Investigation of the effect of fear and anxiety during the COVID-19 pandemic on eating habits

COVID-19 pandemisi sürecinde duyulan korku ve kaygının beslenme alışkanlıkları üzerine etkisinin incelenmesi

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Abstract

This study aimed to evaluate the effects of COVID-19 fear and anxiety on dietary habits during the COVID-19 pandemic. This cross-sectional study employed an online questionnaire comprising the COVID-19 Fear Scale (FCV-19S), Coronavirus Anxiety Scale (CAS), and Generalized Anxiety Disorder-7 (GAD-7) Test to assess demographic characteristics, eating habits, and levels of fear and anxiety. While meal skipping decreased after the pandemic compared to before the pandemic, snack consumption increased ($p<0.001$). FCV-19S scores were linked to a greater intake of nutritious foods, including dairy, meat, eggs, legumes, vegetables, fruits, and home-prepared meals, along with a reduced intake of unhealthy options like fast food and sugar- or sweetener-containing beverages ($p<0.05$). The CAS scores were correlated with higher consumption of healthy foods, including dairy products, eggs, vegetables, fruits, and home-cooked meals, and lower consumption of unhealthy items, such as junk food, processed meats, and fast food ($p<0.05$). GAD-7 scores were linked to higher consumption of unhealthy foods, including cakes, cookies, desserts, fast food, salty snacks, and beverages containing sugar or sweeteners, as well as more frequent eating outside the home and conversely, they were associated with reduced intake of eggs, fresh fruits, and water ($p<0.05$). As a result, the pandemic has caused changes in dietary habits and food choices. Fear and anxiety in this process have been effective in this change. It is important to evaluate the effects of psychological factors experienced in this process on nutrition in order to maintain healthy eating habits of individuals in COVID-19 and future pandemics.

Keywords: Anxiety of COVID-19, fear of COVID-19, nutrition

Özet

Bu çalışmada COVID-19 pandemisi sırasında COVID-19 korku ve kaygısının beslenme alışkanlıkları üzerine etkilerinin değerlendirmesi amaçlanmıştır. Bu kesitsel çalışmada, demografik özellikleri, beslenme alışkanlıklarını ve korku ve kaygı düzeylerini değerlendirmek için COVID-19 Korku Ölçeği (COVID-19 KÖ), Koronavirüs Anksiyete Ölçeği (KAÖ) ve Yaygın Anksiyete Bozukluğu-7 (YAB-7) Testinden oluşan çevrimiçi bir anket kullanılmıştır. Pandemi sonrasında öğün atlama pandemi öncesine göre azalırken ara öğün tüketimi artmıştır ($p<0,001$). COVID-19 KÖ puanları süt ürünleri, et, yumurta, baklagiller, sebzeler, meyveler ve evde hazırlanan yemekler gibi besleyici besinlerin daha fazla tüketilmesi ve fast food ve şeker ya da tatlandırıcı içeren içecekler gibi sağlıksız seçeneklerin daha az tüketilmesi ile ilişkilendirilmiştir ($p<0,05$). KAÖ puanları süt ürünleri, yumurta, sebze, meyve ve ev yemekleri gibi sağlıklı besinlerin daha fazla tüketilmesi ve abur cubur, işlenmiş et ve fast food gibi sağlıksız besinlerin daha az tüketilmesi ile ilişkilendirilmiştir ($p<0,05$). YAB-7 puanları kek, kurabiye, tatlı, fast food, tuzlu atıştırmalıklar ve şeker ya da tatlandırıcı içeren içecekler gibi sağlıksız besinlerin daha fazla tüketilmesi ve ev dışında daha sık yemek yenmesi ile ilişkiliyken; yumurta, taze meyve ve su alımının azalması ile ilişkilendirilmiştir($p<0,05$). Sonuç olarak pandemi süreci beslenme alışkanlıkları ve besin seçimleri üzerinde değişikliğe sebep olmuştur. Bu süreçte duyulan korku ve kaygı bu değişimde etkili olmuştur. COVID-19 ve daha sonrasında yaşanabilecek pandemilerde bireylerin sağlıklı beslenme alışkanlıklarını sürdürebilmek için bu süreçte yaşanan psikolojik faktörlerin beslenme üzerine etkilerinin değerlendirilmesi önemlidir.

Anahtar Kelimeler: COVID-19 kaygısı, COVID-19 korkusu, beslenme

Introduction

Following the cases of pneumonia of undetermined cause reported in China in December 2019, the World Health Organization (WHO) stated that a new type of coronavirus was detected and declared COVID-19 a pandemic (1). Following the detection of the first COVID-19 case in Turkey on March 11, 2020, the virus spread quickly, prompting the implementation of various preventive measures at both individual and societal levels (2). The pandemic has harmed individuals both physically and psychologically by creating an environment of uncertainty, economic difficulties, quarantine, health concerns, and loneliness, all of which have contributed to increased levels of fear, anxiety, and stress (3, 4).

Psychological stress can also influence dietary habits. Stress is one of the factors affecting the amount and type of food consumed by individuals. It has been shown that acute stress decreases food intake and chronic stress increases food intake and consumption of fatty and sugary foods with increased cortisol levels (5). Emotions such as sadness and fear have been associated with less desire to eat and less enjoyment while eating (6). An increase in perceived stress and depressive symptoms may lead to an increase in the frequency of dessert and fast food consumption and a decrease in vegetable, fruit and meat consumption (7). Anxiety is associated with higher energy and fat intake (8).

The COVID-19 pandemic contributed to notable changes in dietary patterns, driven by food access limitations during quarantine, prolonged periods spent at home, and elevated psychological distress, including anxiety and fear. It has been shown that during the pandemic, snack consumption increased, eating outside the home decreased, the food choices of individuals diagnosed with COVID-19 changed towards a healthier diet that would support immunity, and individuals with a high fear of COVID-19 paid more attention to healthy nutrition (9, 10). During the pandemic, elevated levels of stress, anxiety, and depression were associated with reduced consumption of foods such as meat, eggs, dairy products, vegetables, legumes, and fruits, alongside increased intake of high-fat dairy items, sugar- and sweetener-containing beverages, and fast food (11). Increased anxiety levels in this process are associated with an increase in the total amount of food, fried food, sugary drinks, pastries and fast food consumption (12). In a study conducted in Turkey, Kaya et al. (13) observed that individuals with higher FCV-19S scores increased their intake of yogurt, kefir, cheese, and water, those with elevated GAD-7 scores consumed more cakes, cookies, desserts, and tea. It was also observed that market shopping declined as fear and anxiety rose, and that people with greater fear of the virus adopted alternative food cleaning methods, such as washing with vinegar. High anxiety levels were associated with both increased and decreased online food shopping, market shopping, and cooking and eating at home. This was explained by behavioural patterns shaped by variations in socio-demographic traits, as well as factors such as individual preferences, previous experiences and the surrounding environment (14).

