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The effect of media exposure of the 2023 Kahramanmaraş earthquake on traumatic stress

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Abstract

Studies dealing with secondary exposure to a particular stressor have concluded that participants exhibit high rates of secondary traumatic stress symptoms. The aim of this study is to examine the effect of media exposure to the 6th February Kahramanmaras Earthquake on traumatic stress symptoms. 182 physicians and medical school students who accessed online platforms were included in the study, and data were collected using self-report forms. The Depression Anxiety Stress Scale (DASS-21) and the Impact of Events Scale (IES) were used as assessment instruments. According to data analysis, 64.3% of the participants were female (n=117) and 35.7% were male (n=65). The mean age was 28.1±6.2. 57.1% of the participants reported being exposed to news or images about the event through television or social media for more than 12 hours a week, 14.3% for 4-12 hours, 28.6% for less than 4 hours. The study concluded that 46.2% of the participants experienced traumatic symptoms. A significant positive correlation was found between the trauma scores of the participants and their levels of anxiety, depression, and stress. Both exposure to traumatic images for more than 12 hours a week and having a relative injured in the earthquake may be associated with secondary traumatic stress. Future studies are needed to elucidate the effect of exposure to traumatic images through media on traumatic stress.

Keywords: traumatic stress, earthquake, media exposure, post traumatic stress disorder

1. Introduction

The 2023 Kahramanmaraş Earthquakes are two major earthquakes that occurred on February 6, 2023, with their epicenters in Pazarcık and Ekinözü districts, with magnitudes of 7.8 Mw and 7.5 Mw, nine hours apart (1). According to official figures, at least 50 thousand people died and more than 122 thousand people were injured in Turkey as a result of the earthquakes. Approximately 24 thousand aftershocks occurred following two major earthquakes (2). Two major earthquakes caused destruction in an area of approximately 350,000 km^2 affecting 14 million people which constitute 16% of Turkey's population (3).

Damage caused by natural disasters affects very large masses and can lead to various negative physical and mental health consequences (4,5). Studies show that people affected by disasters experience high rates of psychological stress symptoms and become more inclined to post-traumatic stress disorder (6). A study investigating the prevalence of mental illness in the population affected by the Marmara Earthquake concluded that many mental illnesses are still seen at high rates compared to pre-earthquake data although three years have passed since the disaster, with the prevalence of post-traumatic stress disorder being 19.2% (7).

Post-traumatic stress disorder is the most researched disorder among the psychopathologies occurring following natural disasters. Nevertheless, there is no clear consensus on the definition of disaster and disaster exposure (8). Psychological symptoms observed in individuals who do not directly experience the traumatic event but are in close relationships with the victims (such as mental health workers, emergency response team personnel) are called secondary traumatic stress (9). Secondary traumatic stress, which occurs as a result of secondary exposure to traumatic event, presents symptoms very similar to post-traumatic stress disorder, such as disturbing dreams about the event, hyperarousal, and negative changes in cognition and mood (10). Studies addressing secondary exposure to a specific stressor report that participants exhibit high rates of secondary traumatic stress symptoms. A recent study with emergency department nurses utilized the Secondary Traumatic Stress Scale and reported that 94% of participants experienced secondary traumatic stress of varying severity (11). Another study using the same measurement tool determined the prevalence of secondary

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traumatic stress among pediatric nurses as 76.9% (12).

The relationship between disaster exposure via tv or social media and the development of post-traumatic stress disorder is not fully known, with only few studies being available on the subject (13). A study examining the effect of media exposure on psychological symptoms following the September 11 terrorist attacks revealed a relationship between media exposure and symptoms of post-traumatic stress disorder (14). A study examining the effect of watching violent news on the development of post-traumatic stress disorder suggested that the severity of symptoms may be related to the time spent following the news (15).

Psychological problems following a disaster are affected by factors that occur before, during and after the disaster, as well as personal and socio-cultural characteristics (4). A study conducted with people developing acute stress disorder following the earthquake reported that acute stress disorder was more common in those with higher sensitivity to anxiety (16). A research examining psychopathologies occurring after natural disasters in adolescents showed that those who developed post-traumatic stress disorder displayed higher comorbidity of major depressive disorder and anxiety disorder than those who did not (17). A recent study investigating secondary traumatic stress among emergency room workers during the Covid-19 pandemic found that the most important factors included financial difficulties, anxiety and depression in the development of secondary traumatic stress disorder (18).

