

Post Traumatic Stress Disorder and Food Preferences: Earthquake Disaster of the Century

Travma Sonrası Stres Bozukluğu ve Besin Tercihleri: Yüzyılın Deprem Felaketi

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ABSTRACT

Post-traumatic stress disorder (PTSD) is a psychiatric condition that may develop after traumatic events such as earthquakes, which significantly impact public health and eating habits. Stress and emotional responses like tension and excitement are closely linked to changes in eating behaviors. Eating behaviour is linked to mental health and chronic diseases. This study aimed to evaluate post-earthquake food choices, PTSD prevalence, and changes in food preferences among individuals with PTSD. A cross-sectional online survey was conducted among 250 students who experienced twin earthquakes. Sociodemographic characteristics, eating habit changes, food preferences, and PTSD status were assessed. The mean age of participants was 21.33±2.0 years; 82% were female, and 84.2% were in Gaziantep during the earthquakes. PTSD prevalence was 42%. Female gender, physical injury, loss of relatives, staying outside the home, prior psychiatric history, and changes in food preferences were more common in individuals with PTSD. Participants with PTSD reported appetite changes, increased consumption of packaged foods, carbohydrates, tea, and coffee, and decreased intake of vegetables, meat, and protein-rich foods. In contrast, no dietary changes were noted in individuals without PTSD. This study underscores the importance of adequate and balanced nutrition in disaster victims for improving mental health. Longitudinal research is needed to further explore these relationships. Collaborative monitoring by psychiatrists and dietitians could help mitigate public health risks and improve outcomes for individuals with PTSD.

Keywords: Post traumatic stress disorders, Nutrition preferences, Nutrition habits, Earthquake, Naturel Disaster

ÖZ

Travma sonrası stres bozukluğu (TSSB) deprem gibi travmatik olaylardan sonra ortaya çıkabilen psikiyatrik bir bozukluktur. Depremler halk sağlığını ve beslenme alışkanlıklarını önemli ölçüde etkilemektedir. İnsanların maruz kaldığı stres, gerginlik, heyecan gibi duygular bireylerin yeme davranışı ile yakından ilişkilidir. Yeme davranışı ruh sağlığı ve kronik hastalıklarla bağlantılıdır. Bu çalışmanın amacı, deprem sonrası besin seçimini, TSSB'nin yaygınlığını ve TSSB olan bireylerde besin tercihlerindeki değişiklikleri belirlemektir. İkiz deprem yaşayan 250 öğrenciyle kesitsel bir çevrimiçi anket yapılarak, sosyodemografik özellikler, yeme alışkanlığı değişiklikleri, yiyecek tercihleri ve TSSB durumu incelendi. Katılımcıların yaş ortalaması 21.33±2.0 yıl olup, %82.0'si kadın ve %84.2'si depremlerin olduğu gün Gaziantep'te bulunmaktaydı. Katılımcıların TSSB prevalansı %42 olarak bulunmuştur. Kadın cinsiyet, deprem nedeniyle fiziksel yaralanma ve yakın kaybı, ev dışında bir yerde barınma, depremden önce tedavi edilen psikiyatrik hastalık öyküsü ve besin tercihlerindeki değişiklikler TSSB olan katılımcılarda daha yüksek bulunmuştur. TSSB olan katılımcıların iştahı artmış veya azalmış, paketli ürün, karbonhidrat grubu besinler, çay ve kahve tüketimi artmış; sebze, et ve proteinle zenginleştirilmiş ürün tüketimi azalmıştır. TSSB olmayanlarda deprem sonrasında herhangi bir değişiklik olmamıştır. Bu çalışma, afetzedelerin ruh sağlığının iyileştirilmesi için yeterli ve dengeli beslenmenin önemini vurgulamaktadır. Bu ilişkileri daha fazla keşfetmek için uzunlamasına araştırmalara ihtiyaç vardır. Psikiyatristler ve diyetisyenler tarafından yapılacak ortak izleme, halk sağlığı risklerinin azaltılmasına ve TSSB'li bireyler için sonuçların iyileştirilmesine yardımcı olabilir.