Research indicates that the COVID-19 pandemic can lead to alterations in dietary intake, meal frequency, and shopping habits (12-14). Understanding how pandemic-related fear and anxiety influence food choices, meal patterns, and shopping habits is essential for promoting healthy eating. Therefore, this study was conducted to investigate

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the effect of fear and anxiety during the COVID-19 pandemic on individuals' eating habits.

Materials and Methods

Population and Sample

The sample size of the study was calculated as 989 with a 95% power (α=0.05) by one-sided G-Power analysis, taking into account similar studies in the literatüre (13, 14). The population of the study was adults over the age of 18 living in different provinces in Turkey. Pregnant and breastfeeding women were not included in the study due to their different dietary habits and physiological conditions. At the end of the study, 1,066 people were reached, and a total of 58 survey data were excluded from the study, including 24 data that did not meet the inclusion criteria, 5 data with incomplete responses, and 29 data with inappropriate responses, and the study was completed with 1,008 participants.

Study Design and Consent

This cross-sectional study was carried out from December 5, 2020, to April 15, 2021, using an online survey developed with Google Forms and distributed to participants via digital platforms such as WhatsApp, Facebook, Instagram and Telegram. To conduct this study, the approval of the Erciyes University Social and Human Sciences Ethics Committee with application number 2020/179 was obtained.

Data Collection Tool

Before taking part in the study, participants were required to provide their consent by approving the informed consent form. Participants were administered a questionnaire on sociodemographic information and dietary habits, the Fear of COVID-19 Scale (FCV-19S) to measure fear of COVID-19, the Coronavirus Anxiety Scale (CAS) to measure COVID-19 anxiety, and the Generalized Anxiety Disorder-7 Test (GAD-7) to measure general anxiety.

Assessing Nutrition Habits

A 31-item questionnaire was created by the researchers to determine dietary habits, including skipping meals, consumption of snacks, online food shopping, eating at home and out of home, cleaning procedures after food purchases, and participants' thoughts on food protection from the pandemic and the use of nutritional supplements. A 26-item questionnaire was created regarding changes in food consumption preferences for dairy and meat products, vegetables and fruits, grains, beverages, fast food, snacks, and home-cooked meals.

COVID-19 Fear Scale (FCV-19S)

FCV-19S is a seven-item, 5-point Likert-type scale developed by Ahorsu et al. (15). Satici et al. (16) performed the Turkish validation and reliability analysis of the scale, reporting item-total correlations between 0.47 and 0.56, with a Cronbach's alpha internal consistency coefficient of 0.82. The higher the score obtained from the scale, the greater the fear of Covid-19. In this study, the Cronbach's alpha coefficient for the Fear of COVID-19 Scale was found to be 0.853.

Coronavirus Anxiety Scale (CAS)

The CAS is a 5-item, 5-point Likert-type scale developed by Lee (17). Biçer et al. (18) carried out the Turkish validity and reliability assessments of the Coronavirus Anxiety Scale, finding item factor loadings between 0.625 and 0.784, and a Cronbach's alpha reliability coefficient of 0.832. A CAS score >9 classified adults as having dysfunctional anxiety levels with 85% specificity and 90% sensitivity. In this study, the Cronbach's alpha coefficient for the Coronavirus Anxiety Scale was found to be 0.812.

Generalized Anxiety Disorder-7 (GAD-7) Test

The GAD-7, a seven-item questionnaire with a four-point Likert scale, was developed by Spitzer et al. (19), and its Turkish validation was carried out by Konkan et al. (20). The total scores obtained from the scale were accepted as minimal anxiety between 0-4, mild anxiety between 5-9, moderate anxiety between 10-14 and severe anxiety between 15-21. When the total score threshold was chosen as 10, the sensitivity and specificity for the diagnosis of GAD were found to be 89% and 82%, respectively. In this study, Cronbach's alpha coefficient for the Generalized Anxiety Disorder-7 Test was found to be 0.928.

Statistical Analysis

Frequency and percentage for categorical variables, mean, median, minimum and maximum value, standard deviation, and 1st and 3rd quartile for continuous variables were reported. For the analysis selection, data normality was assessed

using both visual methods (histograms) and analytical approaches (Kolmogorov–Smirnov test). Since the data were not normally distributed, non-parametric tests were used in the analyses. Mann-Whitney U Test was used to compare the mean scale scores. McNemar's test was performed for the change in skipping meals and snacking before and after the pandemic and for the change in the frequency of online food shopping, cooking/eating at home, and eating outside. The changes in the FCV-19S, CAS and GAD-7 scale scores in food consumption habits were analyzed with the Kruskal-Wallis H test, and the changes in general tendency were analyzed with the Mann-Whitney U test. Kendall's tau-b and point-biserial correlation coefficient were calculated for the relationship between the change in the consumption of food groups and the FCV-19S, the CAS and the GAD-7 scale. For the correlation coefficients, 0.39 and below were accepted as weak, 0.40 to 0.69 as moderate, 0.70 and above as a strong relationship (21). For the data obtained in the study, $p<0.05$ was considered significant and the data were evaluated with Statistical Package for the Social Sciences (SPSS) 26.0 program.

Results

This study evaluating the impact of COVID-19 fear and anxiety on eating habits was conducted with 1008 participants (648 women and 360 men). Demographic data of the participants are shown in Table 1. The participants' average age was 31.52±11.62 years, 56.1% were employed, and 20.8% used dietary supplements during the pandemic, with vitamin D being the most commonly used at 24.9%. Of the participants who used nutritional supplements, 68.4% used nutritional supplements to boost their immunity. 82.6% of the participants thought that nutrients were effective in protecting against the pandemic and the most common nutrients thought to protect against the pandemic were garlic, ginger and vinegar.