In our study, the questions investigating the effects of media exposure of the Kahramanmaraş Earthquake on anxiety, depression, stress symptoms of physicians and medical students, and traumatic stress symptoms were as follows:

1. Do traumatic stress symptoms of physicians and medical students vary according to socio-demographic characteristics?

2. Is there a relationship between traumatic stress and depression, anxiety and stress levels?

3. Is there a relationship between duration of traumatic exposure and traumatic stress symptoms?

2. Methods

2.1. Data Collection

Study data were collected between 5 April – 15 May 2023 using self-report surveys completed cross-sectionally. Snowball sampling method was adopted. The forms were created using Google Forms (Google, California, USA) and delivered to physicians and medical students via WhatsApp and groups. The data of 182 participants who answered the questions were taken into evaluation.

The study was approved by the Ethics Committee of the Ondokuz Mayıs University Faculty of Medicine (E-2023000092-1 2023/92). The consent form was sent online to all participants and their consent was obtained.

2.1.1. Data Collection Tools

2.1.1.1. Depression Anxiety Stress Scale Short Form (DASS-21)

It is used to evaluate depression, anxiety and stress levels and was created by abbreviating the DASS-42 scale developed by Lovibond (19). There are 21 items in total in the scale, with seven items each for the depression, anxiety and stress subscales. The values obtained from the subscales are collected in themselves. The internal consistency coefficient of the scale was calculated as 0.94 for the subdimension "Depression", 0.87 for the subdimension "Anxiety", and 0.91 for the subdimension "Stress" (20). The Turkish adaptation study of the scale was conducted by Sarıçam in normal and clinical samples (21). The outcomes showed that the Turkish form, like the original scale, consisted of three dimensions.

2.1.1.2. Impact of Event Scale (IES-R)

The original version of the scale was developed by Horowitz et al. (22) to measure the personal impact of traumatic events, which was later revised by Weiss and Marmar(23). The scale's internal consistency coefficient was calculated as 0.87 for the re-experiencing sub-dimension, 0.84 for the avoidance sub-dimension and 0.79 for the hyperarousal sub-dimension.(23). The Turkish validity and reliability study was conducted with 2 groups between the ages of 18-65, with and without a diagnosis of PTSD (24). The scale aims to evaluate PTSD symptoms and is not used for diagnostic purposes (25). Scores range from 0 to 88. Those exceeding 24 points are considered clinically significant. The range of 24-32 points indicates mild, the range of 33-36 points indicates moderate, and the score above 37 points indicates severe traumatic stress symptoms.

2.2. Statistical Analysis

Data were converted from Google forms to Excel format and evaluated by uploading it to the SPSS for Windows 21.0 (SPSS Inc, Chicago, IL). Descriptive statistics are presented as mean (±) standard deviation, frequency distribution and percentage. Correlations between sociodemographic data and scales were examined using the Spearman correlation analysis. In the first step, the Enter method was used to examine the relationship between the impact of events scale and sociodemographic data and all variables were entered. In the second step, the best model was determined with the backward elimination method.

Based on the linear regression analysis in the study conducted by Nishi et al. in 2012 on peri-traumatic distress, the minimum number of participants required for 7 variables was found to be 153 with 95% power and 0.05 error. Therefore, it was decided to terminate the study when 180 participants were achieved (26).

3. Results

The data of 182 participants were examined in our study. Evaluation of sociodemographic data showed that the mean age is 28.1, 64.3% of the participants are female (n: 117), 28.6% had a friend or relative injured, 26.9% personally took part in providing medical or social support after the earthquake,

57.1% of the respondents were exposed to earthquake-related news or images more than 12 hours a week, 14.3% were exposed to between 4-12 hours a week, and 28.6% were exposed to less than 4 hours a week. Sociodemographic data are presented in Table 1.

Table 1. Sociodemographic data

		Mean±SD (%)	n
Age		28.1±6.2	182
Gender	Female	64.3	117
	Male	35.7	65
Traumatic event	0	71.4	130
	Once	18.7	34
	2-3 times	8.8	16
	More than 4 times	1.1	2
Was any of your relatives or friends injured?	Yes	28.6	52
	No	71.4	130
Were you personally involved in providing social or medical support?	Yes	26.9	49
	No	73.1	133
For how long have you been exposed to relevant news or images via television or social media?	More than 12 hours a week	57.1	104
	4-12 hours per week	14.3	26
	Less than 4 hours per week	28.6	52
Have you had any significant stress factors in the last year?	One	28.0	51
	2 or more	9.3	17
	No	62.6	114
Are you diagnosed with any mental disorders?	Yes	17.6	32
	No	82.4	150

In our study, participants were submitted the Depression Anxiety Stress Scale Short Form and the Impact of Events Scale. Mean scores and standard deviations of the scales are presented in Table 2.