Anahtar Kelimeler: Travma sonrası stres bozukluğu, Besin tercihleri, Beslenme alışkanlıkları, Deprem, Doğal afet

The study was approved by the local ethics committee of SANKO University (Ethical approval number: 2023/05).

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INTRODUCTION

Earthquakes are among the most destructive natural events in the world. In addition to causing great loss of life, it also affects economic growth, sustainability and quality of life.¹ Besides causing significant loss of life, they also impact economic growth, sustainability, and quality of life. Post-disaster studies indicate that serious psychiatric and medical problems develop in survivors due to exposure to the traumatic event, losses, low community support, and social disorganisation.^{2,3}

An earthquake with an instrumental magnitude (Mw) of 7.8 and a focal depth of 8.6 km occurred at 04:17 am on Monday, February 6, 2023. The epicenter was announced as Pazarcık (Kahramanmaraş) district, occurring in the Sofalaca region about 22 km west-northwest of Gaziantep. After the first earthquake, which severely shook 11 cities for about 86 seconds, a 6.8 magnitude aftershock occurred near Nurdağı district of Gaziantep. As the aftershocks continued, a second earthquake with an instrumental magnitude (Mw) of 7.6 and a focal depth of 7.0 km occurred 9 hours later at 13:24 on the same day in Elbistan (Kahramanmaraş) district. It was felt in a wide area covering Southeastern Anatolia, Eastern Anatolia, Central Anatolia and Mediterranean regions.⁴ These earthquakes, which occurred within a single day, were the largest earthquakes in the history of the Republic of Turkey and had a devastating impact on the region. More than 50,000 people lost their lives⁵ due to harsh weather conditions and disruptions in communication and transportation.⁶

Studies conducted after disasters indicate that acute stress disorder, post-traumatic stress disorder (PTSD), major depression, anxiety disorders, and sleep disorders are among the leading psychiatric disorders in survivors.⁷⁻⁹ PTSD is the most commonly studied and likely the most frequently diagnosed psychiatric disorder following traumatic events.⁸ PTSD seriously disrupts the individual's daily life functions and is often accompanied by depression and anxiety. Traumatic events can be natural disasters such as hurricanes, floods, earthquakes, there may also be human-induced events such as war, traffic accidents, sexual abuse. If left untreated, PTSD can persist for years and cause serious functional and emotional disorders. It can have negative consequences for both the patient and society as a whole.¹⁰ Although the rate of PTSD in individuals after an earthquake varies between 1.2% and 82.6%, a meta-analysis study reported that it was 23.66%.¹¹

It is important to detect possible health risks after earthquakes in advance and to identify the changeable factors that will cause these risks.¹² Earthquakes significantly affect public health and nutritional status.¹³ Poor diet quality may be one pathway linking PTSD with a higher risk of chronic disease development.¹⁴

This study was conducted to evaluate the post-traumatic stress levels and nutritional preferences of students affected by the Kahramanmaraş earthquakes.

MATERIAL AND METHOD

Ethical Aspect of Research

This study is a cross-sectional online survey. It was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the local ethics committee of SANKO University (Ethical approval number: 2023/05). The research population consists of 550 students from the SANKO University Faculty of Health Sciences.

Considering the reference study and the rate of those showing symptoms of PTSD, calculations were made with $\alpha = 0.05$ and power = 0.80 with a deviation of 10 units.¹⁵ The minimum sample size was found to be 159. A pilot study was conducted on 10 people. Pilot study data were also included in the total data. While collecting the data, the Cronbach Alpha coefficient of the Post-

Traumatic Stress Disorder Checklist scale was found to be 0.919, indicating the scale's reliability.¹⁶ Corrections were made to the survey form, which was then finalised. Research data were collected via Google Forms. Consent to participate in the study was obtained through an informed consent form before the questions. The research sample consists of SANKO University Faculty of Health Sciences students who experienced the twin earthquakes in Kahramanmaraş on 6 February 2023. The data were collected in June 2023, approximately four months after the earthquake. The sample size was calculated with G*Power version 3.1.9.4 and the sample was determined as 159 people according to the reference study.¹⁵ This study was completed with 250 volunteers.