Table 1: Demographic characteristics and nutritional habits of participants

Variables	n	%
Age (Mean±SD)	31.52 ± 11.62	
Gender (female)	648	64.3
Marital status (married)	405	40.2
Education status		
Primary school	14	1.2
Middle school	19	1.9
High school	195	19.4
Undergraduate and graduate	780	77.5
Employment status		
Not working	443	43.9
Working	565	56.1
Income status		
Income less than expenditure	265	26.3
Income matches expenditure	552	54.8
Income more than expenditure	191	18.9
Profession		
Student	260	25.8
Officer	449	44.5
Worker	67	6.6
Housewife	76	7.5
Self-employment	81	8.0

Unemployed	33	3.3
Retired	25	2.5
Private sector employee	17	1.8
Smoking (yes)	236	23.4
Chronic disease(present)	131	51.7
Use of dietary supplements (yes)	210	20.8
Distribution of dietary supplements used*		
Multivitamin	48	15.3
Vitamin D	78	24.9
Vitamin C	55	17.6
Magnesium	10	3.2
Zinc	10	3.2
Omega3	23	7.4
Propolis	17	5.4
Other dietary supplements	72	23.0
Intended use of dietary supplements		
To boost immunity	144	68.4
Because your blood is deficient.	33	15.8
Because it is considered healthy	21	10.0
Because it's good for your illness	4	1.9
Because the family wants it	2	1.0
Other	6	2.9
Thinking that food is effective in protecting against the pandemic (yes)	833	82.6
Food thought to protect against the pandemic*		
Garlic	694	17.3
Ginger	523	13.0
Kefir	390	9.7
Vinegar	553	13.8
Turmeric	402	10.0
Honey	473	11.8
Pickles	478	11.9
Molasses	405	10.1
Other	95	2.4

**More than one answer option, SD: standard deviation*

The mean FCV-19S score was found to be 16.85±5.50, the mean score for CAS with a clinical threshold of nine points was found to be 1.20±2.26, and the mean score for GAD-7 with a threshold of five points for mild anxiety was found to be 4.45±4.99. The mean BMI of the participants was 24.03±4.32 kg/m².

A comparison of meal skipping and snack consumption before and after the pandemic is shown in Table 2. Meal skipping decreased significantly after the pandemic (from 47.2% to 36.3%) ($p<0.001$) and there was a significant decrease in skipping breakfast and lunch compared to before the pandemic ($p<0.001$). Snack consumption increased significantly after the pandemic (from 44.9% to 48.6%) ($p=0.012$), with a significant increase in mid-morning, afternoon and night snacks after the pandemic compared to before the pandemic ($p=0.004$, $p=0.045$, $p<0.001$, respectively).

Table 2: Meal skipping and snack consumption before and after the pandemic

	Before the pandemic n (%)	After the pandemic n (%)	χ^2	p
Skipping meals				
No	532(52.8)	642(63.7)	55.055	**<0.001*** **
Yes	476(47.2)	366(36.3)		
Skipped meal†				
Breakfast	186(23.2)	118(18.0)	36.202	**<0.001*** **
Birdhood	128(15.9)	118(18.0)	0.988	0.320
Noon	275(34.2)	216(33.0)	20.144	**<0.001*** **
Afternoon	115(14.3)	104(15.9)	1.205	0.272
Evening	24(3.1)	27(4.2)	0.121	0.728
Night	75(9.3)	71(10.9)	0.155	0.694
Snack consumption				
No	555(55.1)	518 (51.4)	6.322	**0.012***
Yes	453 (44.9)	490 (48.6)		
Consumed snack†				
Birdhood	98 (16.0)	124 (17.3)	8.224	**0.004****
Afternoon	311 (50.6)	339 (47.2)	4.005	**0.045***
Night	205 (33.4)	255 (35.5)	17.150	**<0.001*** **

†: More than one answer option, p<0.05(*), p<0.01(**), p<0.001 (***) χ2 : Mc Nemar test coefficient, data expressed as n (%).

The comparison of the frequency of online food shopping, cooking/eating at home and eating outside before and after the pandemic is given in Table 3. After the pandemic, the number of individuals shopping for food online once a month decreased significantly (p<0.001), while the number of individuals shopping for food online 2-3 days a week increased significantly (p=0.017). After the pandemic, the number of individuals who cooked/ate food at home once a month and 2-3 days a week decreased significantly compared to before the pandemic (p<0.001, p<0.001, respectively), while the number of individuals who cooked/eat food at home every day increased significantly (p<0.001). After the pandemic, the number of individuals who ate out of home once a month increased significantly (p<0.001); the frequency of eating out of home once every 2 weeks, once a week, 2-3 days a week and every day decreased significantly (p=0.023, p<0.001, p<0.001, p<0.001, p=0.007, respectively).

Table 3: Frequency of online food shopping, cooking/eating at home and eating outside before and after the pandemic

	Before the pandemic n (%)	After the pandemic n (%)	χ^2	p
Frequency of online shopping				
1 per month	235(55.5)	189(44.7)	19.471	**<0.001*** **
1 in 2 weeks	59(14.0)	72(17.0)	1.694	0.193
1 per week	77(18.2)	87(20.6)	0.862	0.353
2-3 days a week	45(10.6)	64(15.1)	5.684	**0.017***
Every day	7(1.7)	11(2.6)	-	0.289
Frequency of cooking/eating at home				
1 per month	40(4.0)	17(1.7)	16.690	**<0.001*** **
1 in 2 weeks	17(1.7)	14(1.4)	-	0.648
1 per week	38(3.9)	32(3.4)	0.543	0.461
2-3 days a week	200(20.4)	139(14.1)	23.841	**<0.001*** **
Every day	687(70.0)	780(79.4)	60.892	**<0.001*** **

Frequency of eating outside				
1 per month	202(24.2)	469(56.4)	239.851	**<0.001*** **
1 in 2 weeks	152(18.3)	119(14.3)	5.146	**0.023***
1 per week	218(26.2)	131(15.7)	36.433	**<0.001*** **
2-3 days a week	197(23.7)	68(8.2)	99.297	**<0.001*** **
Every day	63(7.6)	45(5.4)	7.225	**0.007****

p<0.05(*), p<0.01(**), p<0.001 (***) χ2 : Mc Nemar test coefficient, data expressed as n (%).

The relationship between the change in some dietary habits after the pandemic and FCV-19S, CAS, and GAD-7 test scores is shown in Table 4. After the pandemic, a weak but significant positive correlation, as well as a significant difference, was observed between FCV-19S scores and total food consumption, packaged food intake, and junk food consumption (p<0.05). Individuals who increased their total food consumption and changed their junk food consumption after the pandemic had higher FCV-19S scores than those who did not change their consumption. Compared to individuals whose packaged food consumption remained unchanged (median:16, IQR:13–20), those who increased their packaged food intake exhibited significantly higher FCV-19S scores (median:18, IQR:14–22), while those who decreased their intake showed lower scores (median:14, IQR:14–22) (Kendall's tau-b=0.114, p<0.001).