Table 2. Scale data

		Mean±SD	Median (Q1-Q3)
DASS-21	Anxiety	3.52±3.26	4 (2-8)
	Depression	6.89±4.18	6 (3-14)
	Stress	6.42±3.99	6 (3-25)
IES		24.83±18.14	22 (5-34)

DASS-21: Depression Anxiety Stress Scale-21 IES: Impact of Events Scale SD: Standart Deviation

Based on IES scores, it was concluded that more than half of the participants (53.8%) had normal scores, yet 14.8% experienced mild, 7.1% moderate, and 24.2% experienced severe traumatic stress symptoms. The data are presented in Table 3.

Table 3. Traumatic stress level according to IES scores

	Severity	%	n
Traumatic stress level according to IES scores	None (0-23)	53.8	98
	Mild (24-32)	14.8	27
	Moderate (33-36)	7.1	13
	Severe (37 and above)	24.2	44

IES: Impact of Event Scale

The association between trauma scores and DASS-21 results was investigated. A significant relationship was found between trauma scores and anxiety (r=0.680, p=0.001), depression (r=0.586, p=0.001) and stress (r=0.664, p=0.001) symptoms. Correlation analysis results are presented in Table 4.

Table 4. DASS 21 correlation analysis and trauma score

			Trauma score
DASS-21	Anxiety	r	0.680
		p	0.001
	Depression	r	0.586
		p	0.001
	Stress	r	0.664
		p	0.001

DASS-21: Depression Anxiety Stress Scale-21

Using the IES, the relationship between the sociodemographic data and the IES scores of the participants who were considered to have experienced traumatic stress was examined by logistic regression analysis. Analysis results showed that male gender was a protective factor against traumatic stress, and those with relatives or friends injured in the earthquake and those who were exposed to traumatic images for more than 12 hours a week experienced significantly traumatic stress symptoms at a higher extent (Table 5).

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Table 5. Logistic regression analysis of sociodemographic data and IES results

		OR	p	95% Confidence Interval for OR	
				Lower	Upper
Gender	Male	0.395	0.009*	.197	.791
	Female	Reference Category			
Traumatic event	0	1.176	0.913	0.064	21.708
	Once	1.271	0.874	0.066	24.620
	2-3 times	.848	0.918	0.038	19.184
	More than 4 times	1.176	0.913	0.064	21.708
Was any of your relatives or friends injured?	Yes	3.557	0.002*	1.574	8.036
	No	Reference Category			
Were you personally involved in providing social or medical support?	Yes	1.115	0.767	0.542	2.293
	No	Reference Category			
For how long have you been exposed to relevant news or images via television or social media?	More than 12 hours a week	2.656	0.012*	1.237	5.701
	4-12 hours per week	1.012	0.982	0.353	2.905
	Less than 4 hours per week	Reference Category			
Have you had any significant stress factors in the last year?	One	1.115	0.772	0.533	2.334
	2 or more	1.140	0.828	0.349	3.718
	No	Reference Category			
Are you diagnosed with any mental disorders?	Yes	1.321	0.545	0.537	3.248
	No	Reference Category			

Note: All variables were entered with the Enter method. (eveModel nagelkerke R: 0.127, p: 0.022, classification accuracy: 62.1%) OR: Odds Ratio

All sociodemographic and clinical variables were entered using the backward elimination method and the table reached significance in step 7. According to this model, female gender and having a relative injured in the earthquake were found to be associated with trauma scores. Table 6 shows the relationship between sociodemographic data and trauma scores using the backward elimination method.