The questionnaire consists of three sections, including socio-demographic characteristics, nutritional preferences, and the PTSD Checklist for the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (PCL-5).¹⁷ PTSD Checklist for Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (PCL-5): The Turkish validity and reliability of the PCL-5 was conducted by Boysan et al. in 2017.¹⁸ The scale, consisting of 20 items, evaluates the severity of PTSD symptoms experienced by the individual after a very stressful event. Rating scale descriptors are the same: "Not at all," "A little bit," "Moderately," "Quite a bit," and "Extremely. Each item is scored from 0 to 4, and a total of 0 to 80 points can be obtained. An increase in the score indicates an increase in the severity of post-traumatic stress disorder symptoms. The authors recommend using 47 as a cut-off point to diagnose possible PTSD.¹⁸ In this study, the Cronbach-alpha value of the scale was determined as 0.970.

Post-earthquake food consumption times were collected with open-ended questions and categorized according to response repetition. Participants were asked about the foods they ate for the first time after the earthquake, and the mean and standard deviation were calculated. Participants were also asked about the reasons for their inability to consume food,

and the frequency of these reasons was recorded. The change in food preference was evaluated as increased, decreased, or unchanged after the earthquake.¹⁹

Anthropometric measurements, body weight and height were recorded according to the declaration of the individuals and body mass index (BMI) was calculated by the researcher. Assessment of BMI was performed according to the World Health Organization (WHO) classification.²⁰

Mean and standard deviation or median and minimum-maximum values are given for quantitative variables obtained from the research, and frequency and percentage values are given for qualitative variables. Chi-square test was used to compare categorical variables. In comparing three or more categorical variables, the groups were compared pairwise and the Bonferroni corrected p value was used to determine which group caused the difference. The suitability of quantitative variables for normal distribution was evaluated with the Shapiro-Wilk test. In independent group comparisons; Since the data didn't comply with normal distribution, the Mann Whitney-U test was used. The data obtained from the study were evaluated on a computer using SPSS 23.0 (Statistical Package Program) and $p < 0.05$ was considered statistically significant.

Limitations of the Study

Our current study has some significant limitations. The cross-sectional design of our study, the fact that the PTSD symptoms of the participants were evaluated by self-report questionnaire and the nutritional characteristics were evaluated by questionnaire instead of measurement are limitations of our study. It should also be taken into consideration that our results may be insufficient to represent the broader society, as our study was conducted predominantly in a single city affected by the earthquake. The small number of male participants is another limitation. Additionally, the average age of the participants, their education level, economic status, and the majority of our sample being women could also impact the generalisability

of our findings. Another limitation; this study mainly covers individuals who do not have housing problems. It is thought that the trauma stress levels and food preferences of those who have housing problems may be different.

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RESULTS AND DISCUSSION

This study was completed with 250 students over the age of 18 who were educated at SANKO University and who experienced Kahramanmaraş twin earthquakes.

The mean age of the students participating in the study was 21.33 ± 2.0 years and 82.0% were female. Additionally, 84.2% of the students were in Gaziantep on the day of the earthquakes, while the remaining students experienced them in surrounding cities. 42% of participants were above the PCL-5 cutoff score. Female gender, physical injury and loss of relatives due to the earthquake, sheltering somewhere other than home, history of a psychiatric illness treated before the earthquake and changes in eating habits after the earthquake were found more prevalent in the PTSD group ($p < 0.05$). No statistically difference was found between those with and without PTSD in terms of financial loss ($p > 0.05$).

There was no statistically significant difference between BMI of participants with and without posttraumatic stress disorder

($p > 0.05$). However, there was a statistical difference between the time of food consumption between both groups ($p < 0.05$). A detailed comparison of groups with and without PTSD characteristics is provided in Table 1.

Table 2 shows how many hours after the earthquake the participants ate and the foods they consumed. 137 out of 250 people answered this question. After the earthquake, food consumption was 12.37 ± 12.59 hours later.

The top foods consumed were packaged products (biscuits, crackers, chocolate) with 27.0%, breakfast varieties (cheese, bread, olives) with 25.5%, and 17.5% ate only bread. Additionally, students were questioned about their inability to consume food after the earthquake and the reasons for this. It was observed that 33.2% of the students did not have any problems; however, 40.8% had no desire to eat, and 23.2% had problems due to access to food.

