H.Ü. Sağlık Bilimleri Fakültesi Dergisi
Cilt: 12, Sayı: 3, 2025
Doi: 10.21020/husbfd.1642035

Özgün Araştırma

2023 Türkiye Depremi Sonrası: Yaşam Koşulları Besin Alımını ve Seçimini Nasıl Etkiledi?

Berna Madalı[1], Zeynep Acar[2]

Gönderim Tarihi: 18 Şubat, 2025 **Kabul Tarihi:** 30 Temmuz, 2025 **Basım Tarihi:** 31 Aralık, 2025

Özet

Amaç: Deprem gibi doğal afetlerin artan sıklığı ve şiddeti, hayatta kalanların yaşam koşullarını ve beslenme alışkanlıklarını önemli ölçüde etkilemektedir. Bu çalışma, depremzedelerin geçici barınma alanlarında (GBA) veya ev koşullarında (EK) yaşamalarına göre beslenme durumlarını değerlendirmeyi, stres seviyelerini ve besin seçimlerini incelemeyi amaçlamaktadır.
Gereç ve Yöntem: Çalışmaya Hatay'dan toplam 339 depremzede katılmıştır. Sosyodemografik özellikler, depremle ilgili deneyimler ve beslenme alışkanlıkları değerlendirilmiştir. 24 saatlik geriye dönük besin tüketim kaydı, antropometrik ölçümler (vücut ağırlığı, boy, bel ve kalça çevresi), Travma Sonrası Stres Ölçeği ve Besin Seçim Anketi araştırmacılar tarafından uygulanmıştır. Besin gruplarına göre bireylerin kendi bildirdiği tüketim değişiklikleri değerlendirilmiştir.
Bulgular: Yaş ortalaması 34,1±13,3 yıl olan katılımcıların %63,4'ü kadındır. Depremzedelerin GBA ve EK'da yaşamalarına göre enerji alımlarının sırasıyla ortalama 641,8±389,77 kkal ve 726,4±339,75 kkal olduğu bulunmuştur. Bireylerin yaşadıkları yerden bağımsız TÜBER 2022'ye göre günlük besin ögesi gereksinimlerini karşılama oranlarının %50'nin altında olduğu görülmüştür. Sadece A vitamini alımlarının yeterli oranlarda (EK; %84,0 ve GBA; %67,9) olduğu bulunmuştur. GBA'da yaşayan bireyler, posa hariç tüm besin öğelerinden daha az tüketmiştir. Deprem sonrası dönemde, deprem öncesine kıyasla tüketiminde en fazla azalmanın sebze ve meyveler olduğu bildirilmiştir. Stres düzeyleri, GBA'da yaşayanlarda anlamlı derecede daha yüksek bulunmuştur (p=0,002). Besin seçimlerinde "duyusal çekicilik" ve "sağlık" öncelikli faktörler olarak belirtmişlerdir. Ancak "fiyat" GBA grubundakiler için EK grubuna kıyasla daha etkili bir faktör olarak belirlenmiştir (sırasıyla;2,6±0,97 ve 2,3±0,81).
Sonuç: Çalışma, acil durum ve afetler için beslenme politikaları geliştirilirken yalnızca fizyolojik gereksinimlerin değil, aynı zamanda bireylerin öznel besin kalitesine yönelik algılarının da dikkate alınması gerektiğini vurgulamaktadır. Yaşam koşullarındaki değişiklikler, stresi artırarak besin alımını olumsuz etkilemektedir.

Anahtar Kelimeler: *Deprem, besin alımı, besin seçimi, afet, stres.*

[1]**Berna Madalı (Sorumlu Yazar).** (Necmettin Erbakan Üniversitesi, Beslenme ve Diyetetik Bölümü, Konya, Türkiye, Telefon: +90 (332) 2212087, e-posta: bmadali@erbakan.edu.tr, ORCID: 0000-0002-3917-5874)
[2]**Zeynep Acar.** (Necmettin Erbakan Üniversitesi, Beslenme ve Diyetetik Bölümü, Konya, Türkiye, Telefon: +90 (332) 2212087, e-posta: zeynepacar1029@gmail.com, ORCID: 0009-0002-2533-4026)
*Bu çalışma, XI. Uluslararası Beslenme ve Diyetetik Kongresi'nde (2024) "Depremzedelerin Besin Seçimleri ve Beslenme Durumlarının Değerlendirilmesi" başlıklı bir poster olarak sunulmuştur.

H.Ü. Sağlık Bilimleri Fakültesi Dergisi
Cilt: 12, Sayı: 3, 2025
Doi: 10.21020/husbfd.1642035

Original Research

After the 2023 Türkiye Earthquake: How Living Conditions Affected Food Intake and Food Choices

Berna Madalı[1], Zeynep Acar[2]

Submission Date: February 18th, 2025 **Acceptance Date:** July 30th, 2025 **Pub. Date:** December 31st, 2025

