ORİJİNAL MAKALE / ORIGINAL ARTICLE
Balıkesir Sağlık Bilimleri Dergisi / BAUN Sağ Bil Derg
Balıkesir Health Sciences Journal / BAUN Health Sci J
ISSN: 2146-9601- e ISSN: 2147-2238
Doi: https://doi.org/10.53424/balikesirsbd.1454479

Determination of Post-Earthquake Stress and Anxiety Levels of Individuals in Kahramanmaraş Province, the Center of the Earthquake

Ömer TANRIVERDİ[1], Ayşe SOYLU[2], Yasemin SAZAK[3]

[1] Mardin Artuklu University Faculty of Health Sciences Department of Nursing
[2] Kahramanmaras Sutcu Imam Unıversıty/Kahramanmaras Health Services Vocational School
[3]Kahramanmaraş Istiklal University, Faculty of Health Sciences, Department of Internal Medicine Nursing

Geliş Tarihi / Received: *17.03.2024,* ***Kabul Tarihi / Accepted:*** *20.10.2024*

ABSTRACT

Objective: This study aimed to examine the frequency of post-traumatic stress disorder (TSSS), anxiety, and depression disorders in victims of the February 6, 2023, earthquake in Turkey. **Materials and Methods**: This study was carried out in Kahramanmaraş province, which was the most damaged by the earthquake, six months after the earthquake that shook Turkey on February 6, 2023. In the research, a personal information form was used to collect demographic data and a Traumatic Stress Symptom Scale was used to evaluate TSSS symptoms. The Earthquake Anxiety Attitude Scale was used to measure anxiety levels.**Results:** The mean age of the 570 participants was 28.86±10.71 years, and 77.5% were female. 65.1% of the participants were single, 48.4% had less income than expenses, 78.9% had a university degree or higher, and 51.2% were unemployed. The study revealed the presence of significant mental health problems. 58% of participants reported high levels of anxiety, 55% had symptoms of post-traumatic stress disorder (TSSS), and 43% had comorbid depression with TSSS. The study found a strong and positive relationship between earthquake anxiety and the Traumatic Stress Symptom Scale. **Conclusion:** The results of our study showed that a significant portion of earthquake victims in Turkey experienced mental health problems such as TSSS, anxiety, and depression even 5 months later. These findings clearly demonstrate that the traumatic effects of the earthquake can be long-lasting and that immediate and long-term mental health support is needed in affected areas. The importance of long-term mental health interventions to improve mental health after the earthquake is emphasized.

Keywords: Earthquake centred in Kahramanmaraş, mental health, post-traumatic stress disorder

Depremin Merkezi Kahramanmaraş İlinde Bireylerin Deprem Sonrası Stres ve Kaygı Düzeylerinin Belirlenmesi

ÖZ

Amaç: Bu çalışma, 6 Şubat 2023 depreminin Türkiye'deki mağdurlarda travma sonrası stres bozukluğu (TSSB), anksiyete ve depresyon bozukluğu sıklığını incelemeyi amaçlamıştır. **Gereç ve Yöntem:** Bu çalışma, 6 Şubat 2023 tarihinde Türkiye'yi sarsan depremden altı ay sonra, depremden en çok etkilenen Kahramanmaraş ilinde gerçekleştirilmiştir. Araştırmada demografik verilerin toplanmasına yönelik kişisel bilgi formu, TSSB belirtilerini değerlendirmek için Travmatik Stres Belirti Ölçeği. Kaygı düzeylerini ölçmek için Deprem Kaygısına İlişkin Tutum Ölçeği kullanıldı.

Bulgular: Çalışmaya katılan 570 katılımcının yaş ortalaması 28,86±10,71 yıl olup, %77,5'i kadındı. Katılımcıların %65,1'i bekar, %48,4'ünün geliri giderinden azdı, %78,9'unun üniversite veya daha yüksek derecesi vardı ve %51,2'si işsizdi. Çalışmada önemli ruhsal sağlık sorunlarının varlığı ortaya konuldu. Katılımcıların %58'i yüksek düzeyde kaygı yaşadığını, %55'inde travma sonrası stres bozukluğu (TSSB) belirtileri olduğunu ve %43'ünde TSSB ile birlikte eş zamanlı depresyon bulunduğunu bildirdi. Çalışmada deprem kaygısı ile Travma Stres Belirti Ölçeği arasında güçlü ve pozitif bir ilişki bulundu.

Sonuç: Çalışmamızın sonuçları, Türkiye'deki depremzedelerin önemli bir kısmının 5 ay sonra travma sonrası stres bozukluğu (TSSB), anksiyete ve depresyon gibi ruh sağlığı sorunları yaşadığını göstermiştir. Bu bulgular, depremin travmatik etkilerinin uzun süreli olabileceğini ve etkilenen bölgelerde acil ve uzun vadeli ruh sağlığı desteğine ihtiyaç olduğunu açıkça ortaya çıkarıyor. Deprem sonrası ruh sağlığını iyileştirmek için uzun süreli ruh sağlığı müdahalelerinin önemi vurgulanmaktadır.

Anahtar Kelimeler: Kahramanmaraş merkezli deprem, ruh sağlığı, travma sonrası stres bozukluğu.