Individuals who increased cooking/eating at home after the pandemic had higher FCV-19S scores than those who decreased their consumption. The FCV-19S scores of individuals who decreased eating outside were higher than those who did not change their consumption.

A positive, weak and significant correlation and a significant difference were found between total food consumption, online food shopping, cooking/eating at home, packaged food consumption and junk food consumption and CAS scores after the pandemic (p<0.05). Individuals who changed their total food consumption after the pandemic had higher CAS scores than those who did not. Individuals who changed their total food and packaged food consumption after the pandemic had higher CAS scores than those who did not change their consumption. Similarly, compared to individuals whose packaged food consumption remained unchanged (median:0, IQR:0–1), those who increased or decreased their packaged food intake had significantly higher CAS scores (median:0, IQR:0–2 for increased; median:0, IQR:0–2.25 for decreased) (Kendall's tau-b=0.127, p<0.001). Individuals who decreased online food shopping and junk food consumption and increased cooking/eating at home had higher CAS scores than those who did not change their consumption.

A positive, weak and significant correlation and a significant difference were found between total food consumption, online food shopping, cooking/eating at home, eating outside, packaged food consumption and junk food consumption and GAD-7 scores after the pandemic (p<0.05). Individuals who increased or decreased their total food and junk food consumption, and cooking/eating at home after the pandemic had higher GAD-7 scores than those who did not change their consumption. Following the pandemic, individuals who reported an increase in online food shopping and a reduction in eating outside had higher GAD-7 scores compared to those whose consumption patterns remained unchanged. Individuals with high GAD-7 scores increased their consumption of packaged food (p<0.001).

A positive, weak and significant correlation and a significant difference were found between the FCV-19S and CAS scores of individuals who applied different cleaning procedures after purchasing food and thought that food was useful in protecting against the pandemic (p<0.05). The FCV-19S and CAS scale scores of individuals who applied different cleaning procedures after food purchase and thought that foods were useful in protecting against the pandemic were found to be higher. Individuals who practiced different cleaning procedures after food purchase had higher GAD-7 scores (p<0.001).

Table 4: The relationship between changes in food consumption habits and scale scores

	FCV-19S			CAS			GAD-7		
	Median (Q1-Q3)	p*	Kendall tau b	Median (Q1-Q3)	p*	Kendall tau b	Median (Q1-Q3)	p*	Kendall tau b
Total food consumption after the pandemic									
Unchanged	16 (13-20)[a]	**0.003****	**0.073****	0 (0-1)[a]	**<0.001*****	**0.124*****	2 (0-6)[a]	**<0.001*****	**0.203*****
Increased	18 (14-21)[b]			0 (0-2)[b]			5 (2-9)[b]		
Decreased	17 (12-21)[ab]			0.50 (0-3)[b]			4 (1.7-9)[b]		
Shopping for food online after the pandemic									
Unchanged	17 (13.5-21)	0.961	0.006	0 (0-2)[a]	**0.033***	**0.075****	3 (0-7)[a]	**0.018***	**0.056***
Increased	17 (12-21)			0 (0-2)[ab]			4 (1-7)[b]		
Decreased	16.5 (14-21)			0.50 (0-3)[b]			5 (0-9)[ab]		
Cooking/eating at home after the pandemic									
Unchanged	17 (13-21)[b]	**0.008****	0.033	0 (0-1)[a]	**0.011***	**0.089****	3 (0-6)[a]	**<0.001*****	**0.119*****
Increased	17 (14-22)[a]			0 (0-2)[b]			5 (1-9)[b]		
Decreased	14 (12.5-19.5)[b]			0 (0-3.5)[ab]			5 (1-9.5)[b]		
Eating outside the home after the pandemic									
Unchanged	16 (13-29)[a]	**0.001****	0.030	0 (0-2)	0.597	0.036	2 (0-6)[a]	**<0.001*****	**0.135*****
Increased	17 (11.5-21)[ab]			0 (0-2)			3 (0-7)[ab]		
Decreased	17 (14-21)[b]			0 (0-2)			4 (1-7)[b]		
Packaged food consumption after the pandemic									
Unchanged	16 (13-20)[a]	**<0.001*****	**0.114*****	0 (0-1)[a]	**<0.001*****	**0.127*****	2 (0-6)[a]	**<0.001*****	**0.134*****
Increased	18 (14-22)[b]			0 (0-2)[b]			5 (2-9)[b]		
Decreased	14 (14-22)[b]			0 (0-2.25)[b]			3 (1-7)[c]		
Junk food consumption after the pandemic									
Unchanged	16 (13-20)[a]	**0.006****	**0.077****	0 (0-1)[a]	**0.002****	**0.100*****	2 (0-6)[a]	**<0.001*****	**0.139*****
Increased	17 (14-21)[b]			0 (0-2)[ab]			4 (1-8)[b]		
Decreased	17 (14-22)[b]			0 (0-3)[b]			4 (1-7)[b]		
Implement a cleaning procedure when purchasing food									
No	15 (11-19)	**<0.001*****	**0.171*****	0 (0-1)	**<0.001*****	**0.086****	2 (0-6)	**<0.001*****	0.055
Yes	18 (14-21)			0 (0-2)			4 (0-7)		
Thinking that food is useful in protecting against the pandemic									
No	15 (11-19)	**0.006****	**0.092****	0 (0-1)	**<0.001*****	**0.114*****	3 (0-7)	0.621	0.010
Yes	17 (13-21)			0 (0-2)			3 (0-7)		

CAS: Coronavirus Anxiety Scale, FCV-19S-19S: COVID-19 Fear Scale, GAD-7: Generalized Anxiety Disorder Test, Values expressed as median (1st-3rd quartiles). Kendall tau-b coefficient is significant at p<0.05 (*), p<0.01 (**), p<0.001 (***). p: All significant p values for Mann Whitney U Test and Kruskall Wallis Test are shown in bold. a,b,c: There is a significant difference between groups with different letters.*

The relationship between the change in food consumption and the FCV-19S, CAS and GAD-7 test is shown in Table 5. A weak but statistically significant positive correlation and a significant difference were identified between FCV-19S scores and the consumption of various foods, including milk, yogurt, cheese, red meat, poultry, fish, eggs, legumes, green leafy and other vegetables, fresh and dried fruits, sweets, tea, water, sugar- or sweetener-containing beverages, fast food, and home-cooked meals ($p<0.05$). Following the pandemic, individuals who altered their intake of milk, fish, tea, and water; increased their consumption of yogurt, cheese, red meat, poultry, eggs, legumes, various vegetables, fresh and dried fruits, desserts, and home-cooked meals; and reduced their intake of fast food and sugar- or sweetener-containing beverages had higher FCV-19S scores compared to those whose consumption patterns remained unchanged.