Abstract

Objectives: The increasing frequency and severity of natural disasters, such as earthquakes, significantly impact survivors' living conditions and dietary habits. This study aimed to assess the nutritional status of earthquake survivors based on their living in temporary shelters (LTS) or living in home conditions (LHC), evaluate stress levels, and food choices.
Materials and Methods: A total of 339 earthquake survivors from Hatay participated. Sociodemographic characteristics, earthquake-related experiences, and dietary habits were assessed through questionnaires. A 24-hour dietary recall, anthropometric measurements (weight, height, waist and hip circumference), the Post-Traumatic Stress Scale, and the Food Choice Questionnaire were administered by the researchers. Self-reported changes in food consumption across food groups were also analyzed.
Results: The participants had a mean age of 34.1±13.3 years, and 63.4% were female. The average daily energy intake of earthquake survivors living in LTS and LHC was found to be 641,8±389,77 kcal and 726,4±339,75 kcal, respectively. Regardless of residence, the proportion of individuals meeting daily nutrient requirements according to TÜBER 2022 was below 50%. Only vitamin A intake was found to be adequate (LHC; 84,0% and LTS; 67.9%). Individuals living in LTSs consumed significantly lower amounts of all nutrients except fiber. In the post-earthquake period, the greatest decrease in consumption compared to pre-earthquake levels was reported for fruits and vegetables. Stress levels were significantly higher among those living in LTSs (p=0.002). "Sensory appeal" and "health" were stated as the primary factors influencing food choices. However, "price" was identified as a more influential factor among LTS residents compared to those in LHC (2.6±0.97 vs. 2.3±0.81, respectively).
Conclusion: The study highlights the need to consider not only physiological requirements but also subjective food quality when developing nutrition policies for emergency and disaster situations. Changes in living environments exacerbated stress and disrupt dietary intake.

Keywords: *Earthquake, food intake, food choice, disaster, stress*

[1]**Berna Madalı (Corresponding Author).** (Necmettin Erbakan University, Department of Nutrition and Dietetics, Konya, Türkiye, Phone: +90 (332) 2212087, e-mail: bmadali@erbakan.edu.tr, ORCID: 0000-0002-3917-5874)
[2]**Zeynep Acar.** (Necmettin Erbakan University, Department of Nutrition and Dietetics, Konya, Türkiye, Phone: +90 (332) 2212087, e-mail: zeynepacar1029@gmail.com, ORCID: 0009-0002-2533-4026)
*This study were presented as a poster titled "Evaluation of Food Choices and Nutritional Status of Earthquake Survivors" at the XI. International Nutrition and Dietetics Congress (2024)

H.Ü. Sağlık Bilimleri Fakültesi Dergisi
Cilt: 12, Sayı: 3, 2025
Doi: 10.21020/husbfd.1642035

Introduction

The February 2023 earthquake in Türkiye, reported as the most severe natural disaster in recent years, had its epicenter in Kahramanmaraş and occurred with magnitudes of Mw 7.7 and Mw 7.6. Both earthquakes affected multiple provinces, including Hatay, Adıyaman, Kahramanmaraş, Adana, Osmaniye, Gaziantep, Malatya, Diyarbakır, Kilis, Şanlıurfa, and Elâzığ (AFAD, 2023). The disaster led to significant challenges such as housing shortages, limited access to food, malnutrition-related energy deficiencies, water scarcity, and difficulties in accessing clean water, all of which contributed to a decline in the quality of life for the affected population.

Post-traumatic stress disorder (PTSD) is a stress and anxiety disorder that arises following exposure to events involving serious injury, death, or physical or sexual violence (Obenaus et al., 2017). The prevalence of PTSD among individuals affected by earthquakes has been reported to range from 4.10% to 67.07% in adults (İlhan et al., 2023). Earthquake-related PTSD, particularly due to its prolonged psychological effects, can impair decision-making abilities, lead to poor choices, and negatively impact dietary habits. Making healthy food choices is crucial in this process to maintain and improve health. However, individuals experiencing trauma may deprioritize their need for food and water due to their psychological state. Studies have shown that during periods of psychological distress, such as stress and depression, individuals tend to prefer certain food groups more frequently (Dabravolskaj et al., 2022; Firth et al., 2020; Gangwisch et al., 2015). In particular, the intense stress caused by lifestyle changes and losses during the COVID-19 pandemic altered eating habits and food preferences within society. Individuals with depression have been reported to favor foods with higher carbohydrate content and processed foods (Özenoğlu, 2018). However, it is essential to consider that traumatic events and the availability of resources in the aftermath can also influence food choices. As a result of the extensive destruction, the collapse of alternative food access points (such as restaurants and supermarkets), limited cooking facilities, and infrastructure problems led to restricted food access, which in turn influenced individuals' food choices.

In recent years, the frequency of natural disasters has increased, leading to significant changes in the living conditions of disaster survivors during the emergency and post-disaster periods. These changes have been linked to alterations in dietary patterns. Despite the recognized importance of addressing the physiological and nutritional requirements of survivors during these periods, a review of the literature revealed no studies investigating the

H.Ü. Sağlık Bilimleri Fakültesi Dergisi
Cilt: 12, Sayı: 3, 2025
Doi: 10.21020/husbfd.1642035

nutritional status and food choices of survivors. While priority is often given to addressing survivors' health status and medical needs in the aftermath of an earthquake, ensuring adequate nutrition can help prevent potential adverse health outcomes. Therefore, the aim of this study is to evaluate the nutritional status of individuals based on living environments after an earthquake, assess the stress levels, and food choices. To the best of our knowledge, this study is the first in Türkiye to conduct a face-to-face assessment of nutritional status in the post-earthquake period, aiming to identify the food groups most frequently preferred by affected individuals.

Materials and Methods

Participants

This cross-sectional study, conducted to assess the nutritional status of individuals affected by the February 2023 Türkiye earthquake, identify factors influencing food choices during this period, and examine their relationship with post-traumatic stress levels, included 339 earthquake survivors residing in Hatay. The study was carried out between December 2023 and February 2024. Inclusion criteria were earthquake survivors aged 18-64 years, literate in Turkish, and experienced the February 2023 earthquake. Exclusion criteria included individuals who were not residing in Hatay at the time of the study or were not citizens of the Republic of Türkiye. Data were collected using face-to-face surveys, and anthropometric measurements were performed by the researcher. All data were reviewed and interpreted by a qualified expert in the field.