Sorumlu Yazar / Corresponding Author: Ömer Tanrıverdi, Mardin Artuklu University, Faculty of Health Sciences, Department of Public Health Nursing, Mardin, Türkiye
E-mail: omertanriverdi@artuklu.edu.tr

Bu makaleye atıf yapmak için / Cite this article: Tanrıverdi, Ö., Soylu, A. & Sazak, Y. (2024). Examination of the relationship between mindfulness in society and life satisfaction. Determination of post-earthquake stress and anxiety levels of individuals in Kahramanmaraş province, the center of the earthquake. *BAUN Health Sci J, 13*(3), 636-645. https://doi.org/10.53424/balikesirsbd.1454479

INTRODUCTION

On February 6, 2023, two strong earthquakes occurred during the day, with a magnitude of 7.7 at 04:17 local time in Kahramanmaraş-Pazarcık district and 7.6 at 13:26 in Kahramanmaraş-Elbistan district. The earthquakes, which affected a geographically wide area, were felt in many provinces (Kahramanmaraş Diyarbakır, Malatya, Hatay, Gaziantep, Kilis, Adıyaman, Elazığ, Osmaniye, Adana, Şanlıurfa). The earthquakes caused over 50 thousand people to lose their lives and over 100 thousand to be injured (Azap, 2023).

Post-earthquake trauma, housing problems, environmental health problems, psychological distress, changes in diet, lack of physical activity, and loss of health workers (482 people) (Azap, 2023) and inadequate health services due to physical damage caused by the earthquake negatively affected the physical and mental health of individuals and reduced their quality of life. In addition, individuals who survived the earthquake experienced intense stress and anxiety for reasons such as injury, fear of death, separation from family members, loss of first-degree relatives, economic losses, and displacement (Kono & Shinew, 2015). If these symptoms are not controlled and reduced, they become serious mental problems (Valladares-Garrido et al., 2022). For example, a meta-analysis conducted following the Haiti earthquake in 2020 found that the human and material damages caused by the earthquake were traumatic enough to trigger serious symptoms of post-traumatic stress disorder (TSSS), depression, anxiety, and other mental health problems. (Cénat et al., 2020). Again, in the study conducted after the Nepal earthquake, it was stated that the incidence of anxiety and depressive symptoms and post-traumatic stress disorder in people exposed to earthquakes was high even after one year (Thapa et al., 2018). In a study conducted after the Izmir earthquake in Turkey, it was reported that individuals with high anxiety sensitivity may experience higher peritraumatic dissociation, and these individuals may have a higher risk of TSSS (Uğur et al., 2021). In a study conducted on the youth population in Ecuador after the 2016 earthquake, high levels of depression, post-traumatic stress, and anxiety were found in those who had suffered particularly severe economic damage to their families. High rates of unemployment among parents, coupled with a lack of hope and optimism for the future, have been reported to be associated with a condition that can lead to emotional distress and psychological disorders (Gerstner et al.,2020). In a retrospective study conducted after the Pohang 2017 earthquake, it was found that there was a twofold increase in the risk of developing anxiety and stress-related disorders in the days after the earthquake (Han, 2022). In 2008, it was reported that the incidence of TSSS in individuals directly or indirectly affected by the earthquake in Schuan (China) was between 21.5% and 41.0% (Eisma et al., 2019). In studies conducted after major earthquakes, 54% of adults were diagnosed with depressive disorders (Rajabi vd., 2022).

Based on the literature data, it is very important to measure many psychological problems such as stress, depression, and anxiety in individuals who have experienced the earthquake, to intervene early in the problems, and to learn how to approach the psychological traumas that occur in society (Kotozaki & Kawashima, 2012; Zhang vd., 2018).

Nurses, who are important service providers of the health system, are involved in every stage of this psychological process with their professional equipment, knowledge and clinical skills, communication skills, mastery of meeting the need for psychological support, personal competencies such as resilience and creativity in caregiving, ethical responsibilities, and skills in caring for the injured (Kesgin, 2023). This study, which we planned to determine the risk of mental disorders, TSSS, and anxiety states in individuals after the earthquake and to offer solutions, is aimed to contributing to the literature. In line with the objectives, answers to the following questions were sought:

- What is the level of stress in individuals after the earthquake?
- What is the level of anxiety in individuals after the earthquake?
- What is the level of depression in individuals after an earthquake?
- Is there a relationship between stress, depression and anxiety levels in individuals after an earthquake?

MATERIALS AND METHODS

Study type

This study was conducted as a descriptive and correlational study. The research was conducted between July 15 and August 5, 2023 in Kahramanmaraş.

Study group

The study population consists of adults who experienced the earthquake in the province of Kahramanmaraş. According to 2023 data, the population of Kahramanmaraş is 1,183,977. The OpenEpi program was used to determine the sample size of the study (https://www.openepi.com). By calculating the sample size with the OpenEpi program with a 50% observation rate, a 5% margin of error, and a 97% power interval, it was calculated that 471 people should be included in the study. The study was completed with the participation of 570 people. The informed consent section was added for the first individuals in the prepared online data collection, and after the consent of the individuals who were divided into parts, the data collection formula was continued. The dependent variables of the earthquake are stress and anxiety levels. The independent variables are socio-demographic and descriptive characteristics related to the earthquake. The criteria for inclusion in

the study were: being over 18 years of age, living in the province of Kahramanmaraş, and being able to read and write.

Procedures

Using a virtual snowball sampling approach, data were collected online via Google Form from individuals affected by earthquakes in Kahramanmaraş province. The data of the study were collected by using "Personal Introduction Form", "Traumatic Stress Symptom Scale" and "Attitude towards Earthquake Anxiety Scale".