Table 1. Comparison of Groups with and without PTSD

	PCL-5 scores				p
	≤ 46 score (PTSD -)		≥47 score (PTSD +)		
	n	%	n	%	
Gender ^a					
Female	112	54.6	93	45.4	0.021
Male	33	73.3	12	26.7	
Total	145	58.0	105	42.0	
Loss of relatives due to the earthquake^a					
No	65	65.7	34	34.3	0.047
Yes	80	53.0	71	47.0	
Physical injury due to earthquake^a					
No	91	65.5	28	34.5	0.009
Yes	54	49.1	56	50.9	
Type of shelter^a					
Home	145	60.2	96	39.8	0.001
Other (container, tent)	0	0	9	100	
Financial loss (over 100.000 Turkish Liras)^a					
Yes	19	44.2	24	55.8	0.065
No	126	60.9	81	39.1	
A psychiatric illness treated before the earthquake^a					
No	131	61.2	83	38.8	0.012

Table 1. (Continued)

	PCL-5 scores				p
	≤ 46 score (PTSD -)		≥47 score (PTSD +)		
	n	%	n	%	
A psychiatric illness for which you are still being treated^a					
No	140	59.1	97	40.9	0.143
Yes	5	38.5	8	61.5	
Changes in dietary habits after the earthquake^a					
Yes	55	44.0	70	56.0	0.001
No	90	72.0	35	28.0	
BMI categories ^a					
<18.5	22	62.9	13	37.1	0.798
18.5-24.9	99	57.6	73	42.4	
25.0-29.9	21	58.3	15	41.7	
≥ 30	3	42.9	4	57.1	
The time following the earthquake which the first food was consumed (hour)^b (n=137)	Median	(min-max)	Median	(min-max)	
	8	(1-48)	8	(3-96)	0.025

PTSD: Post-traumatic stress disorder, PCL-5: PTSD Checklist for Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, BMI;Body Mass Index a: Chi-square test; b: Mann Whitney U test p<0.05

Table 2. Foods Eaten by the Participants for the First Time and the Time of Food Consumption After the Earthquake

Variables	n	%
Types of foods consumed after the earthquake		
Pastries, bagels, pies	19	13.9
Packaged product	37	27.0
Soup	15	10.9
Breakfast (cheese, olives, bread)	35	25.5
Bread	24	17.5
Home meal	1	0.7
Sweet	2	1.5
Meat, chicken wrap	4	2.9
Inability to consume food		
Consumed	83	33.2
Lack of available food	58	23.2
Financial inadequacy	6	2.4
Lack of appetite for food	102	40.8
Other (Fasting)	1	0.4
How long after the first food was consumed after the earthquake (hour)	Min-Max	$\bar{X} \pm SD$
	1-96	12.37±12.59

In Table 3, the relationship between students' body weight, appetite, number of meals, various food groups/types, and various beverage consumption with the level of traumatic stress disorder in the post-earthquake period is evaluated. No statistical difference was found between the groups with and without PTSD in body weight, fatty

foods, fruit, floury and sugary foods, dried legumes, canned products, desserts and dessert varieties, instant fruit juice, acidic drinks, and water consumption ($p>0.05$) (Table 3). Bonferroni corrected p-values were used in bilateral comparisons to determine which variable caused the difference in appetite, number of meals, consumption of packaged products, carbohydrate group foods, vegetable group foods, meat and meat products, protein-enhanced products, tea, and coffee between the trauma stress level groups (Table 3-continued).

The appetites of those with post-traumatic stress disorder changed in the direction of increased or decreased. Consumption of packaged products, carbohydrate group foods (rice, pasta, bread), tea, and coffee increased; consumption of vegetables, meat, and protein-enhanced products decreased (Table 3-continued). In those without post-traumatic stress disorder, appetite status, consumption of packaged products, vegetables, meat and meat products, carbohydrate foods, protein-enhanced products, tea, and coffee did not change.

This study was conducted to evaluate the post-traumatic stress states, eating habits and nutritional preferences of students affected by the earthquakes that occurred in

Kahramanmaraş, Türkiye on 6 February 2023. The findings obtained from the study were discussed in line with the literature.

