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Research Article

Psychological Impact of the February 6th Earthquake in Turkey: A Study on Post-Traumatic Stress Disorder, Depression, and Anxiety

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Abstract

The study aimed to examine the psychological effects of the earthquake. Seven hundred and forty earthquake survivors who experienced the February 6, 2023, earthquake was examined for relationships between post-traumatic stress disorder (PTSD), depression, anxiety, involuntary thoughts, and avoidance behaviors. The study utilized a sociodemographic information form, the Posttraumatic Stress Disorder Checklist (PTSD-5), the Impact of Events Scale (IES), the Beck Anxiety Scale (BAS), and the Beck Depression Inventory (BDI). The data were analyzed using the SPSS 25.0 software, and the presence of extreme data and normality distribution was checked before analysis. Results showed a positive correlation between the level of PTSD and the impact of the events, depression, and anxiety levels among earthquake survivors. While a positive relationship was found between the effects of events and depression, no significant relationship was observed with anxiety levels. A positive relationship was also found between depression and anxiety levels. According to the regression analysis, the impact of events, depression, and anxiety variables positively predicted the level of PTSD, with a total variance of 37%. Our findings highlight the importance of classifying earthquake survivors through psychiatric and psychosocial assessments to improve psychological intervention programs and support for future disasters.

Key Words: *Anxiety, Depression, Earthquake survivors, Mental health, Post-traumatic stress disorder*

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Introduction

Earthquakes and other natural catastrophes significantly influence both the physical landscape and the mental health of survivors. The February 6th, 2023, earthquake in Turkey caused severe damage, displacing thousands of individuals and leaving many with lasting psychological effects. Earthquakes, as multidimensional traumatic experiences, disrupt daily lives, prioritizing basic survival needs such as shelter, food, and safety over emotional and psychological well-being. However, psychological first aid should be as immediate and necessary as physical support in the aftermath of such catastrophic events. Early psychological interventions, like Psychological First Aid (PFA), are critical for mitigating post-traumatic stress and promoting recovery among survivors (1, 2). Studies suggest that providing timely psychological support can significantly reduce anxiety and long-term psychological distress (3, 4).

Previous studies have shown that survivors of natural disasters, particularly earthquakes, are more prone to developing post-traumatic stress disorder (PTSD), depression, and anxiety (5, 6). The intensity of PTSD, depression, and other psychological issues is often correlated with the severity of the disaster, the loss of loved ones, and the individual's demographic characteristics, such as age and gender (7). For instance, studies conducted after the Armenian and Taiwanese earthquakes demonstrated that between 50% and 52% of survivors developed major depression and significant levels of anxiety (8, 9).

Beyond psychiatric disorders, earthquake survivors also face long-term effects such as impaired relationships, diminished quality of life, and decreased academic or professional performance (10). These findings suggest a high comorbidity between PTSD, depression, and life satisfaction in earthquake survivors. Loss of life and property significantly heightens the psychological burden, with studies showing that the death of family members can intensify PTSD symptoms (7).

Studies of the relationship between the type of loss caused by trauma and the development of psychiatric disorders have found that the death of family members can increase the severity of PTSD (7, 9). A study conducted in Iran found that the loss of a family member in an earthquake caused prolonged grief, anxiety, and depression, but not PTSD (11). A study conducted in Turkey found that loss of home and dormitory increased PTSD (12).

Natural disasters are complex stressors that affect both the short-term and long-term

psychological health of affected populations. In the wake of an earthquake, individuals often experience heightened fear, anxiety, and sleep disturbances, which can escalate into more serious mental health conditions without timely intervention. While much research has explored the immediate psychological impacts of earthquakes, there is limited focus on the longitudinal effects, particularly in culturally specific contexts like Turkey. Early psychological support, such as Psychological First Aid (PFA), has been shown to mitigate anxiety and post-traumatic stress symptoms, especially when tailored to the cultural and social context of the affected population (1, 2). Additionally, culturally specific interventions, such as those addressing community and family support systems, have been effective in promoting resilience and recovery (13, 14). A strong sense of community and tailored psychological counseling strategies have further demonstrated their importance in mitigating the long-term psychological effects of earthquakes (15, 16).