Personal Introduction Form: The researcher prepared the descriptive information form based on the relevant literatüre (Fong vd., 2022; Sharma vd., 2021)This form consists of questions about the participants' age, gender, marital status, employment status, place of residence, loss of first-degree relatives (if any), whether they received psychological support, use of psychiatric medication after the earthquake, and use of substances (cigarettes, alcohol) after the earthquake.

Traumatic Stress Symptom Scale (TSSS): The self-report scale developed by Başoğlu et al. (Başoğlu et al., 2001) to determine possible TSSS and depression accompanying TSSS in the last month in individuals, each item receives a score between 0-3 and consists of a total of 23 items. The first 17 items question TSSS symptoms specified in DSM-IV and the last six items question depression symptoms. A score of 25 and above on these 17 items indicates possible/probable TSSS, while a score of 38 and above on the 23 items indicates depression accompanying possible TSSS. Cronbach's alpha coefficient of the scale was reported as 0.81 and calculated as 0.91 in this study. In the validity and reliability study of the scale, Cronbach's alpha values were 0.94 for the whole scale, 0.93 for the TSSS dimension, and 0.82 for the depression dimension. In this study, Cronbach's alpha value was 0.963 for the whole scale, 0.954 for the TSSS dimension, and 0.88 for the depression dimension.

Attitude towards Earthquake Anxiety Scale (ASES): The scale is made up of 34 items. Each item on the scale is worth a minimum of 1 point and a maximum of 5 points. The scale was developed by Bal and Akgül (Bal & Akgül, 2023). The lowest score obtained from the total items is 34 and the highest score is 170. The total result obtained by summing the scores given to the items in the scale determines the earthquake anxiety level according to the following scoring. 0-34 indicates normal, 35-70 low, 71-120 moderate, 121-170 high anxiety level. The aim of this scale is to assess the level of anxiety experienced by individuals after an earthquake. The scale includes questions such as "I have less desire to talk to others after the earthquake," "I am more easily startled," "I feel tired and fatigued," "My heart rate has increased," and "I have less joy in life." In addition, test-retest and alpha reliabilities were calculated to prove the reliability of the scale and found to be 0.87 (Bal & Akgül, 2023). In this study, the Cronbach's alpha value of the scale was 0.962.

Statistical analysis

IBM SPSS 25.00 package program was used for data analysis. In the statistical analysis, number and percentage distribution, and mean standard deviation were used to evaluate the sociodemographic variables. Skewness and skewness tests were used to evaluate the conformity of the data to normal distribution.

Kurtosis normality distribution test was performed. According to George and Mallery (2010); if the Skewness and Kurtosis values are between +2.0 and -2.0, it means that the scales and dimensions used are normally distributed and parametric tests should be used (George & Mallery, 2010). In this context, since the Skewness and Kurtosis values of the scales used in the study were between +1.5 and -1.5, the ındependent Sample t Test, One-Way Analysis of Variance and Pearson Correlation test were used to determine the relationship between the scale scores. Tukey test and Games-Howell test were used according to the homogeneity of variance to determine from which groups the difference originated as a result of variance analysis. The statistical significance level was accepted as $p<.0.05$.

Ethical considerations

Approval was obtained from Mardin Artuklu University health sciences non-interventional clinical research ethics committee (Date:10.07.2023, Approval no: 2023/7-10). Consent for participation in the study was obtained from all participants.

RESULTS

The mean age of the individuals participating in the study was 28.86±10.71. 77.5% of the individuals were female, 65.1% were single, 48.4% had income less than expenses, 78.9% were university graduates and above, and 51.2% were not employed in any job (Table 1).

While 96.7% of the individuals who participated in the study did not lose a first-degree relative, 8.1% received psychological support after the earthquake. At the same time, 89.3% of the individuals did not use any psychiatric medication after the earthquake, while 6.5% stated that they used antidepressant medication. It was found that 16.1% of the individuals started smoking and 1.4% started drinking alcohol after the earthquake (Table 2).

Table 1. Distribution of individuals according to socio-demographic characteristics (n=570).

Features		Min-Max	Mean±SD
Age (years)		18-68	28.86±10.71
		n	**%**
Gender	Female	442	77.5
	Male	128	22.5
Marital status	Married	199	34.9
	Single	371	65.1
Income status	Income less than expenditure	276	48.4
	Income equals expenditure	234	41.1
	Income more than expenditure	60	10.5
Education status	Literate	6	1.1
	Primary - Secondary School	21	3.7
	High School	93	16.3
	University and higher education	450	78.9
Employment status	Works in any job	272	47.7
	Does not work in any job	292	51.2
	Pensioner	6	1.1

Mean: Average, SD: Standard deviation.

Table 2. Distribution of descriptive characteristics of individuals related to earthquake (n=570)

Features		n	%
Place of stay	Own house	428	75.1
	House of relatives or friends	89	15.6
	Container	38	6.7
	Tent	15	2.6
Lost 1st degree relatives	Father or mother	8	1.4
	Sibling	11	1.9
	No casualties	551	96.7
Receiving Psychological Support	Yes	46	8.1
	No.	524	91.9
Use of psychiatric medication after the earthquake	None	509	89.3
	Antidepressant medication	37	6.5
	Anxiety medication	7	1.2
	Sleep medication	17	3.0
New habits after the quake	Cigarette	92	16.1
	Alcohol	8	1.4
	None	470	82.5

Mean: Average, SD: Standard deviation.