PTSD is a mental disorder that is often studied after disasters. Studies show a global PTSD prevalence rate of 23.66% among earthquake survivors, despite the variance from 1.2% to 82.6% in different studies¹¹. In this study, the prevalence of post-traumatic stress disorder was 42% (Table 1). Factors such as the destructiveness of earthquake, the

timing of the studies were conducted after the earthquakes, the different socioeconomic levels of the countries, and the methodological differences used in the studies may cause this wide range. It is thought that the higher prevalence of PTSD in this study compared to previous earthquakes was due to the fact that this was the earthquake that caused the most damage and destruction in Türkiye and the study was conducted shortly after the earthquake

Table 3. Comparison of Groups with and Without PTSD in Terms of Body Weight, Eating Habits and Food Preferences

Variables	PCL-5 scores				p
	≤ 46 score (PTSD-)		≥47 score (PTSD +)		
	n	%	n	%	
Body weight					
Increased	38	26.2	34	32.4	0.079
Decreased	41	28.3	38	36.2	
Unchanged	66	45.5	33	31.4	
Consumption of fatty foods					
Increased	21	14.5	20	19.0	0.284
Decreased	23	15.9	22	21.0	
Unchanged	101	69.7	63	60.0	
Fruit consumption					
Increased	26	17.9	21	20.0	0.126
Decreased	31	21.4	33	31.4	
Unchanged	88	60.7	51	48.6	
Consumption of flour and sugar foods					
Increased	44	30.3	47	44.8	0.064
Decreased	20	13.8	12	11.4	
Unchanged	81	55.9	46	43.8	
Consumption of legumes					
Increased	19	13.1	19	18.1	0.093
Decreased	19	13.1	22	21.0	
Unchanged	107	73.8	64	61.0	
Consumption of canned products					
Increased	15	10.3	17	16.2	0.062
Decreased	12	8.3	16	15.2	
Unchanged	118	81.4	72	68.6	
Consumption of desserts and sweets					
Increased	42	29.0	42	40.0	0.080
Decreased	26	17.9	22	21.0	
Unchanged	77	53.1	41	39.0	
Consumption of water					
Increased	69	47.6	47	44.8	0.058
Decreased	15	10.3	22	21.0	
Unchanged	61	42.1	36	34.3	
Consumption of fruit juice					
Increased	27	18.6	32	30.5	0.057
Decreased	19	13.1	16	15.2	
Unchanged	99	68.3	57	54.3	
Consumption of acidic beverages					
Increased	26	17.9	27	25.7	0.250
Decreased	25	17.2	20	19.0	
Unchanged	94	64.8	58	55.2	

Chi-square test; p<0.05

In our study, PTSD was found to be higher in female gender, those who lost loved ones due to the earthquake, those who had physical injuries due to the earthquake, those living in out-of-home residences, and those with a psychiatric disease that was treated before the earthquake, compared to the group without PTSD. There was no statistically significant difference between the groups with and without PTSD in terms of financial losses of the participants (Table 1). Female gender,^{10, 21-23} loss of loved ones due to earthquake,^{10, 22-24} home loss, change of residence,²²⁻²⁴ serious financial loss and family internal conflicts,²³ past traumatic experience and depression,²³ direct witnessing of events in adolescents,¹⁰ low social support and being elderly²¹ have been reported as risk for PTSD. High fear of

earthquakes, low education level and living in a rented house are also linked to the emergence of traumatic stress symptoms.²² Factors affecting PTSD also vary in regions that suffered severe or moderate earthquake damage. In areas heavily damaged after the 2008 Wenchuan earthquake in China, being in a temporary residence or shelter after an earthquake, having no income, having a death in the family, or losing a home are risks for PTSD. In moderately damaged areas, it has been reported that lack of income, having debt or credit, and loss of home and farmland increase the risk for PTSD.²⁴ In another study conducted after the 2008 Wenchuan earthquake in China, it was reported that property loss and home damage did not have a significant effect on the increased risk of PTSD.