The sample size for this study was determined based on the official population data provided by AFAD following the earthquake, utilizing the known population sampling method. Given a population of 926,000 individuals residing in Hatay, the required sample size was calculated using a 90% confidence level ($Z = 1.645$) and a 5% margin of error ($d = 0.05$). The probability of the event occurrence was assumed to be 50% ($p = 0.5$). Based on these parameters, the minimum sample size necessary to ensure statistical significance and representativeness of the population was calculated to be 271.

Ethical approval for the study was obtained from the Scientific Research Ethics Committee of Necmettin Erbakan University, Faculty of Health Sciences (Decision No: 16327, Decision Date: 07.10.2023).

H.Ü. Sağlık Bilimleri Fakültesi Dergisi
Cilt: 12, Sayı: 3, 2025
Doi: 10.21020/husbfd.1642035

Measures

Sociodemographic and Anthropometric Assessments

In the first section of the study, participants were asked about their sociodemographic characteristics including age, gender, marital status, educational level, income level, chronic medical conditions, and smoking and alcohol consumption habits. Data related to the earthquake experience, such as entrapment under rubble, earthquake-related injuries, and current living conditions (e.g., home, container, tent), were also collected. Additionally, participants were asked about dietary-related information (number of main and snack meals consumed per day, meal skipping and its reasons, etc.).

For anthropometric assessments, weight was measured using a regularly calibrated adult scale (sensitivity±0.1 kg) (Polosmart PSC04 digital scale), with participants wearing light clothing, no shoes, and empty pockets. Height was measured with participants standing against a wall, feet together, and head in the Frankfort horizontal plane. The height was marked and measured from the floor using a non-stretchable tape (Pekcan, 2011). Waist, and hip circumferences were measured by the researcher using a non-elastic measuring tape. Body mass index (BMI) was calculated based on the recorded weight and height, and classifications were made in accordance with World Health Organization (WHO) standards (WHO, 2000).

Post-Traumatic Stress Scale

The original scale was developed by Weathers et al. in 1993 based on the DSM-IV criteria (Weathers et al., 2013). The Turkish validity and reliability study was conducted by Kocabaşoğlu et al. (Kocabaşoğlu et al., 2005). The scale consists of 17 items, categorized into three subdimensions: re-experiencing, avoidance, and increased arousal. Items are rated on a five-point Likert scale, ranging from 0 to 4. The total score is obtained by summing the arithmetic means of all items.

Food Choice Questionnaire

The Food Choice Questionnaire, developed by Steptoe et al. in 1995, is used to assess the factors influencing individuals' food choices (Steptoe et al., 1995). The Turkish validity and reliability study was conducted by Dikmen et al. in 2015, with a reported Cronbach's alpha of 0.90, confirming its validity in the Turkish population (Dikmen et al., 2016). In the present study, the reliability of the scale was found to be high (Cronbach’s alpha = 0.94).

The questionnaire consists of 36 items and evaluates food choice determinants across nine subdimensions: health, mood, convenience, sensory appeal, natural content, price, weight control, familiarity, and ethical concern. Participants rate each item on a four-point Likert scale

H.Ü. Sağlık Bilimleri Fakültesi Dergisi
Cilt: 12, Sayı: 3, 2025
Doi: 10.21020/husbfd.1642035

ranging from "Not important" (1 point) to "Very important" (4 points). The total score for each subdimension is obtained by calculating the arithmetic mean, and comparisons are based on these scores.

24-Hour Dietary Recall

Participants' dietary intake was assessed using a 24-hour recall method, conducted face-to-face by the researcher with the aid of a photographic food atlas (Rakıcıoğlu et al., 2010). Dietary data were analyzed using the Computer-Assisted Nutrition Program, Nutrition Information System (BEBIS) to estimate energy and nutrient intake. The percentage of daily energy and micronutrient intake met by earthquake survivors was calculated based on the recommended values from TÜBER 2022, according to age and gender (TUBER, 2022). For macronutrients, the percentage of intake met was calculated using the recommended energy values based on age and gender, and the approximate average values from the reference intake ranges for carbohydrates, protein, and fat provided in TÜBER 2022 (respectively; 55%, 15%, and 30%). In the report, these values are specified as 45-60% for carbohydrates, 10-20% for protein, and 20-35% for fat.

Additionally, changes in food group consumption following the earthquake were evaluated based on self-reported increases or decreases. Food groups were categorized as dairy products (milk, cheese), meat and meat products (red meat, poultry, fish, eggs, legumes), grain products (bread, pasta, rice, pastries, desserts), fruits and vegetables (fresh and frozen produce, dried fruits), beverages (tea, coffee, herbal tea, mineral water, fruit juice, carbonated drinks, alcohol), and fast food items (biscuits, chips, chocolate, ice cream).

Statistical Analysis

The statistical analysis of the study data was performed using IBM SPSS Statistics 25.0. Descriptive statistics, including mean, standard deviation, minimum, and maximum values, were calculated for continuous variables, while categorical variables were summarized using frequency and percentage distributions. The normality of data distribution was assessed to determine the appropriate statistical tests. Non-parametric tests were employed for data that did not meet the normality assumption. The Student’s t-test was used for comparing the means of two independent groups when normality was satisfied, whereas the Mann-Whitney U test was utilized for non-normally distributed data. Statistical significance was determined at $p<0.05$, and all analyses were conducted within a 95% confidence interval to ensure the robustness of the findings.

H.Ü. Sağlık Bilimleri Fakültesi Dergisi
Cilt: 12, Sayı: 3, 2025
Doi: 10.21020/husbfd.1642035

Results

A total of 339 individuals, aged 18 to 65 years, who experienced the February 6, 2023 earthquake and currently reside in Hatay, participated in the study. All participants were literate in Turkish. The socio-demographic characteristics of the earthquake survivors, including gender, age, educational status, body mass index (BMI), injury status, and history of being trapped under debris, are presented in Table 1.