It was found that 58.1% of the individuals who participated in the study had high anxiety levels, 55.6% had TSSS and 43.5% had TSSS+depression. The mean earthquake anxiety scale score was 122.96±26.44 and the mean traumatic stress symptoms scale score was 35.29±16.54 (Table 3).

Table 3. Earthquake anxiety and TSSS levels of individuals.

		n	%
Earthquake Anxiety Level	Normal (0-34 points)	2	0.4
	Low (35-70 points)	21	3.7
	Medium (71-120 points)	216	37.9
	High (121-170 points)	331	58.1
TSSS Level	Non-traumatic	253	44.4
	TSSS (≥25 points)	317	55.6
	TSSS+Depression (≥38 points)	248	43.5
Scale Score Averages		**Min-Max**	**Mean± SD**
Earthquake Anxiety Scale		34-170	122.96±26.44
Traumatic Stress Symptoms Scale		0-69	35.29±16.54

Mean: Average, SD: Standard deviation.

It was found that the mean scores of the Earthquake Anxiety Scale and TSSS were higher in women than in men. At the same time, it was found that the mean scores of the Earthquake Anxiety Scale and Traumatic Stress Symptoms Scale of individuals with low income were higher than those with high income and income equal to expenditure, and this difference was statistically significant (Table 4, $p<0.05$).

Table 4. Comparison of mean scores of earthquake anxiety scale and traumatic stress symptoms scale according to socio-demographic characteristics of individuals.

Variables		n	Earthquake Anxiety Scale Mean±SD	Traumatic Stress Symptoms Scale Mean±SD
Gender	Woman	442	126.18±24.59	37.01±16.00
	Male	128	111.83±29.55	29.35±17.05
	Test value, p		t=5.544, **p=0.001**	t=4.702, **p=0.001**
Marital status	Married	199	123.78±24.80	34.28±15.05
	Single	371	122.52±27.31	35.83±17.28
	Test value, p		t=0.546, p=0.586	t=-1.113, p=0.266
Income status	Income less than expenditures[a]	276	126.77±27.25	38.31±16.74
	Income equals expenditures[b]	234	119.98±24.32	33.00±15.09
	Income more than expenditures[c]	60	117.06±28.43	30.33±18.53
	Test value, p		F=5.939, **p=0.003 a-b, a-c**	F=9.850, **p=0.001 a-b, a-c**
Education status	Literate	6	145.50±19.27	49.66±16.81
	Primary - Secondary School	21	131.80±24.50	38.38±17.27
	High School	93	122.68±28.75	34.89±17.22
	University and higher education	450	122.30±25.98	35.04±16.31
	Test value, p		F=2.347, p=0.072	F=1.814, p=0.144
Employment status	Works in any job	272	122.52±25.31	33.88±15.88
	Does not work in any job	292	123.38±27.58	36.67±17.04
	Pensioner	6	122.16±23.65	32.33±17.72
	Test value, p		F=0.077, p=0926	F=2.101, p=0.123

Mean: Average. SD: Standard deviation, a, b, c, d difference between groups, t: Independent groups t test, F: One-way analysis of variance

It was found that the mean scores of the Earthquake Anxiety Scale and Traumatic Stress Symptoms Scale were higher in those who lost a first-degree relative, received psychological support, used psychiatric drugs after the earthquake, and started smoking and alcohol after the earthquake, and this difference was statistically significant (Table 5, p<0.05).

Table 5. Comparison of the mean scores of the earthquake anxiety scale and traumatic stress symptoms scale according to the descriptive characteristics of the individuals related to the earthquake.

Variables		**n**	**Earthquake Anxiety Scale Mean±SD**	**Traumatic Stress Symptoms Scale Mean±SD**
Place of stay	Own house	428	122.06±26.26	34.08±16.31
	House of relatives or friends	89	125.64±26.31	38,97±16.63
	Container	38	127.39±28.98	39.97±17.71
	Tent	15	121.53±26.17	36.13±15.56
	Test value, p		F=0.839, p=0.473	F=3.297, p=0.060
Lost 1st degree relatives	Father or mother[a]	8	140.37±14.84	48.00±14.61
	Brother[b]	11	137.45±6.68	44.90±6.84
	No casualties[c]	551	122.42±26.66	34.92±16.58
	Test value, p		F=3.531, **p=0.030 a-c, b-c**	F=4.411, **p=0.013 b-c**
Psychological support Alma	Yes	46	132.63±23.81	41.69±16.54
	No.	524	122.11±26.52	34.73±16.44
	Test value, p		t=2.598, **p=0.010**	t=2.752, **p=0.006**
After the earthquake Psychiatric drug use status	None[a]	509	121.14±26.44	34.03±16.19
	Antidepressant medication[b]	37	141.54±23.49	47.83±16.91
	Anxiety medication[c]	7	125.00±15.54	37.85±13.83
	Sleep medication[d]	17	136.11±15.97	44.70±13.46
	Test value, p		F=8.635, **p=0.001 a-b**	F=10.460, **p=0.001 a-b, a-d**
After the earthquake Starting a bad habit	Cigarette[a]	92	134.57±23.25	44.40±15.16
	Alcohol[b]	8	133.12±12.01	35.75±17.03
	None[c]	470	120.51±26.59	33.50±16.23
	Test value, p		F=11.907, **p=0.001 a-c, b-c**	F=17.669, **p=0.001 a-c**

*Mean: Average. SD: Standard deviation

*a, b, c, d difference between groups, t: Independent groups t test, F: One-way analysis of variance

A high positive correlation was found between the Earthquake Anxiety Scale and the Traumatic Stress Symptoms Scale (r=0.835, Table 6).