A positive, weak and significant correlation and a significant difference were found between the consumption of milk, yogurt, cheese, kefir, red meat, poultry, fish, processed meat, eggs, dried legumes, green leafy vegetables, other vegetables, fresh fruits, dried fruits, cakes and cookies, sweets, tea, coffee, water, drinks containing sugar and sweeteners, fast food, salty snacks and home-cooked meals and CAS scores ($p<0.05$). Individuals who changed their consumption of milk, red meat, fish, processed meat, dried legumes, green leafy vegetables, dried fruits, cakes and cookies, sweets, tea, coffee, water, drinks containing sugar and sweeteners, and salty snacks; increased their consumption of yogurt, cheese, eggs, other vegetables, fresh fruits, home-cooked meals, and decreased their consumption of processed meat and fast food after the pandemic had higher CAS scores than those who did not change their consumption. Individuals who increased their kefir consumption had higher CAS scores than those who did not change their consumption and those who decreased their consumption. After the pandemic, poultry consumption decreased in individuals with high CAS scores.

A positive, weak and significant correlation and a significant difference were found between the GAD-7 scores for consumption of milk, yogurt, cheese, red meat, poultry, fish, processed meat, eggs, dried legumes, oilseeds, green leafy vegetables, other vegetables, fresh fruits, dried fruits, bread, rice, bulgur and pasta, cakes and cookies, sweets, tea, coffee, water, drinks containing sugar and sweeteners, fast food, salty snacks and home-cooked meals ($p<0.05$). Individuals who changed their consumption of milk, yogurt, cheese, red meat, poultry, processed meat, dried legumes, oilseeds, green leafy vegetables, other vegetables, dried fruits, rice, bulgur and pasta, tea, coffee, and increased their consumption of fish and home-cooked meals had higher GAD-7 scores than those who did not change their consumption. Those who reported an increase in the consumption of bread, sweet snacks, and salty snacks had higher GAD-7 scores compared to individuals who either reduced their intake or made no changes. After the pandemic, individuals with high GAD-7 scores decreased their consumption of eggs, fresh fruits and water, and increased their consumption of cakes, cookies, fast food and drinks containing sugar and sweeteners.

Table 5: The relationship of changes in food consumption with scale scores after the pandemic

Nutrients	FCV-19S (Median(Q1-Q3))					CAS (Median(Q1-Q3))					GAD-7 (Median(Q1-Q3))				
	Unchanged	Increased	Decreased	p*	Kendall tau b	Unchanged	Increased	Decreased	p*	Kendall tau b	Unchanged	Increased	Decreased	p*	Kendall tau b
Milk group															
Milk	17 (13-21)[a]	18 (14-21)[b]	19 (15-22)[b]	**0.023***	**0.069****	0 (0-1)[a]	0 (0-2)[b]	1 (0-3)[b]	**<0.001*****	**0.130*****	3 (0-6)[a]	4 (1-9)[b]	6 (3-11)[b]	**<0.001*****	**0.132*****
Yogurt	16 (12.5-20)[a]	18 (14-22)[b]	18.50 (15.2-22)[ab]	**<0.001*****	**0.118*****	0 (0-1)[a]	0 (0-2)[b]	0 (0-3)[ab]	**<0.001*****	**0.135*****	2 (0-6)[a]	4 (1-7)[b]	5.5 (1.5-10.5)[b]	**<0.001*****	**0.130*****
Cheese	16 (13-20)[a]	18 (15-22)[b]	16 (14-20)[ab]	**<0.001*****	**0.088****	0 (0-1)[a]	0 (0-2)[b]	0 (0-5)[ab]	**0.002****	**0.100****	3 (0-6)[a]	4 (1-9)[b]	5 (2-12)[b]	**<0.001*****	**0.133*****
Kefir	17 (13-21)	17.5 (14-21)	16 (13-19)	0.342	0.007	0 (0-1)[b]	1 (0-2)[a]	0 (0-1)[b]	**0.002****	**0.067***	3 (0-7)	3 (1-7)	4 (0-7)	0.326	**0.037*****
Meat group															
Red meat	17 (13-21)[a]	17 (14-22)[b]	17 (13.75-21.2)[ab]	**0.022***	**0.071****	0 (0-1)[a]	1 (0-2)[b]	0 (0-1)[b]	**<0.001*****	**0.133*****	3 (0-6)[a]	4 (1-8)[b]	5 (3-10)[b]	**<0.001*****	**0.140*****
Poultry	17 (13-20)[a]	18 (14-22)[b]	17 (13-22)[ab]	**0.032***	**0.064***	0 (0-1)[a]	0 (0-2)[b]	1 (0-4)[c]	**<0.001*****	**0.113*****	2.5 (0-6)[a]	5 (1.5-9)[b]	4 (1-8)[b]	**<0.001*****	**0.151*****
Fish	16 (13-20)[a]	17 (14-22)[b]	18 (14-22)[b]	**<0.001*****	**0.099*****	0 (0-1)[a]	0 (0-2)[b]	0 (0-2)[b]	**<0.001*****	**0.112*****	3 (0-6)[a]	4 (1-8)[b]	4 (0-6)[ab]	**<0.001*****	**0.105*****
Processed meat	17 (13-20.5)	17 (13-21)	17 (13-22)	0.571	0.027	0 (0-1)[a]	0 (0-2)[ab]	0 (0-2)[b]	**0.011***	**0.085****	3 (0-6)[a]	5 (0-11)[b]	4 (1-7)[b]	**<0.001*****	**0.102*****
Egg	16 (12-20)[a]	18 (14-22)[b]	16 (12-20.5)[ab]	**<0.001*****	**0.111*****	0 (0-1)[a]	0 (0-2)[b]	0 (0-3.5)[ab]	**<0.001*****	**0.145*****	2 (0-6)[a]	4 (1-7)[b]	7 (3.7-10.2)[c]	**<0.001*****	**0.141*****
Dry legume	17 (13-21)[a]	18 (14-22)[b]	16 (12-20)[ab]	**0.021***	**0.063***	0 (0-1)[a]	0 (0-2)[b]	1 (0-5)[b]	**<0.001*****	**0.111*****	3 (0-6)[a]	4 (1-9)[b]	7 (2-11)[b]	**<0.001*****	**0.150*****
Oil seeds	17 (13-21)	16 (13-20)	17 (14.7-21)	0.539	0.021	0 (0-2)	0 (0-1)	1 (0-2)	0.142	0.049	3 (0-6)[a]	4 (0-8)[b]	4.5 (1.5-11)[b]	**0.002****	**0.094*****
Vegetables and fruits															
Green leafy vegetables	16 (12-20)[a]	17 (14-22)[b]	17 (15-20.5)[ab]	**<0.001*****	**0.103*****	0 (0-1)[a]	0 (0-2)[b]	1 (0-3)[b]	**<0.001*****	**0.146*****	2 (0-6)[a]	4 (1-7)[b]	6 (1-10)[b]	**<0.001*****	**0.129*****
Other vegetables	16 (13-20)[a]	18 (14-22)[b]	16 (14-19)[ab]	**<0.001*****	**0.095*****	0 (0-1)[a]	0 (0-2)[b]	1 (0-3)[ab]	**<0.001*****	**0.138*****	2 (0-6)[a]	4 (1-7)[b]	9 (2-11)[b]	**<0.001*****	**0.116*****
Fresh fruit	16 (12-20)[a]	18 (14-22)[b]	16 (13.5-20)[ab]	**<0.001*****	**0.093*****	0 (0-1)[a]	0 (0-2)[b]	0 (0-2.2)[ab]	**<0.001*****	**0.121*****	2 (0-6)[a]	4 (1-7)[b]	8.5 (4-11)[c]	**<0.001*****	**0.201*****
Dried fruit	16 (13-20)[a]	19 (14.2-22)[b]	18 (14-21.5)[ab]	**<0.001*****	**0.139*****	0 (0-1)[a]	1 (0-3)[b]	1 (0-3)[b]	**<0.001*****	**0.174*****	2 (0-6)[a]	5 (1-8)[b]	5 (2.5-10)[b]	**<0.001*****	**0.150*****