The mean age of the 339 participants was 34.1±13.3 years. The majority of participants were female (63.6%) and married (64.0%). Regarding educational status, 26.5% had completed high school, and 53.1% perceived their economic status as average. According to BMI classifications, 39.6% of participants were categorized as normal weight, 30.8% as overweight, and 25.4% as obese. Additionally, 81.1% of participants reported losing a relative during the earthquake, and 23.6% sustained injuries. Following the earthquake, 65% of participants skipped lunch, with 29% citing lack of hunger as the primary reason.

Table 1. Distribution of Socio-Demographic Characteristics of Earthquake Survivors (n=339).

	n	%
Gender		
Male	123	36,3
Female	215	63,4
Educational Status		
Literate	36	10,6
Primary school	86	25,4
Secondary school	63	18,6
High school	90	26,5
University	62	18,3
Marital Status		
Married	217	64
Single	114	33,6
Divorced	8	2,4
Economic Status		
Income less than expenses	108	31,9
Income equal to expenses	180	53,1
Income greater than expenses	44	13
Chronic Illness		
None	294	86,7
Present	45	13,3
Smoking Status		
Yes	84	24,8
No	253	74,7
Alcohol Consumption		
Never	325	95,9
1-2 times per month	6	1,8
Once a week	2	0,6
4-6 times per week	2	0,6
Every day	1	0,3

H.Ü. Sağlık Bilimleri Fakültesi Dergisi
Cilt: 12, Sayı: 3, 2025
Doi: 10.21020/husbfd.1642035

Table 1. Distribution of Socio-Demographic Characteristics of Earthquake Survivors (n=339) (continued).

	n	**%**
Meal Skipping		
No	79	23,3
Yes	198	58,4
Occasionally	62	18,3
Skipped Meals		
Breakfast	44	13,0
Lunch	222	65
Dinner	11	3,2
Injury during Earthquake		
Yes	80	23,6
No	259	76,4
Trapped under Debris during Earthquake		
Yes	23	6,8
No	316	93,2
Living Situation Post-Earthquake		
Living home conditions	136	40,1
Living temporary shelters	203	59,9
Age	**X±SD** 34,1±13,30 years	**Min.-Max** 18-65 years

In Table 2, the comparison of BMI, waist-to-hip ratio, post-traumatic stress levels (PTSL), and nutrient intakes based on participants' living conditions is presented. LTS were found to have significantly higher BMI values compared to LHC (p=0.040). Furthermore, PTSL for LTS were significantly higher than LHC (p=0.002).

Table 2. Comparison of Post-Traumatic Stress Levels, BMI, and Waist-to-Hip Ratio Based on Participants' Living Conditions.

	Living Conditions		
	LHC	**LTS**	
	X±SD	**X±SD**	***p****
PTSD	3,1±0,09	3,5±0,92	**0,002**
BMI	26,1±6,12	27,0±5,70	**0,040**
Waist-to-Hip Ratio (F)	0,79±0,08	0,81±0,08	0,065
Waist-to-Hip Ratio (M)	0,90±0,05	0,88±0,07	**0,029**

*Non-parametric, Mann-Whitney U test was applied. Statistical significance is given as p<0.05. LHC: Living in Home Conditions, LTS: Living in Temporary Shelters, F: Female, M: Male.

Regarding nutrient intakes, statistically significant differences were observed between the two groups in terms of energy, protein, fat, vitamin A, and calcium intake. Participants in the LHC group had significantly higher mean daily energy (726,4±339,75 kcal vs. 641,8±389,77 kcal, p = 0.007), protein (34,0±22,98 g vs. 28,0±18,83 g, p = 0.025), and fat intake (36,4±19,74 g vs. 30,1±26,48 g, p < 0.001) compared to the LTS group. Vitamin A intake was also significantly greater among the LHC group (561,5±371,91 µg vs. 502,27±447,00 µg, p = 0.031), as was calcium intake (337,1±192,21 mg vs. 275,0±197,64 mg, p < 0.001). No statistically significant differences were found in the intake of carbohydrates, fiber, vitamins E

H.Ü. Sağlık Bilimleri Fakültesi Dergisi
Cilt: 12, Sayı: 3, 2025
Doi: 10.21020/husbfd.1642035

and C, iron, sodium, or potassium between the two groups ($p > 0.05$ for all). In both groups, the percentage of DRI met remained below recommended levels for most nutrients. Notably, mean energy intake met only 39,0% and 34.2% of the DRI in the LHC and LTS groups, respectively. The intake of calcium, iron, fiber, and potassium was particularly inadequate, with both groups achieving less than 40% of the recommended values (Table 3).

Table 3. Comparison of Mean Daily Nutrient Intakes and Percentage of Dietary Reference Intake Met by Living Conditions

	Living Conditions				
	LHC (X±SD)	**LTS (X±SD)**	***p****	**LHC (% DRI Met)**	**LTS (% DRI Met)**
Energy (kcal)	726,4±339,75	641,8±389,77	**0,007**	39,0	34,2
Median	682,9	609,9			
Macronutrients					
Carbohydrates (g)	63,7±39,52	62,8±42,43	0,858	29,8	29,0
Median	56,7	59,7			
Protein (g)	34,0±22,98	28,0±18,83	**0,025**	54,2	44,5
Median	28,7	22,5			
Fat (g)	36,4±19,74	30,1±26,48	**<0,001**	53,9	43,5
Median	34,0	25,8			
Fiber (g)	7,8±5,31	8,0±5,77	0,885	31,4	31,8
Median	7,2	6,8			
Micronutrients					
Vitamin A (µg)	561,5±371,91	502,27±447,00	**0,031**	84,0	67,9
Vitamin E (mg)	5,6±4,79	5,7±6,68	0,706	49,2	48,6
Vitamin C (mg)	75,2±76,32	65,1±61,95	0,339	76,3	64,4
Calcium (mg)	337,1±192,21	275,0±197,64	**<0,001**	35,5	29,0
Iron (mg)	4,0±2,44	3,8±2,88	0,201	30,7	30,0
Sodium (mg)	1002,4±567,56	952,4±758,21	0,094	50,2	47,6
Potassium (mg)	1356,3±812,88	1299,0±824,61	0,490	38,9	37,0

*Non-parametric, Mann-Whitney U test was applied. Statistical significance is given as $p<0.05$. LHC: Living in Home Conditions, LTS: Living in Temporary Shelters, F: Female, M: Male.