Tablo 6. The relationship between earthquake anxiety scale and traumatic stress symptoms scale (n=570).

Scales	Earthquake Anxiety Scale	Symptoms of Traumatic Stress Scale
Earthquake Anxiety Scale	1	
Symptoms of Traumatic Stress Scale	0.835*	1

*p<0.001.

DISCUSSION

This study investigated the levels of traumatic stress and anxiety experienced by people in the epicenter of the earthquake. The results showed that participants experienced high levels of traumatic stress, depression, and anxiety. Similarly, a study of people who survived the 2010 Haiti earthquake reported that one in four had severe post-traumatic stress disorder (TSSS), one in three had severe depression, and one in five had severe anxiety (Cénat vd., 2020).

Earthquakes affect the mental state of survivors and traumatize them individually for reasons such as injury, disability, fear of death, loss of family, economic destruction, and housing problems. This trauma can cause serious mental health problems by increasing the stress and anxiety levels of individuals (Kono & Shinew, 2015). For this reason, the identification of the problem and suggestions for solutions are very valuable. The findings from the research will be discussed with literature-supported studies and solution suggestions.

Literature review shows that most studies examining the prevalence of TSSS occurred approximately three months after the earthquake (Guo vd., 2014). In the study conducted five months after the earthquake, 58.1% of participants had high earthquake-related anxiety, 55.6% had high TSSS, and 43.5% had high TSSS and depression. This study examines the long-term effects of earthquakes and suggests that the observed differences may be due to various factors such as loss of family or home, unemployment, injury, gender, and coping skills {Citation}We may need to address these factors to reduce TSSS in the long term.

It was found that more than half of the participants in the study had anxiety and TSSS disorders, and almost half of them had both. In the literature, a study conducted 4–12 months after the Marmara earthquake (1999) found that the rate of post-traumatic stress disorder was 25% ((Tural vd., 2004). A retrospective study conducted after the Pohang earthquake reported that the risk of developing anxiety and stress-related disorders doubled one year later (Han, 2022). Again, the incidence of anxiety, depressive symptoms, and TSSS in individuals exposed to the Nepal earthquake was found to be high even one year later (Thapa vd., 2018). A study of TSSS, anxiety, and depression in adolescents six months after the 2008 Wenchuan earthquake in China found a prevalence of TSSS of 15.8%, anxiety of 40.5%, and depression of 24.5% (Fan vd., 2011). A study conducted three months after the Jiuzhaigou earthquake found that the prevalence of TSSS anxiety symptoms and depressive symptoms was 52.7%, 53.8%, and 69.6%, respectively. These results indicate a high prevalence of these symptoms, similar to our study (Xi vd., 2020). Examples in the literature support our research findings. Anxiety, stress, and depression can occur as a result of natural disasters and may increase mental health problems in the future (Lee & Lee, 2019).

The study found that women experienced higher levels of anxiety and stress than men after the earthquake. In terms of gender, women may experience more intense emotions than men because they have less access to positive social support after a natural disaster. They may also experience their emotions more severely because they are biologically more emotional than men (Mukherjee vd., 2014). In addition, women may be more exposed to factors associated with post-disaster depression due to their social status. In developing countries, women may be more affected than men by the destruction of their homes and migration situations (Bradshaw, 2004; Kipay, 2023) Similar studies show that women have high levels of anxiety and stress after an earthquake (Kocoglu vd., 2023; Kuo vd., 2003; Kurt & Gülbahçe, 2019). To be more effective in post-earthquake intervention efforts, it is necessary to focus more on this issue in order to reduce the impact of the earthquake on causing psychopathological effects on women, which is a sensitive aspect of society. Specific studies are needed to strengthen psychological well-being, taking into account women and their physiological characteristics.

The study found that people with lower income levels had higher levels of stress and anxiety after the earthquake. This is one of a number of similar findings in the literature. Loss of work and property after an earthquake increases the risk of psychological problems such as TSSS and depression in individuals (Cerdá vd., 2013; Cofini vd., 2015; Gigantesco vd., 2013). Economic status is important in completing Maslow's hierarchy of needs (Lenthe vd., 2015). In order to prevent the severe material consequences of the earthquake, government-supported employment programs should be focused on as soon as possible after the earthquake, and individuals' economic wounds should be healed. In the study, individuals who lost their first-degree relatives in the earthquake

