Hülya Özberk, Dilek Bilgiç; **Data Collection and/or Processing:** Hülya Özberk, Büşra Çap; **Analysis and/or Interpretation:** Hülya Özberk, Dilek Bilgiç; **Literature Review:** Hülya Özberk, Büşra Çap; **Writing the Article:** Hülya Özberk, Dilek Bilgiç, Büşra Çap; **Critical Review:** Hülya Özberk, Dilek Bilgiç, Büşra Çap.

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