In Figure 1, 50% of LHC reported an increase in food intake, while this rate was found to be 40.4% for LTS. The proportion of individuals reporting a decrease in food intake was 45.6% among LHC and 34.5% among LTS. It was determined that LHC experienced more significant changes in their food intake.

H.Ü. Sağlık Bilimleri Fakültesi Dergisi
Cilt: 12, Sayı: 3, 2025
Doi: 10.21020/husbfd.1642035

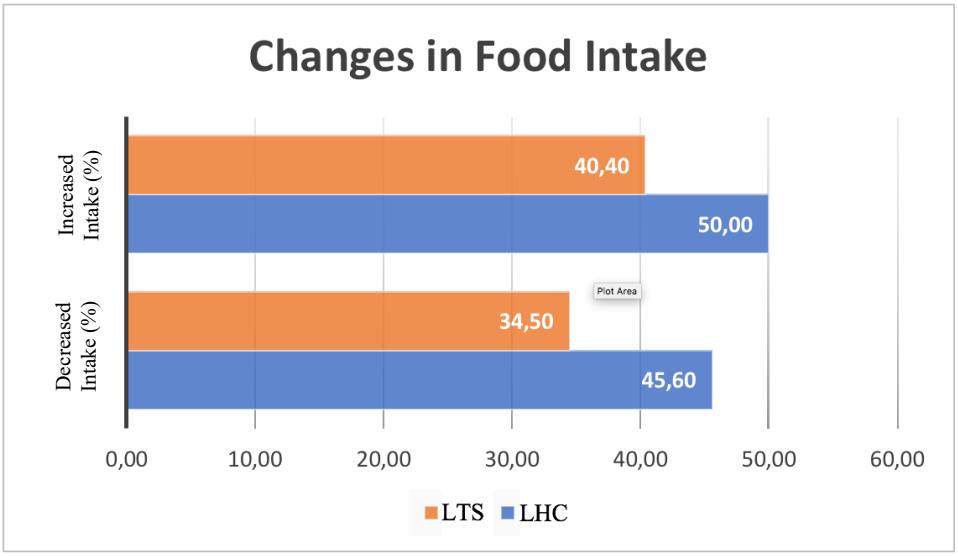

Figure 1. Distribution of the Decrease and Increase in Food Intake Rates among Earthquake Survivors Based on Their Living Conditions (LHC: Living in Home Conditions, LTS: Living in Temporary Shelters).

The figure illustrates changes in food groups consumption among earthquake survivors (Figure 2). Among those reporting a decrease in food intake, a significant reduction in the consumption of fruits and vegetables is particularly evident among LTS. Furthermore, reductions in the consumption of meat and dairy products are common among both LTS and LHC. On the other hand, among those reporting an increase in food intake, a notable rise in the consumption of fast food and beverages is observed. Fast food consumption increased more significantly among LTS, while beverage consumption increased among both LTS and LHC.

H.Ü. Sağlık Bilimleri Fakültesi Dergisi
Cilt: 12, Sayı: 3, 2025
Doi: 10.21020/husbfd.1642035