had higher levels of post- earthquake stress and anxiety. In particular, the loss of a mother and father was found to cause anxiety disorder, and the loss of siblings was found to cause stress disorder. In the study examining the general health status of parents who lost their children in the Bam earthquake 10 years later, it was reported that the category of "anxiety/insomnia" was higher (Rashidinejad et al., 2015). The loss of a child in the 2008 earthquake in China was reported to be a strong cause of TSSS for parents. In addition, it was stated that the loss of parents and siblings would cause TSSS (Chan CL et al., 2011). Also ın another study, parents were buried in the earthquake or lost their children. These parents stated that they felt guilty because their children died in the earthquake and they survived (Canel, Nilgün Azize, Balcı, 2009). Our study supports these results. The loss of a first-degree relative is a cause of trauma that will last for years and be transferred from generation to generation. Because some will never recognize their parents, some will feel and question the absence of their siblings for years. Some will live with a feeling of guilt for not being able to save their loved ones. The difference between anxiety and stress levels and psychological support was found to be statistically significant in the study. As earthquakes cause material and emotional destruction, people need psychological support to help them overcome their psychological damage. It is important to help people regain a sense of life and hope. When symptoms of trauma-related disorders occur in the early post-trauma period, psychological first aid should be provided first. Personalized therapies, structured therapy methods, and the use of drugs should be avoided as much as possible (Yıldız vd., 2023). It is important to organize the social environment, review the individual's relationship with relatives who can provide support, and allow emotional expression (Reyes-Valenzuela vd., 2021).
.The difference between the level of anxiety and stress and the use of antidepressant medication is statistically significant. There may be times when the individual cannot overcome the material and moral problems experienced after the earthquake alone. The damage from the February 6, 20223 Kahramanmaraş-centered earthquakes is unprecedented in our century. Therefore, it may have left more psychological sequelae than expected. For this reason, when the individual cannot regain his or her health on his or her own, he or she may resort to medical treatment. For example, an increase in the use of antidepressants was found after the L'Aquila earthquake (Trifirò vd., 2013). The rates of drug use 6 months after the earthquake in Italy were compared with the s a m e period a year ago, and it was reported that there was a 37% increase in new antidepressant prescriptions and a 129% increase in antipsychotic prescriptions (Rossi vd., 2011). These findings are consistent with previous studies showing increases in anxiety and antidepressant use after disasters (Han vd., 2017; Rossi vd., 2011).In the study, the statistical difference between stress and anxiety levels and smoking initiation (starting a bad habit) was significant. High stress and serious life changes may lead individuals to smoke. For example, after the Great East Japan earthquake, the prevalence of smoking and nicotine dependence levels among earthquake victims were still high even 3 years after the disaster (Osaki vd., 2020). Similarly, 24% of those who quit smoking after the Canterbury earthquakes started smoking again after the earthquake (Erskine vd., 2013). Other studies conducted after the earthquake found that rates of substance use among young people increased (Amiri vd., 2022; Bianchini vd., 2015; Nakano vd., 2018). Since the nervous system of individuals after trauma is agitated, victims may resort to smoking, alcohol, or other pharmacological drugs to suppress the mental distress experienced. To prevent this situation, the necessary psychological support infrastructure should be established (Nakajima, 2013). In the study, it was determined that there was a strong positive relationship between earthquake anxiety and the traumatic stress symptom scale. While the earthquake is a major trauma, the loss of family members as a result of this trauma increases the level of post-traumatic anxiety and stress. In the studies, it was found that those who experienced loss after the earthquake had higher levels of anxiety, depression, and post-traumatic stress disorder (Cerdá vd., 2013; Kurt & Gülbahçe, 2019; Türkkan & Hatipoğlu, 2024) It was reported that anxiety, post-traumatic stress, and depression levels were higher in individuals living outside their own homes after the earthquake. A similar finding was observed in a study conducted by Cofini et al. in 2015 after the Italian earthquake (Cofini vd., 2015). Shelter is a need related to the sense of trust, which is one of the most basic motives of people. Uncertainty about trust creates stress in individuals. Stress increases anxiety and stress production by secreting cortisol, adrenaline, and noradrenaline in the amygdala, hypothalamus, and adrenal glands of the brain (Kaba, 2019). After the earthquake, removing the remains of the earthquake as soon as possible, providing shelter and employment to the individual, and following up on the psychological processes can raise the hope of the individual and reduce the level of anxiety and stress.

CONCLUSION

This study assessed TSSS, depression, and anxiety levels after the earthquake. 570 people took part in the study. It was found that people had high levels of post-traumatic stress, depression, and anxiety after the earthquake. It was found that people who lost loved ones or experienced financial losses had higher levels of stress and anxiety. There was also an increase in smoking and an increase in anxiety and stress. A strong and positive relationship was found between earthquake anxiety and the Traumatic Stress

Symptom Scale. An increase in the use of antidepressants was also observed. Stress and anxiety levels were found to be high in individuals after the earthquake. We should not perceive these results only as individual outputs. With the logic that a healthy individual means a healthy society, it is necessary to carry out therapy programs that will reduce the stress and anxiety levels of individuals, support them, and raise their hopes through teams of experts in mental health at regular intervals in the earthquake region. It can be made compulsory for all health workers, especially doctors and nurses, to receive post-earthquake psychological first aid training. Since we are an earthquake country, a compulsory psychological first aid course can be included in the curriculum of all departments providing health education at the undergraduate and associate-graduate levels in universities. The number of social and spiritual counsellors who will provide services specific to the spirituality of each society can be increased. After the earthquake, the remains of the earthquake (building debris) can be removed as soon as possible, and employment of individuals can be employed.

Acknowledgement
The authors would like to extend their sincere thanks to anyone who contributed to this study.

Conflict of Interest
The author declare no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Author Contributions
Plan, design: ÖT **Material, methods and data collection:** ÖT, AS, YS **Data analysis and comments:** YS, **Writing and corrections:** ÖT, AS.

Funding
None.