Table 3-continued. Comparison of groups with and without PTSD in terms of body weight, eating habits and food preferences

Variables	PCL-5 scores				p
	≤ 46 score (PTSD -)		≥47 score (PTSD +)		
	n	%	n	%	
Appetite					
Increased	29	20.0	34	32.4	0.001
Decreased	45	31	44	41.9	
Unchanged	71	49	27	25.7	
Number of meal					
Increased	25	17.2	24	22.9	0.046
Decreased	39	26.9	39	37.1	
Unchanged	81	55.9	42	40.0	
Consumption of packaged products					
Increased	55	37.9	61	58.1	0.006
Decreased	21	14.5	12	11.4	
Unchanged	69	47.6	32	30.5	
Consumption of carbohydrate group foods (Rice, pasta, bread)					
Increased	48	33.1	48	45.7	0.036
Decreased	15	10.3	15	14.3	
Unchanged	82	56.6	42	40.0	
Consumption of vegetables					
Increased	20	13.8	12	11.4	0.004
Decreased	28	19.3	40	38.1	
Unchanged	97	66.9	53	50.5	
Consumption of meat and meat products					
Increased	22	15.2	12	11.4	0.006
Decreased	17	11.7	29	27.6	
Unchanged	106	73.1	64	61.0	
Consumption of protein-enhanced products					
Increased	19	13.1	13	12.4	0.041
Decreased	12	8.3	20	19.0	
Unchanged	114	78.6	72	68.6	
Consumption of tea					
Increased	40	27.6	42	40.0	0.022
Decreased	12	8.3	14	13.3	
Unchanged	93	64.1	49	46.7	
Consumption of coffee					
Increased	66	45.5	60	57.1	0.020
Decreased	9	6.2	12	11.4	
Unchanged	70	48.3	33	31.5	

PTSD: Post-traumatic stress disorder, PCL-5: PTSD Checklist for Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition Chi-square test; p<0.05

There are differences in studies on the effect of financial loss on PTSD. In our study, financial loss was not different in the groups with and without PTSD. The sample size and the fact that our sample consisted of young participants may have caused this result. Young adults, who do not have financial concerns and do not have the responsibility of meeting the needs of the household, may not have their stress status affected (Table 1). It is difficult to compare the results of studies due to differences in the intensity of earthquakes, extent of damage, time since the earthquake, sampling methods and measures used.²⁵

It has also been suggested that there is a bidirectional relationship between depression and obesity, with increasing depression severity leading to an increase BMI, and increasing BMI leading to an increase in depression severity.²⁶ The lack of association in this study was attributed to the number of BMI groups. Damage to food systems by natural disasters and destruction of food source infrastructure can threaten people's food security.²⁷ In this study, the average post-earthquake food consumption was found to be 12.37 ± 12.59 hours, and 23.2% of participants had problems accessing food (Table 2). It was determined that the first time people with PTSD consumed food was later than those without PTSD. Governments need to focus on themes such as process management, difficulties encountered and coordination in order to ensure food security after all kinds of natural disasters.²⁷

The key considerations for sustaining life and protecting people's health in natural disasters include (1) people getting enough water, (2) getting enough food (primarily energy, then protein and water-soluble vitamins), (3) ensuring that food intake is safe (sanitary), and (4) staying as physically active as possible.²⁸ In this study, no difference was found among the groups in water consumption, which is among the primary needs of individuals (Table 3). Food security is among the factors affecting food consumption after the earthquake in Ecuador in 2016. It has been determined that having moderate or severe food insecurity causes the

consumption of foods with low nutritional value such as rice, oil and sugary drinks, and the consumption of whole grains, vegetables and fruits is low.²⁹ In one study, compared with those without trauma, women with prevalent high PTSD and women with new-onset high PTSD symptoms had 3.3% and 3.6% lower improvements in diet quality at follow-up, respectively.³⁰ Our study was conducted four months after the earthquake and the majority of the participants consisted of people who did not have housing problems and did not have serious financial losses. Therefore, we think that traumatic stress disorder, not food insecurity, may have the potential to affect food choice.

The 2015 Nepal earthquake saw an increase in shops selling snack foods, and the provision of snack foods as part of emergency relief caused a change in individuals' food preferences. It has been suggested that efforts should be made to promote the consumption of healthy foods, especially fruits and vegetables, including post-disaster humanitarian aid.³¹ In our study, it was determined that packaged foods were the first food consumed at the highest rate after the earthquake (Table 3-continued). It was determined that there was higher in the consumption of packaged products in those with PTSD group.