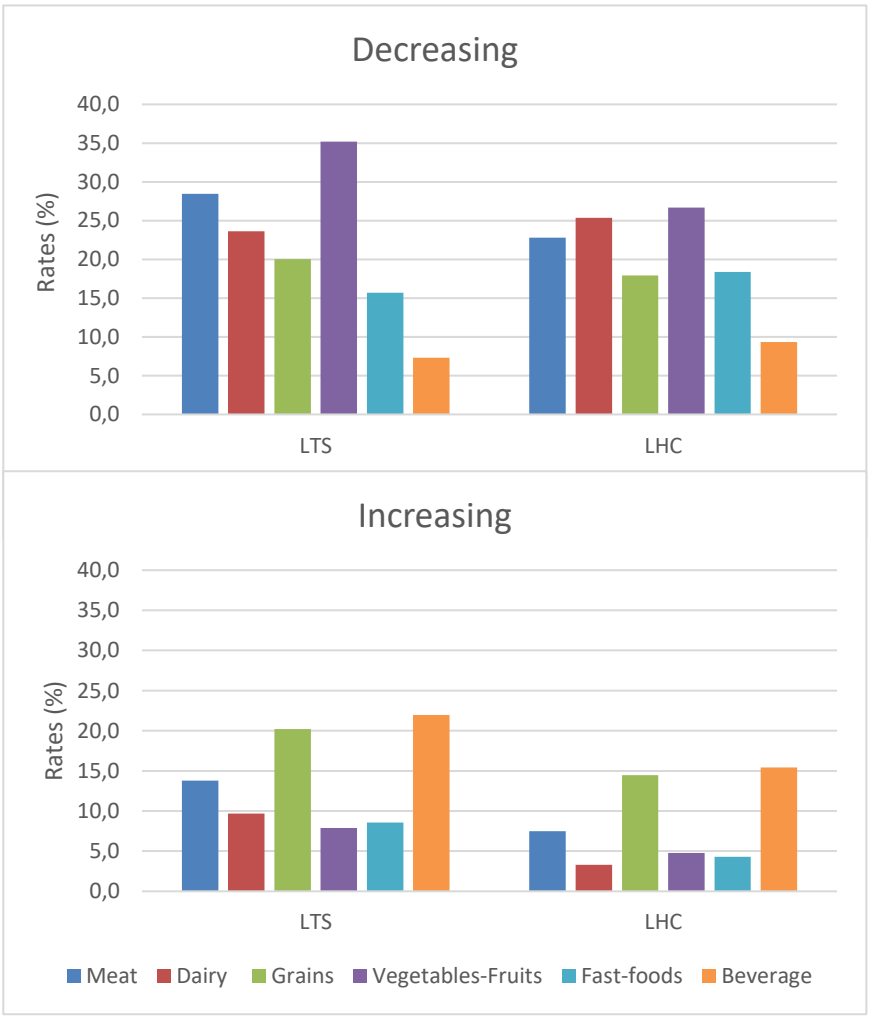

Figure 2. Distribution of the Decrease and Increase Rates in Food Groups among Earthquake Survivors Based on Their Living Conditions (LHC: Living in Home Conditions, LTS: Living in Temporary Shelters).

When evaluating the factors influencing individuals' food choices, “sensory appeal” and “health” were identified as the most important factors for both LHC and LTS. However, for LHC, “natural content” ranked third as an important factor, while for LTS, “mood” was more prominent (Table 4).

Additionally, factors such as “convenience” and “familiarity” were of similar importance for both groups, while a significant difference was observed regarding the “price” ($p<0.05$). For LHC, price was the least important factor (ranked 9th), whereas for LTS, it held a higher priority (ranked 7th).

H.Ü. Sağlık Bilimleri Fakültesi Dergisi
Cilt: 12, Sayı: 3, 2025
Doi: 10.21020/husbfd.1642035

Table 4. Food Choice Motivations of Survivors Based on Their Living Conditions.

Food choice motivations	LHC		LTS	
1.	Sensory Appeal	2,8±0,79	Sensory Appeal	2,8±0,87
2.	Health	2,6±0,75	Health	2,7±0,87
3.	Natural content	2,6±0,90	Mood	2,7±0,85
4.	Mood	2,6±0,74	Convenience	2,7±0,83
5.	Convenience	2,5±0,72	Familiarity	2,6±0,90
6.	Familiarity	2,5±0,86	Natural content	2,6±0,95
7.	Ethical concerns	2,5±0, 84	Price	**2,6±0,97***
8.	Weight control	2,4±0,85	Ethical concerns	2,6±0,91
9.	Price	**2,3±0,81***	Weight control	2,4±0,91

*There is a statistically significant difference between the values highlighted in bold (*p=0,002*). LHC: Living in Home Conditions, LTS: Living in Temporary Shelters.

Discussion and Conclusion

The findings of this study indicate that earthquake survivors, irrespective of LTS or LHC, were largely unable to meet their daily nutritional requirements. LTS, with the exception of carbohydrates, exhibited significantly lower intake levels of most nutrients. Additionally, a notable decline in the consumption of fruits and vegetables and an increase in beverage consumption were observed among the survivors. Both groups, whether LHC or LTS, prioritized "sensory appeal" and "health" in their food choices, while factors such as "ethical concerns," "weight control," and "price" were found to have the least impact on food choices. Furthermore, a significant difference was observed regarding the influence of "price," which had a substantially higher impact on food choices for LTS compared to LHC. These findings suggest that the living conditions, particularly LTS, can significantly alter dietary patterns and food choices in survivors.

The present study revealed that individuals failed to meet the majority of their energy and nutrient requirements. It is important to note that this inadequacy may not solely stem from individual preferences or psychological distress, but also from structural limitations—including restricted food access, limited cooking facilities, and irregular income—particularly prevalent during the first year following the earthquake (Hikichi et al., 2019). Previous studies have shown that post-disaster conditions often lead to significant disruptions in food systems and infrastructure, which in turn reduce individuals' ability to maintain adequate dietary intake (Amagai et al., 2014; Çakır et al., 2024). Damage to homes and the subsequent relocation to temporary shelters can alter individuals' proximity to markets or restaurants, potentially leading to changes in their eating habits. Additionally, living in temporary housing or caravan-style homes can complicate food preparation, thus influencing cooking and meal habits (Hikichi et al., 2019). Moreover, the experience of post-traumatic stress disorder (PTSD) and depression

H.Ü. Sağlık Bilimleri Fakültesi Dergisi
Cilt: 12, Sayı: 3, 2025
Doi: 10.21020/husbfd.1642035

can significantly affect the eating behaviors of survivors (Hall et al., 2015). Both depression and PTSD are linked to unhealthy dietary patterns (Flórez et al., 2015; Van den Berk-Clark et al., 2018). Specifically, LTS with higher stress levels were more likely to report an increase in fast-food consumption, a finding that aligns with the results of this study.

While the factors influencing nutrition post-natural disasters have been reasonably explained in the literature, direct assessments of food intake among disaster survivors during the post-disaster period remain sparse. In a study by Nishi et al. (2013), the nutritional intake of survivors was evaluated 6 to 11 months after the Great East Japan Earthquake and Tsunami. The study identified that individuals enduring economically difficult circumstances exhibited significantly lower consumption of seafood, soy products, fruits, and vegetables. However, the study did not account for the survivors' living conditions or PTSL. In a similar vein, Uemura et al. (2016) conducted an investigation one year after the Great East Japan Earthquake and Tsunami, revealing that PTSD was inversely correlated with the frequency of consumption of staple foods (e.g., rice and bread), fish, meat, vegetables, and dairy products, while it was positively associated with an increased intake of fruit and vegetable juices. The findings of the present study align with these results, as the most notable increase in consumption was observed in beverages. This suggests a potential shift in dietary patterns during post-disaster recovery, further emphasizing the need for interventions targeting the nutritional recovery of affected populations.