Table 5: The relationship of changes in food consumption with scale scores after the pandemic continued

Nutrients	FCV-19S (Median(Q1-Q3))					CAS (Median(Q1-Q3))					GAD-7 (Median(Q1-Q3))				
	Unchanged	Increased	Decreased	p*	Kendall tau b	Unchanged	Increased	Decreased	p*	Kendall tau b	Unchanged	Increased	Decreased	p*	Kendall tau b
Grains															
Bread	17 (13-21)	17 (14-21)	17 (12-21)	0.158	0.022	0 (0-1.5)	0 (0-2)	0 (0-2)	0.126	0.052	2 (0-6)^{b}	5 (2-11)^{a}	3 (0-7)^{b}	**<0.001*****	**0.093*****
Rice, bulgur, pasta	17 (13-21)	17 (13.5-21)	17 (12.2-21)	0.605	0.021	0 (0-2)	0 (0-2)	0 (0-2)	0.350	0.040	2 (0-6)^{a}	5 (2-11)^{b}	4.5 (1-9)^{b}	**<0.001*****	**0.168*****
Cake, cookies	16 (13-20)	17 (14-21)	17 (12-22)	0.062	0.049	0 (0-1)^{a}	0 (0-2)^{b}	0 (0-2)^{b}	**<0.001*****	**0.111*****	2 (0-6)^{a}	5 (2-9)^{b}	3 (0-8)^{c}	**<0.001*****	**0.165*****
Sweet	16 (13-20)^{a}	18 (14-21.5)^{b}	17 (13-21)^{ab}	**0.027***	**0.057***	0 (0-1)^{a}	0 (0-2)^{b}	0 (0-2)^{b}	**<0.001*****	**0.096****	2 (0-6)^{b}	5 (2-9)^{a}	3 (0-6)^{b}	**<0.001*****	**0.124*****
Beverages															
Tea	16 (13-20)^{a}	17 (14-21)^{b}	17 (12-21.5)^{b}	**0.033***	**0.061***	0 (0-1)^{a}	0 (0-2)^{b}	0 (0-2)^{b}	**0.005****	**0.079****	2 (0-6)^{a}	4 (1-8)^{b}	5 (0.5-9)^{b}	**<0.001*****	**0.184*****
Coffee	17 (13-20.2)	17 (14-21)	16 (12-21)	0.133	0.034	0 (0-1)^{a}	0 (0-2)^{b}	0 (0-2)^{b}	**0.003****	**0.098****	2 (0-6)^{a}	5 (2-8)^{b}	4 (1.5-9)^{b}	**<0.001*****	**0.200*****
Water	16 (13-20.2)^{a}	17 (13-21)^{b}	18 (14-21)^{ab}	**0.040***	**0.065***	0 (0-1)^{a}	0 (0-2)^{b}	0 (0-2)^{ab}	**0.006****	**0.091****	2 (0-6)^{a}	4 (1-7)^{b}	5 (2-9)^{c}	**<0.001*****	**0.127*****
Beverages containing sugar and sweeteners	16 (13-20)^{a}	17 (14-21)^{ab}	17 (14-22)^{b}	**0.006****	**0.082****	(0-1)^{a}	0 (0-2)^{b}	0 (0-2)^{b}	**<0.001*****	**0.148*****	2 (0-6)^{a}	6 (2-9.5)^{b}	4 (0-7)^{c}	**<0.001*****	**0.110*****
Fast food	16 (13-20)^{a}	17.5 (13-20)^{ab}	17 (13.5-21)^{b}	**0.024***	**0.070****	0 (0-1)^{a}	0 (0-2)^{ab}	0 (0-2)^{b}	**<0.001*****	**0.112*****	2 (0-6)^{a}	6 (1.2-11)^{b}	3 (1-7)^{c}	**<0.001*****	**0.118*****
Salty snacks	17 (13-20)	17 (13-21)	17 (13-22)	0.129	**0.051***	0 (0-1)^{a}	0 (0-2)^{b}	0 (0-2)^{b}	**0.008****	**0.086****	3 (0-7)^{b}	5 (1.2-10.7)^{a}	3 (0-6)^{b}	**<0.001*****	**0.062***
Home cooking	16 (13-20)^{a}	17 (13-21)^{b}	15 (10-22)^{ab}	**0.004****	**0.076****	0 (0-1)^{a}	0 (0-2)^{b}	0 (0-5)^{ab}	**0.003****	**0.098****	1 (0-5)^{a}	4 (1-8)^{b}	7 (0-11)^{ab}	**<0.001*****	**0.182*****