Ethical Approval
Institution: Mardin Artuklu University Health Sciences Non-interventional Clinical Research Ethical Committee
Date: 10.07.2023
Approval No: 2023/7-10

REFERENCES

Amiri, H., Riyahifar, S., Nakhaee, N., & Nekoei-Moghadam, M. (2022). The long-term impact of the earthquake on substance use. *International Journal of Emergency Medicine*, *15*(1), 44. https://doi.org/10.1186/s12245-022-00449-x

Azap, A. (2023). 6th February earthquakes and ınfectious diseases: what are the turkish society of clinical microbiology and ınfectious diseases and klimik journal doing? *Klimik Dergisi/Klimik Journal*, *36*(1), Article 1. https://doi.org/10.36519/kd.2022.4597

Bal, F., & Akgül, Ö. (2023). Deprem kaygısına yönelik tutum ölçeği geliştirme çalışması. *Asos Journal*, 77-96.https://doi.org/DOI : 10.29228/ASOS.68461

Bianchini, V., Roncone, R., Giusti, L., Casacchia, M., Cifone, M., & Pollice, R. (2015). TSSS growth and substance abuse among a college student community: coping strategies after 2009 l'aquila earthquake. *Clinical Practice and Epidemiology in Mental Health : CP & EMH*, *11*, 140-143. https://doi.org/10.2174/1745017901511010140

Cénat, J. M., McIntee, S.-E., & Blais-Rochette, C. (2020). Symptoms of posttraumatic stress disorder, depression, anxiety and other mental health problems following the 2010 earthquake in Haiti: A systematic review and meta-analysis. *Journal of Affective Disorders*, *273*, 55-85. https://doi.org/10.1016/j.jad.2020.04.046

Cerdá, M., Paczkowski, M., Galea, S., Nemethy, K., Péan, C., & Desvarieux, M. (2013). Psychopathology ın the aftermath of the haıtı earthquake: a populatıon-based study of posttraumatıc stress dısorder and major depression. *Depression andanxiety*,*30*(5),413-424. https://doi.org/10.1002/da.22007

Cofini, V., Carbonelli, A., Cecilia, M. R., Binkin, N., & di Orio, F. (2015). Post traumatic stress disorder and coping in a sample of adult survivors of the Italian earthquake. *Psychiatry Research*, *229*(1-2),Article1-2. https://doi.org/10.1016/j.psychres.2015.06.041

Erskine, N., Daley, V., Stevenson, S., Rhodes, B., & Beckert, L. (2013). Smoking Prevalence ıncreases following canterbury earthquakes. *The Scientific World Journal*, 596957. https://doi.org/10.1155/2013/596957

Fan, F., Zhang, Y., Yang, Y., Mo, L., & Liu, X. (2011). Symptoms of posttraumatic stress disorder, depression, and anxiety among adolescents following the 2008 Wenchuan earthquake in China. *Journal of Traumatic Stress*, *24*(1), Article 1. https://doi.org/10.1002/jts.20599

Fong, K. N. K., Law, Y. M., Luo, L., Zhao, Z. E., Chen, H., Ganesan, B., Lai, AgnesW. Y., Lee, B. H. C., Leung, A. N. T., Liu, K. Y. S., Wong, C. S. M., Li, C. W. P., Wong, M. S., & Shum, D. H. K. (2022). Post-traumatic stress disorder (TSSS) after an earthquake experience: A cross-sectional survey of Wenchuan earthquake victims with physical disabilities 10 years later. *International Journal of Disaster Risk Reduction*,*80* https://doi.org/10.1016/j.ijdrr.2022.103225

George, D., & Mallery, M. SPSS for windows step by step: a simple guide and reference, (10a ed.), Pearson, Boston, 2010.

Guo, J., Wu, P., Tian, D., Wang, X., Zhang, W., Zhang, X., & Qu, Z. (2014). Post-traumatic Stress Disorder among adult survivors of the Wenchuan Earthquake in China: A repeated cross-sectional study. *Journal of Anxiety Disorders*, *28*(1), 75-82. https://doi.org/10.1016/j.janxdis.2013.12.001

Han, K.-M., Kim, K.-H., Lee, M., Lee, S.-M., Ko, Y.-H., & Paik, J.-W. (2017). Increase in the prescription rate of antidepressants after the Sewol Ferry disaster in Ansan, South Korea. *Journal of Affective Disorders*, *219*, 31-36. https://doi.org/10.1016/j.jad.2017.05.026

Kaba, İ. (2019). Stres, ruh sağlığı ve stres yönetimi: güncel bir gözden geçirme. *63*, 73-81.

Kesgin, M. T. (2023). Afetler ve hemşirelik. *Yaşam Boyu Hemşirelik Dergisi*, *1*(1), Article 1. https://doi.org/10.29228/llnursing.69152

Kocoglu, E., Demir, F., Oteles, U., & Ozeren, E. (2023). Post-Earthquake trauma levels of university students evaluation: example of 6 february kahramanmaras earthquake. *Higher Education Studies*, *13*(2), Article 2. https://doi.org/10.5539/hes.v13n2p121

Kono, S., & Shinew, K. J. (2015). Roles of Leisure in the Post-Disaster Psychological Recovery after the Great East Japan Earthquake and Tsunami. *Leisure Sciences*, *37*(1), Article 1. https://doi.org/10.1080/01490400.2014.935836