Earthquakes can cause short- and long-term damage to a community's psychological health, in addition to physical and financial damage. Understanding the changes in individuals' psychological states during this period plays a critical role in planning early interventions and long-term psychological support and recovery processes. The research will be conducted on individuals from different demographic groups affected by the earthquake, and data will be collected through questionnaires. This research can be used to improve the effectiveness of post-earthquake interventions and support programs, leading to faster and healthier recovery for individuals and communities. It can also make important contributions to the development of disaster management and public health policies.

The present study seeks to investigate the relationships between PTSD, depression, anxiety, and coping mechanisms among survivors of the February 6th, 2023 earthquake in Turkey. We aim to analyze how these psychological conditions manifest in the months following the disaster and how survivors' psychological states evolve over time. This research aims to contribute to disaster management policies and improve mental health interventions for earthquake survivors, ensuring more effective, long-term recovery strategies. The research problems were defined as follows:

Method

The study was approved by one of the University Research Ethics Committee and conducted by the Declaration of Helsinki (edited out for blind review).

A population-based epidemiological study was conducted after the Maraş earthquake. A descriptive correlational survey model was used to evaluate the psychological and traumatic effects of the earthquake in relation to coping strategies. This study was designed as a cross -sectional study. In this study, data were collected from the 9th month after the earthquake

Participants

The research population comprises residents from Antakya, Samandağ, Defne, and İskenderun in Hatay. A total of 740 participants (mean age = 38.22 years, SD = 11.29, 54.6% employed) were recruited for the study from regions most affected by the February 6, 2023, earthquake. Participants were selected based on their proximity to the epicenter and willingness to participate in the study.

Data Collection

Data were collected face-to-face from individuals living in Antakya, Samandağ, Defne, and İskenderun. The study used a researcher-prepared sociodemographic information form, the Posttraumatic Stress Disorder Checklist-5 for DSM-5 (PTSD Checklist-5), the Life Events List-5 (LIST-5), the Impact of Events Scale (IES) to assess traumatic and vital effects of the earthquake, the Beck Anxiety Scale to measure anxiety, and the Beck Depression Inventory to measure depression.

Sociodemographic Information Form: This form was developed for the study. The sociodemographic questionnaire consisted of four sections, it included questions such as age, marital status, spouse's working status, and previous natural disasters. In the second part of the questionnaire, questions were asked about which earthquakes the participants experienced in the provinces where the earthquake occurred, the losses they experienced, the meaning of the word earthquake in the third part, where they were at the time of the earthquake, what they felt, how they behaved, their level of awareness of earthquake risk, and in the fourth part, questions were asked about the participants' emotional, cognitive and behavioral reactions to the earthquake.

Posttraumatic Stress Disorder Checklist for DSM-5 (PTSD Checklist-5) and Life Events List-5 (LIST-5): It was developed by Weathers et al. (17), is a 20-item self-report scale using a 5-point Likert format to assess PTSD symptoms within one month of a traumatic event. The original scale showed strong reliability (Cronbach's alpha =94, test-retest =82), with the Turkish version also demonstrating excellent internal consistency (Cronbach’s alpha =94). In this study, the alpha coefficient was 87.

***The Impact of Events Scale (IES)*:** It was developed by Horowitz et al. (18) and adapted to Turkish by Çorapçıoğlu et al. (19), is a 22-item, 5-point Likert scale assessing the impact of traumatic events, with scores ranging from 0 to 88. Higher scores indicate greater impact. The scale has two subscales: Intrusive Thoughts (e.g., intrusive memories, nightmares) with an internal consistency of .78, and Avoidance (e.g., suppression of memories, emotional numbness) with an internal consistency of .82. The total scale's Cronbach's alpha is .94, and test-retest reliability is .87. In this study, the alpha coefficient for the total IES score was .65.

***Beck Anxiety Scale (BAS)*:** It was developed by Beck (20) and reliability and validity studies in Turkish was conducted by Ulusoy et al. (21). The aim of this scale, which consists of 21 items with 4-point Likert type, is to determine anxiety symptoms and their intensity experienced by adult individuals, in the last week. The minimum score on the scale is 0, and the maximum is 63. Higher scores indicate increased levels of anxiety. The internal consistency coefficient of the Turkish version was .93 and the test-retest reliability coefficient was .57. In the present study, a Cronbach's alpha coefficient value of .88 was calculated for the total score.