CAS: Coronavirus Anxiety Scale, FCV-19S: Fear of COVID-19 Scale, GAD-7: Generalized Anxiety Disorder Test, Values are expressed as median (1st-3rd quartiles). p: All significant p values for the Kruskall Wallis Test are shown in bold. Kendall tau b coefficient is significant at p<0.05 (*), p<0.01 (**), p<0.001 (***). a,b,c: A significant difference exists between groups with different letters.*

Discussion

In our study, we investigated the effect of fear and anxiety during the COVID-19 pandemic on eating habits in adults. The pandemic has caused changes in eating habits.

The immune system reacts to protect the body against viral infections and nutritional supplements can improve immunity and have anti-inflammatory effects (22). Antioxidants have been shown to reduce loss of lung function and may be effective in preventing and treating lung diseases in which inflammation is present by reducing oxidative stress (23, 24). It has been shown that individuals used vitamin D and C, multivitamins, fish oil and zinc supplements to increase their immunity during the pandemic (25). Similarly, in our study, 20.8% of participants used nutritional supplements such as multivitamins, vitamin D, vitamin C, magnesium, zinc, and omega-3, and the most effective reason for using nutritional supplements was to boost immunity at 68.4% (Table 1).

Foods are thought to be effective against the COVID-19 virus by supporting immunity thanks to the micronutrients and bioactive compounds they contain, and individuals have turned to seek alternative ways to protect themselves from the pandemic (25, 26). Garlic, vinegar and ginger are thought to have antimicrobial, anti-inflammatory, antioxidant and antiviral properties and thus support immunity (27-29). A study carried out during the pandemic found that 68.9% of participants believed certain foods could help protect against the virus, with garlic, ginger, kefir, and vinegar being the most commonly mentioned (30). In our study, 82.6% of the participants thought that foods such as garlic, vinegar, ginger, pickles, honey, molasses and turmeric were effective in protection against the pandemic (Table 1). Individuals who thought that nutrients were useful in protecting against the pandemic had higher FCV-19S and CAS scale scores (Table 4). This may be explained by the fact that individuals with high fear and anxiety about the pandemic tend to seek alternative ways to protect themselves from the pandemic.

After the COVID-19 pandemic, there was a change in the number of meals of individuals and it was shown that skipping meals decreased and snack consumption increased after the pandemic (31). Mascherini et al. (32) found an increase in breakfast consumption after the pandemic, while Kaya et al. (13) found a decrease in skipping breakfast and an increase in skipping lunch. The reason for skipping meals is generally shown to be lack of time (33), and the increase in time spent at home due to the pandemic may be a reason to reduce skipping meals. In our study, skipping meals in general and skipping breakfast and lunch in particular decreased after the pandemic (Table 2). The decrease in skipping breakfast and lunch may also be due to the increase in the time spent at home due to restrictions, as well as having enough time to eat breakfast and lunch. Snack consumption increased after the pandemic, and this increase was significant for the mid-morning, afternoon and night snacks.

It has been shown that the pandemic may lead to an increase in food consumption (34). The increase in food intake of the individuals in our study may have paralleled with the increase in the number of meals. In addition, with the increase in the time spent at home, more time for cooking, exposure to more food-related stimuli and boredom may have increased food intake. Increased fear of COVID-19 has been shown to cause an increase in food intake (35). In our study, participants who reported an increase in overall food consumption after the pandemic exhibited higher FCV-19S scores compared to those with unchanged eating habits, suggesting that pandemic-related fear may be associated with increased food intake (Table 4). After the pandemic, there was a change in the shopping preferences of individuals, while online shopping increased due to the fear of contracting the virus, the increasing number of cases and the fear and anxiety for COVID-19 led to a decrease in grocery and market shopping (34, 36). In our study, when the online shopping frequency of individuals was questioned, it was observed that there was a significant decrease in the frequency expressed as ‘once a month’ and a significant increase in the frequency expressed as ‘2-3 days a week’ (Table 3). In our study, FCV-19S scale scores did not have a significant effect on the increase in online shopping after the pandemic, and CAS and GAD-7 scale scores had different results. After

the pandemic, it was observed that CAS scores were higher in individuals who decreased their online food shopping compared to individuals who did not change their online food shopping, and GAD-7 scores of individuals who increased their online shopping were higher than individuals who did not change their online food shopping (Table 4). These observed changes in online food shopping behaviour can be explained by the Health Belief Model (HBM), which suggests that health-related behaviours are influenced by individuals' perceptions of their susceptibility to, and the severity of, a health threat, as well as the perceived benefits and barriers of taking action. (37) In this context, an increased perception of susceptibility to and severity of a potential infection from the COVID-19 may encourage online shopping by increasing the perceived benefits of avoiding crowded environments, while perceived barriers, such as concerns about virus contamination from delivered products, may inhibit this behaviour.

It has been shown that consumption of home-cooked meals increased after the pandemic and eating meals outside the home decreased after the pandemic (38). In our study, FCV-19S and GAD-7 scores were found to be higher in individuals who decreased their consumption of meals outside the home after the pandemic compared to individuals who did not change their consumption (Table 4). This supports the idea that an increase in fear and anxiety may be associated with a decrease in consumption of meals outside the home after the pandemic.

During the pandemic, the consumption of packaged foods increased instead of openly sold products because they were thought to be safer, and an increase in COVID-19 phobia mediated this situation (39). In our study, GAD-7 scores were higher in individuals with increased consumption of packaged food. FCV-19S scores were higher in individuals whose consumption of packaged food increased compared to those whose consumption did not change, and lower in individuals whose consumption decreased (Table 4). In other words, higher levels of fear and anxiety were associated with increased packaged food consumption, while lower fear scores were associated with decreased consumption. This correlation may reflect a tendency to prefer packaged foods due to concerns about the safety of openly sold products.