Kotozaki, Y., & Kawashima, R. (2012). *Effects of the Higashi-Nihon earthquake: Posttraumatic stress, psychological changes, and cortisol levels of survivors.* https://doi.org/10.1371/journal.pone.0034612

Kuo, C.-J., Tang, H.-S., Tsay, C.-J., Lin, S.-K., Hu, W.-H., & Chen, C.-C. (2003). Prevalence of psychiatric disorders among bereaved survivors of a disastrous earthquake in taiwan. *Psychiatric Services (Washington, D.C.)*, *54*(2), Article 2. https://doi.org/10.1176/appi.ps.54.2.249

Kurt, E., & Gülbahçe, A. (2019). Van depremini yaşayan öğrencilerin travma sonrası stres bozukluğu düzeylerinin incelenmesi, 23(3),957-972

Mukherjee, S., Dutta, S., Majumdar, S., Biswas, T., Jaiswal, P., Sengupta, M., Bhattacharya, A., Gangopadhyay, P. K., Bavdekar, A., Das, S. K., & Ray, K. (2014). Genetic defects in Indian Wilson disease patients and genotype-phenotype correlation. *Parkinsonism & Related Disorders*, *20*(1),75-81. https://doi.org/10.1016/j.parkreldis.2013.09.021

Nakajima, S. (2013). Post-Earthqake Psychology. *The Medical Journal of Okmeydani Training and Research Hospital*, *28*(Supp 2), 2. https://doi.org/10.5222/otd.supp2.2012.150

Nakano, H., Ohira, T., Maeda, M., Yabe, H., Ohtsuru, A., Suzuki, Y., Harigane, M., Horikoshi, N., Nagai, M., Zhang, W., Takahashi, H., Yasumura, S., Iso, H., & Kamiya, K. (2018). Associations of disaster-related and psychosocial factors with changes in smoking status after a disaster: A cross-sectional survey after the Great East Japan Earthquake. *BMJ Open*, *8*(6), https://doi.org/10.1136/bmjopen-2017-018943

Osaki, Y., Maesato, H., Minobe, R., Kinjo, A., Kuwabara, Y., Imamoto, A., Myoga, Y., Matsushita, S., & Higuchi, S. (2020). Changes in smoking behavior among victims after the great East Japan earthquake and tsunami. *Environmental Health and Preventive Medicine*, *25*, 19. https://doi.org/10.1186/s12199-020-00858-5

Rajabi, M. S., Taghaddos, H., & Zahrai, S. M. (2022). Buildings ımproving emergency training for earthquakes through ımmersive virtual environments and anxiety tests: a case study. https://www.mdpi.com/2075-5309/12/11/1850

Rossi, A., Maggio, R., Riccardi, I., Allegrini, F., & Stratta, P. (2011). A quantitative analysis of antidepressant and antipsychotic prescriptions following an earthquake in Italy. *Journal of Traumatic Stress*, *24*(1), 129-132. https://doi.org/10.1002/jts.20607

Sharma, V., Levin, B. L., Rahill, G. J., Baldwin, J. A., Luitel, A., & Marhefka, S. L. (2021). Post-earthquake self-reported depressive symptoms and post-traumatic stress disorder and their correlates among college-youths in Kathmandu, Nepal. *psychiatric quarterly*, *92*(4),1595-1609. https://doi.org/10.1007/s11126-021-09928-5

Thapa, R., Rijal, H. B., & Shukuya, M. (2018). Field study on acceptable indoor temperature in temporary shelters built in Nepal after massive earthquake 2015. *Building and Environment*, *135*, 330-343. https://doi.org/10.1016/j.buildenv.2018.03.001

Trifirò, G., Italiano, D., Alibrandi, A., Sini, G., Ferrajolo, C., Capuano, A., Spina, E., Rossi, A., Caserta group, & L'Aquila group, null. (2013). Effects of L'Aquila earthquake on the prescribing pattern of antidepressant and antipsychotic drugs. *International Journal of Clinical Pharmacy*,*35*(6),1053-1062. https://doi.org/10.1007/s11096-013-9822-8

Tural, U., Coşkun, B., Onder, E., Corapçioğlu, A., Yildiz, M., Kesepara, C., Karakaya, I., Aydin, M., Erol, A., Torun, F., & Aybar, G. (2004). Psychological consequences of the 1999 earthquake in Turkey. *Journal of Traumatic Stress*, *17*(6), Article 6. https://doi.org/10.1007/s10960-004-5793-9

Türkkan, T., & Hatipoğlu, E. (2024). Factors Affecting the Mental Health of Youth After the Great Kahramanmaras Earthquake Disaster. *Journal of Social Service Research*, *0*(0), 1-13. https://doi.org/10.1080/01488376.2024.2352158

Xi, Y., Yu, H., Yao, Y., Peng, K., Wang, Y., & Chen, R. (2020). Post-traumatic stress disorder and the role of resilience, social support, anxiety and depression after the Jiuzhaigou earthquake: A structural equation model. *Asian Journal of Psychiatry*,*49* https://doi.org/10.1016/j.ajp.2020.101958

Zhang, Y.-Y., Han, W.-L., Qin, W., Yin, H.-X., Zhang, C.-F., Kong, C., & Wang, Y.-L. (2018). Extent of compassion satisfaction, compassion fatigue and burnout in nursing: A meta-analysis. *Journal of Nursing Management*, *26*(7), 810-819. https://doi.org/10.1111/jonm.12589