Table 6. Linear regression analysis of sociodemographic data and IES scores

		OR	p	95% Confidence Interval for OR	
				Lower	Upper
Gender	Female	5.568	.018	1.450	5.662
	Male	Reference Category			
Was any of your relatives or friends injured?	Yes	9.620	.022	3.740	15.784
	No	Reference Category			

Note: Backward elimination method was adopted. In the first step, all sociodemographic variables in Table 1 were entered and 7th step was shown in the table. (model nagelkerke R: 0.101, classification accuracy 78.6%) OR: Odds Ratio

4. Discussion

Sociodemographic data and clinical scale scores of the 182 physicians and medical students included in our study are presented in Tables 1, 2 and 3. Inter-scale correlation was examined and a significant positive relationship was found between IES scores and DASS-21 scores. Evaluation of the relationship between sociodemographic data and traumatic stress scores revealed a positive significant relationship between female gender, whether a friend or relative was injured in the earthquake, and exposure to traumatic images for more than 12 hours a week and traumatic stress scores.

A study examining the effect of media exposure on traumatic stress using IES found that 29.4% of the participants had traumatic stress symptoms (15). A study conducted among those exposed to images of the September 11 terrorist attack grouped participants according to the images they watched most frequently (buildings collapsing, people running away, plane crashing into towers), and post-traumatic stress disorder was determined as 11.2% in the group with the highest rate (14). In our study conducted on a sample of physicians and medical students, it was concluded that 46.2% of the participants experienced traumatic stress symptoms after being exposed to the Kahramanmaraş Earthquake through the media, 23.2% of which had severe symptoms. This rate, which is high compared to other studies, is particularly striking. This difference may be due to the relatively small sample size of our study compared to other studies, or it may indicate how damaging the earthquake disaster was even on individuals of our country who did not directly experience the disaster.

However, it is clear that there is a need for prospective studies examining the effect of the Kahramanmaraş earthquake on traumatic stress.

A review of post-traumatic psychiatric disorders noted that although post-traumatic stress disorder is the most frequently examined mental disorder among trauma victims, it does not usually occur as a single mental condition, is often accompanied by symptoms of depression and anxiety, fears of stigma, and suicidal thoughts (27). A study conducted with disaster victims after Cyclone Fani, which occurred in Odisha, India in 2019, concluded that 40.9% of the sample was diagnosed with post-traumatic stress disorder, with the post-traumatic stress disorder group displaying anxiety, depression and stress symptoms at higher rates (28). Consistent with the literature, our study revealed a positive significant relationship between traumatic stress scores and depression, anxiety and stress levels.

Analysis of the literature indicates studies showing that traumatic stress symptoms increase in line with the duration of exposure to traumatic images through television (13, 29). In our study, it was found that male gender was a protective factor against traumatic stress, and injury of a relative or friend in a disaster and exposure to traumatic images for more than 12 hours a week increased traumatic symptoms. However, participants whose relatives or friends were injured in the earthquake may have followed earthquake news more frequently on social media. And in this case, it is difficult to understand whether traumatic stress symptoms are related to exposure to earthquake news or the loss of a friend or relative.

Our study has both strengths and limitations. Among its strengths, it is the first study to examine traumatic symptoms after a natural disaster in Turkey and the study data was collected shortly after the disaster. Thus, we assume that recall bias is kept as low as possible. Relatively small sample size compared to available studies, disproportionality in the number of men and women, and the fact that the sample was created by the snowball method cause some limitations. Creating population by this method may not always accurately represent the general population. Additionally, study forms were sent to online platforms and filled in by those willing to participate in the study. This method may have caused selection bias and those with high traumatic stress symptoms may not have wanted to participate in the study.

In summary, two major earthquakes occurred on February 6, 2023, the city of Kahramanmaras in Turkey being the epicentre. We collected data from a population of physicians and medical students using online surveys and found that 24.2% of participants had symptoms of severe traumatic stress. A positive correlation was determined between trauma scores and anxiety, depression, and stress scores. Those who were exposed to news about the event through the media for more than 12 hours a week had significantly higher traumatic stress scores. Our study provides valuable information about the effect of exposure to traumatic images through the media on traumatic stress. We hope that future studies will provide more insightful data on the impact of exposure duration on traumatic stress.

Conflict of Interest

There is no conflict of interest between the authors.

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Authors' contributions

Concept: P.G., M.B.U., Ö.B., Design: P.G., M.B.U., Ö.B., Data Collection or Processing: P.G., Analysis or Interpretation: M.B.U., Literature Search: P.G., Writing: P.G.

Ethical Statement

The study was approved by the Ethics Committee of the Ondokuz Mayıs University Faculty of Medicine (E-2023000092-1 2023/92).

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