In the report on Nutrition Services in Emergency Situations by the Ministry of Health, it is emphasized that, during the initial post-disaster period, non-perishable food items such as bread, cheese, yogurt, olives, grains, eggs, legumes, and canned goods (e.g., meat, fish) should be prioritized, along with tea and sugar. Given the difficulties in accessing clean water for washing fresh produce, the consumption of raw fruits and vegetables is discouraged. Additionally, the provision of hot foods, such as soups and beverages, is recommended for their psychological benefits to survivors. In contrast to the majority of post-disaster nutrition studies, which have typically been conducted at later stages (Nishi et al., 2013; Nozue et al., 2017; Uemura et al., 2016), this study is distinguished by its relatively short timeline post-earthquake. As a result, significant increases in the consumption of grains, beverages, and meats, along with dairy products, were noted among LTS. These findings are in concordance with the Ministry of Health's nutritional guidelines, which advocate for the provision of shelf-stable, easy-to-distribute food items and highlight the decline in the consumption of fresh produce.

H.Ü. Sağlık Bilimleri Fakültesi Dergisi
Cilt: 12, Sayı: 3, 2025
Doi: 10.21020/husbfd.1642035

Collectively, the results affirm that nutritional interventions as specified by the Ministry of Health were successfully implemented, with nutrition assistance reaching LTS.

A cross-cultural review examining food selection factors across various countries identified “sensory appeal,” “health,” and “price” as the most influential determinants in food choice (Cunha et al., 2018). In line with these findings, our study corroborates that “sensory appeal” and “health” remain the predominant factors influencing food choice, irrespective of the individuals’ living conditions. However, the results also indicate that LTS experienced significantly elevated levels of stress, which in turn influenced their food selection patterns. “Mood” was identified as a key determinant of food choice for this group. While no significant statistical differences were observed across other factors, a notable difference emerged with regard to the factor of “price,” with LTS placing greater importance on cost considerations. This is likely due to the more challenging economic circumstances faced by this population, underscoring the importance of affordability as a central determinant in food choice in disaster-stricken environments.

The primary limitation of this study is that dietary intake data were based on self-reported, single-day food records. Although three-day dietary assessments are generally recommended for increased reliability, this was not feasible due to the psychological vulnerability of individuals affected by the earthquake and the inability to access participants at a later time. The high levels of psychological stress experienced by participants may also have contributed to underreporting of food intake. Moreover, it was assumed that individuals residing in the earthquake-affected region had access to food aid packages; however, the specific contents of these packages and the regularity of their distribution were not investigated. Conducting the study in the acute post-disaster period may have triggered negative emotions among participants, limiting their willingness or ability to provide more detailed information.

In conclusion, this study highlights the importance of considering not only individuals' physiological nutritional requirements but also the subjective quality of food choices when developing nutrition plans and policies in response to increasing emergency and disaster situations. Despite the assumption that nutritional assistance was largely provided to LTS, the results indicate that, regardless of their living conditions, earthquake survivors were largely unable to meet their daily nutritional requirements. Furthermore, the study observed that changes in living conditions contributed to increased stress levels among survivors, which, in turn, led to alterations in their food intake. This study was conducted within the first year following the earthquake, and a significant proportion of participants were still living in

temporary shelters. Changes in food consumption across different food groups suggest that LTS had greater access to government-provided food assistance, while LHC experienced shortcomings in this regard. Despite these differences, food choice patterns revealed that survivors still prioritized sensory qualities in food choices. The establishment of alternative food access points, such as markets and temporary restaurants, which offer consumers more choices, is recommended as a strategy to improve food intake among survivors

Acknowledgment

We thank all the participants of this study for their time and effort in this study.

Funding

This research was supported by 2209-A - Research Project Support Programme for Undergraduate Students (Project no: 1919B012332843).

Conflict of Interest

The authors declare no potential conflict of interest.

H.Ü. Sağlık Bilimleri Fakültesi Dergisi
Cilt: 12, Sayı: 3, 2025
Doi: 10.21020/husbfd.1642035

References

Afet ve Acil Durum Müdürlüğü (AFAD). (2023). *06 Şubat 2023 Kahramanmaraş (Pazarcık ve Elbistan) Depremleri Saha Çalışmaları Ön Değerlendirme Raporu*. Ankara. [Online]. Erişim: deprem. afad. gov. tr/assets/pdf/Arazi_Onrapor_28022023_surum1_revize. pdf.

Amagai, T., Ichimaru, S., Tai, M., Ejiri, Y. And Muto, A. (2014). Nutrition in the Great East Japan Earthquake Disaster. *Nutrition in Clinical Practice, 29*(5): 585-594.

Cunha, L. M., Cabral, D., Moura, A. P., & de Almeida, M. D. V. (2018). Application of the Food Choice Questionnaire across cultures: Systematic review of cross-cultural and single country studies. *Food Quality and Preference*, *64*, 21-36.

Çakır, M. A., Mercan, Y., İçyer, N. C., & Bozkurt, F. (2024). Post-disaster food safety and food security: An example of the Türkiye earthquake. *Food Security, 17*(1).

Dabravolskaj, J., Marozoff, S., Maximova, K., Campbell, S., & Veugelers, P. J. (2022). Relationship Between Fruit and Vegetables Intake and Common Mental Disorders in Youth: A Systematic Review. *Public Health Reviews*, *43*, 1604686.