Psychological status after the earthquake has been associated with low intake frequency of certain nutrients.³² In a study conducted after the Nepal earthquake, it was reported that the degree of emotional eating was high in women with an increase in overeating.³³ In this study, those with high post-traumatic stress levels reported that their eating habits changed after the earthquake (Table 3-continued). People with PTSD had increased or decreased appetite and consumption of packaged products, carbohydrate group foods (rice, pasta, bread), tea and coffee, while the consumption of vegetables, meat and protein-enhanced products has decreased. There was no change in those without PTSD after the earthquake. The lack of the amount of consumption by individuals in this study is a limitation of the study (Table 3-continued).

Psychological problems in individuals evaluated after the Great East Japan Earthquake were associated with the insufficient frequency of consumption of foods such as fish, meat, vegetables, fruits, milk and yoghurt, and this relationship was observed predominantly in women.³² Post-disaster mental health and nutrition patterns were investigated longitudinally in elderly survivors of the 2011 earthquake and tsunami in Japan. Diets in the study; Type 1: high percentage of vegetables, soy products and fruit; Type 2 carbohydrate-rich foods and snacks/confectionery; Type 3 is defined as dietary patterns containing high amounts of alcoholic beverages, meat and seafood. As a result of the study, it was observed that individuals with PTSD/depression had a lower rate of applying the Type 1 diet, while individuals with PTSD had a higher rate of applying the Type 2 and 3 diet. In conclusion; It has been reported that disaster victims showing symptoms of PTSD tend to have a less healthy diet nine years later.³² In this study, in parallel with the literature, vegetable consumption decreased in those with high trauma stress levels (Table 3-continued). Anti-inflammatory diets based on vegetables and fruits are reported to be protective³³ and inversely associated with depression risk³⁴ Since the relationship between nutrition and mental health is bidirectional³⁵ one study reported that depressive symptoms affect food choices.³⁶

A study conducted with adult women reported that PTSD symptoms were

associated with an increase in the frequency of fast food and soda consumption.³⁷ In another study, individuals with PTSD consumed significantly less amount of fruit than those without PTSD; however, it was observed that there was no difference in vegetable, caffeine or fast food consumption according to PTSD status.³⁸ In a study of women, PTSD symptoms were associated with increased frequency of fast food and soda consumption as well as unhealthy eating behaviors, but not with increased body mass index (BMI).³⁹ In this study, no difference was observed between the fruit, soda and trauma stress level groups. It was observed that the tea and coffee consumption of those with PTSD increased, and the consumption of tea and coffee did not change in those without PTSD (Table 3-continued). High doses of caffeine intake may cause psychotic and manic symptoms and more commonly anxiety.⁴⁰ The lack of the amount of consumption by individuals in this study is a limitation of the study.

In the study conducted by Şanlıer&Yabancı¹³ after the Marmara earthquake, it was found that those affected by the earthquake were deficient in micronutrient intake. It has been argued that stress and financial difficulties may also affect food intake.¹³ This study found that the food preferences of people with post-traumatic stress disorder differ from those before the traumatic event. There is a need to evaluate the nutritional status of individuals with PTSD and monitor whether their needs are met.

CONCLUSION AND RECOMMENDATIONS

Epidemiological studies of disaster nutritional status can pose many technical challenges, such as impeded access to victims and affected areas, broader ethical challenges, limited time to collect data after expected disasters, and the unreliability of delayed self-reports, all of which can limit the evidence. In terms of public health after natural disasters, it is very important to ensure the food security of individuals and to meet the needs of those living in difficult conditions. Adequate and balanced nutrition of the individual will also contribute to a better mood. Participants with

PTSD showed changes in appetite, with increased consumption of packaged foods, carbohydrate foods, tea and coffee, and decreased consumption of vegetables, meat and protein-enriched foods. The presence of dietary changes in those with PTSD after the earthquake suggests that stress may affect eating habits and food preferences. These findings suggest the need for an interdisciplinary focus on physical and mental health to improve health outcomes. Monitoring individuals with PTSD with a team work consisting of psychiatrists and

dietitians may prevent possible problems in terms of public health.

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