It has been revealed that junk food consumption increased after the pandemic and the increase was caused by high anxiety levels (40). Increased general anxiety may increase junk food and fast food consumption (8). However, in our study, CAS scores were found to be higher in individuals with COVID-19 anxiety who reduced their junk food consumption compared to individuals who did not change their consumption (Table 4). Increased COVID-19 anxiety may be associated with reduced their junk food consumption by distancing them from unhealthy eating habits and encouraging them to eat healthier to avoid COVID-19.

After the pandemic, the cleanliness of the products purchased has become more important and there has been an increase in the disinfection of purchased products (39), and it has been shown that FCV-19S scores were higher in individuals who disinfected food after purchasing food and performed practices such as washing vegetables and fruits with vinegar water (13). The fact that COVID-19 virus can be detected on various surfaces even after a few days may have encouraged taking precautions against virus infection from surfaces. In our study, FCV-19S, CAS and GAD-7 scores were higher in individuals who applied different cleaning procedures when purchasing food (Table 4).

Stress has been linked to a rise in the consumption of unhealthy foods and a decline in healthy food intake, while emotions like sadness and fear have been connected to a reduced appetite (6, 41). In women, anxiety has been shown to be associated with higher energy and fat intake, while stress has been shown to be associated with more snack consumption and more frequent consumption of sweets and fast food and less consumption of vegetables, fruits and meat (7, 8, 42). Fear and anxiety during the pandemic also affected dietary habits. In their study, Kowalczuk and Gębski (34) showed that the consumption of cereal products, fruits, vegetable oils, eggs, meat, fish, sweets, sugar, water, soft drinks increased the most in individuals who were very afraid of COVID-19, but the consumption of soft drinks, vegetable oils, dairy products and snacks decreased the most in this group; while the consumption of eggs, meat and

fish decreased in the group with moderate fear of COVID-19, while the consumption of sweets and animal fat increased. Kaya et al. (13) showed that individuals with high FCV-19S scores increased consumption of yogurt, cheese, kefir and water, and decreased consumption of oilseeds, rice-pasta and coffee. Fear of COVID-19 has been found to be related to healthier eating habits as well as unhealthier eating habits (43). Chopra et al. (44) showed that 70% of the participants tried not to consume high-fat, sugary and salty foods and sugary drinks regularly after the pandemic. In our study, FCV-19S scores of individuals who increased their consumption of yogurt, cheese, red meat, poultry, eggs, legumes, green leafy vegetables, other vegetables, fresh fruits, dried fruits, desserts, homemade meals, and decreased their consumption of fast food and beverages containing sugar and sweeteners were higher than those of individuals who did not change their consumption (Table 5). Individuals who were more afraid of COVID-19 may tend to consume less fast food and beverages containing sugar and sweeteners to protect their health.

Studies have indicated that individuals experiencing moderate to high anxiety levels during the pandemic tended to reduce their intake of seafood, raw foods, and imported fresh products; that COVID-19-related anxiety was linked to lower dietary diversity; and that increased consumption of sweet and salty snacks during quarantine was associated with heightened anxiety (14, 45). Matsungo (46) showed that consumption of vegetables and fruits, meat products, cereals, legumes, oilseeds, dairy products, eggs decreased in individuals with GAD-7 symptoms during the pandemic process compared to less anxious individuals; according to Kaya et al. (13), individuals with elevated GAD-7 scores altered their intake of cheese, legumes, and oilseeds, and reported increased consumption of cakes, cookies, desserts, and tea. In our study, participants who increased their intake of bread, sweet, and salty snacks exhibited higher GAD-7 scores compared to those who either maintained or reduced their consumption. Individuals with high GAD-7 scores increased their consumption of cakes, cookies, fast food and drinks containing sugar and sweeteners and decreased their consumption of eggs, fresh fruits and water (Table 5). After the pandemic, individuals who increased their consumption of yogurt, cheese, eggs, other vegetables, fresh fruits, home-cooked meals and decreased their consumption of processed meat and fast food had higher CAS scores than those who did not change their consumption. Individuals who increased kefir consumption had higher CAS scores than those who did not change their consumption and those who decreased their consumption (Table 5). The effect of general anxiety on nutrition and the effect of anxiety felt specifically due to COVID 19 disease on nutrition may be different. Having higher anxiety about COVID-19 may be related to trying to gain immunity against the disease by not consuming unhealthy foods. While general anxiety is generally associated with individuals increasing their consumption of unhealthy foods such as cakes, cookies, sweets, fast food, salty snacks, and drinks containing sugar or sweeteners; fear and anxiety about COVID-19 have been found to be associated with individuals increasing their consumption of healthy foods such as dairy products, meat, eggs, legumes, vegetables, and fruits, and decreasing their consumption of unhealthy foods such as fast food, processed meat, and beverages containing sugar or sweeteners. This situation is consistent with the concept of emotional eating, whereby stress and anxiety encourage the consumption of energy-dense, palatable foods (3,5). It also shows that fear, especially related to the pandemic, can motivate protective eating behaviors aimed at strengthening immunity (10,13). Thus, the presence of both healthy and unhealthy eating behaviors in our sample reflects the influence of different types of anxiety and coping strategies.

Our findings are largely consistent with those of previous studies that have examined the impact of the pandemic and psychological factors on eating behaviours. Importantly, our study provides new insights by showing that fear and anxiety specifically related to the pandemic are associated with increased consumption of healthy foods, whereas general anxiety tends to be associated with higher intake of unhealthy foods. This distinction highlights the complex and sometimes contradictory effects that different types of anxiety can have on dietary habits, and emphasises the

importance of considering these nuances when designing strategies to promote healthy eating during pandemics.

The strengths of our study are that it was conducted with a large population and included a combination of the CAS, FCV-19S, which measures coronavirus anxiety and fear, and the GAD-7 test, which measures general anxiety. The limitations of our study include the fact that the data collection process included changes such as the discovery of the COVID-19 vaccine and the reduction of pandemic measures and then the reintroduction of stricter measures; the fact that the study was conducted online; the risk of recall bias due to self-reporting; and the inability to establish a causal link due to its cross-sectional design. Although there is no significant difference, the different gender distributions could be considered a potential limitation.

Conclusion

The fear and anxiety experienced by individuals due to the pandemic had both positive and negative consequences on nutrition. Awareness of healthy nutrition should be increased in order to prevent negative effects and reinforce positive effects. In order to maintain healthy eating habits during pandemics, it is important to evaluate the effects of psychological factors experienced in this process on nutrition and to provide information on healthy nutrition with reliable information sources. In this context, integrated nutrition and mental health interventions could be beneficial to support individuals in maintaining healthy dietary behaviors during pandemics.

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