Dikmen, D., İnan-Eroğlu, E., Göktaş, Z., Barut-Uyar, B., & Karabulut, E. (2016). Validation of a Turkish version of the food choice questionnaire. *Food Quality and Preference, 52*, 81-86.

Firth, J., Gangwisch, J. E., Borsini, A., Wootton, R. E., & Mayer, E. A. (2020). Food and mood: how do diet and nutrition affect mental wellbeing? *BMJ*, *369*.

Flórez, K. R., Dubowitz, T., Ghosh-Dastidar, M. B., Beckman, R., & Collins, R. L. (2015). Associations between depressive symptomatology, diet, and body mass index among participants in the supplemental nutrition assistance program. *Journal of the Academy of Nutrition and Dietetics*, *115*(7), 1102-1108.

Gangwisch, J. E., Hale, L., Garcia, L., Malaspina, D., Opler, M. G., Payne, M. E., Lane, D. (2015). High glycemic index diet as a risk factor for depression: analyses from the Women's Health Initiative. *The American Journal of Clinical Nutrition*, *102*(2), 454-463.

Hall, K. S., Hoerster, K. D., & Yancy Jr, W. S. (2015). Post-traumatic stress disorder, physical activity, and eating behaviors. *Epidemiologic Reviews*, *37*(1), 103-115.

Hikichi, H., Aida, J., Kondo, K., Tsuboya, T., & Kawachi, I. (2019). Residential relocation and obesity after a natural disaster: A natural experiment from the 2011 Japan Earthquake and Tsunami. *Scientific Reports*, *9*(1), 374.

İlhan, B., Berikol, G. B., Eroğlu, O., & Deniz, T. (2023). Prevalence and associated risk factors of post-traumatic stress disorder among survivors of the 2023 Turkey earthquake. *The American Journal of Emergency Medicine*, *72*, 39-43.

Kocabaşoğlu, N., Çorapçıoğlu Özdemir, A., Yargıç, İ., & Geyran, P. T. (2005). PTSD Checklist-Civilian Version (PCL-C) Ölçeğinin Geçerlilik ve Güvenilirliği. *Yeni Symposium, 43*(3), 126-134.

Nishi, N., Yoshimura, E., Ishikawa-Takata, K., Tsuboyama-Kasaoka, N., Kubota, T., Miyachi, M., Kobayashi, S. (2013). Relationship of living conditions with dietary patterns among survivors of the great East Japan earthquake. *Journal of Epidemiology*, *23*(5), 376-381.

Nozue, M., Nishi, N., Tsubota-Utsugi, M., Miyoshi, M., Yonekura, Y., Sakata, K., Ogawa, A. (2017). Combined associations of physical activity and dietary intake with health status among survivors of the Great East Japan Earthquake. *Asia Pacific Journal of Clinical Nutrition*, *26*(3), 556-560.

Obenaus, A., Ng, M., Orantes, A. M., Kinney-Lang, E., Rashid, F., Hamer, M., Pearce, W. J. (2017). Traumatic brain injury results in acute rarefication of the vascular network. *Scientific Reports*, *7*(1), 239.

Özenoğlu, A. (2018). Duygu durumu, besin ve beslenme ilişkisi. *Acıbadem Üniversitesi Sağlık Bilimleri Dergisi*, (4), 357-365.

Pekcan, G. (2011). Beslenme durumunun saptanması. A. Baysal, M. Aksoy, H. T. Besler, N. Bozkurt, S. Keçecioğlu, S. M. Mercanlıgil, T. K. Merdol, G. Pekcan, ve E. Yıldız (Ed.), *Diyet El Kitabı* içinde (6. baskı, ss. 67-142). Ankara Hatiboğlu Yayınevi.

Rakıcıoğlu, N., Tek, N., Ayaz, A., & Pekcan, A. G., (2010). Yemek ve Besin Fotoğraf Kataloğu Ölçü ve Miktarlar. Ankara: Ata Ofset Matbaacılık

Steptoe, A., Pollard, T. M., & Wardle, J. (1995). Development of a measure of the motives underlying the selection of food: the food choice questionnaire. *Appetite*, *25*(3), 267-284.

Türkiye Beslenme Rehberi (TÜBER) (2022) Sağlık Bakanlığı, Halk Sağlığı Genel Müdürlüğü, Sağlık Bakanlığı Yayın no: 1031, Ankara 2022.

Uemura, M., Ohira, T., Yasumura, S., Otsuru, A., Maeda, M., Harigane, M., Takahashi, H. (2016). Association between psychological distress and dietary intake among evacuees after the Great East Japan Earthquake in a cross-sectional study: the Fukushima Health Management Survey. *BMJ Open*, *6*(7), e011534.

H.Ü. Sağlık Bilimleri Fakültesi Dergisi
Cilt: 12, Sayı: 3, 2025
Doi: 10.21020/husbfd.1642035

van den Berk-Clark, C., Secrest, S., Walls, J., Hallberg, E., Lustman, P. J., Schneider, F. D., & Scherrer, J. F. (2018). Association between posttraumatic stress disorder and lack of exercise, poor diet, obesity, and co-occuring smoking: A systematic review and meta-analysis. *Health Psychology*, *37*(5), 407.

Weathers, F., Blake, D., Schnurr, P., Kaloupek, D., Marx, B., & Keane, T. (2013). *The Life Events Checklist for DSM-5 (LEC-5) Standard.* [Measurement instrument]. Available from https://www.ptsd.va.gov/

World Health Organization (WHO). (2000). Obesity: preventing and managing the global epidemic: report of a WHO consultation. Geneva: World Health Organization; 2000. Rapor No: 894.