***Beck Depression Inventory (BDI)*:** It was developed by Beck et al and reliability and validity studies in Turkish was conducted by Hisli (22). The aim of this scale, which consists of 21 items with 4-point Likert type, is to determine depression symptoms experienced by adult individuals, in the last week. The minimum score is 0 and the maximum score is 63. A higher score on the scale is interpreted as an increase in the level of depression. The Cronbach's alpha coefficient was found to be 0.80. In the present study, a Cronbach's alpha coefficient value of 0.88 was calculated for the total score.review

Statistical Analysis

The data collected in the study were analyzed using Statistical Package for the Social Sciences (SPSS) 25.0 software. Before analysis, the presence of extreme data and the normality assumption were checked. No extreme data were found in the study. To check the normality assumption, skewness and kurtosis values were examined. The skewness and kurtosis values of the research scales and other descriptive statistical information are presented in Table 2. Parametric tests, including Pearson correlation and multiple regression analyses, were conducted as normality assumptions were met. Multicollinearity was assessed using tolerance (>0.10) and VIF (<10) values,

both of which were within acceptable ranges, indicating no multicollinearity issues.

Results

The sample included both male and female participants, with 54.60% employed and 45.40% unemployed. Detailed information about the study group is presented in Table 1.

Table 1: Sociodemographic Information of Participants.

N= 740			
Variables		**F**	**%**
Employment Status	Employee	336	45.40
	Not working	404	54.60
Education Level	Primary School	273	36.90
	Middle School	195	26.40
	High School	147	19.90
	University	127	16.80
Marital Status	Married	655	88.50
	Single	53	7.20
	Widow	32	4.30
Child Status	There is	696	5.90
	No	44	94.10
Place of Residence	City	302	40.80
	District	179	24.20
	Village	259	35.00
Income Status	Very low	50	6.80
	Low	324	44.00
	Middle	339	46.00
	Above average	24	3.30
Mental Illness	Yes	50	6.80
	No.	685	93.20
Physical Injury in an Earthquake	Yes	255	34.60
	No.	483	65.40
Physical Injury to a Relative Receiving	Yes	402	54.30
	No.	338	45.70
That His Life Is In Danger Thinking	Yes	702	95.00
	No.	38	5.00
I'm not going to let someone close to you Feeling Endangered	Yes	703	95.00
	No.	37	5.00
Don't Feel Helpless	Yes	698	94.30
	No.	42	5.70
Living in Great Fear	Yes	708	95.70
	No.	32	4.30
Under a Subsidence	Yes	182	24.50
	No.	558	75.40
Participating in Rescue Operations	Yes	188	25.40
	No.	552	74.60
Relatives or Acquaintances Loss of Life from Inside	Yes	478	64.60
	No.	262	35.40
Loss of Property	Some loss of property	311	42.00
	Quite a loss of property	410	55.40
	Too much property loss	19	2.60
Staying in a Tent after an Earthquake	Yes	740	100.00

Table 2: Descriptive Statistics.

	$\bar{X}$	SS	Min	Max
Posttraumatic Stress Disorder (Total)	26.01	8.56	5.00	47.00
Depression (Total)	51.93	5.93	41.00	76.00
Anxiety (Total)	30.17	10.25	3.00	52.00
Impact of Events (Total)	33.63	6.43	12.00	59.00

According to Table 1, which presents the sociodemographic information of the participants, 404 participants (54.60%) were employed, while 336 participants (45.40%) were not employed. Of the participants, 273 (36.90%) graduated from primary school, 195 (26.40%) from secondary school, 147 (19.90%) from high school and 124 (16.80%) from university. Regarding marital status, 655 (88.50%) of the participants were married, 53 (7.20%) were single and 32 (4.30%) were widowed. While 696 (94.10%) of the participants have children, 44 (5.90%) do not have children. 302 (40.80%) of the participants reside in the city, 179 (24.20%) in the district and 259 (35.00%) in the village. Of the individuals included in the study, 50 (6.80%) reported very low, 324 (43.80%) low, 339 (45.80%) medium and 24 (3.30%) above medium income. While 50 (6.80%) of the participants had a mental illness, 685 (92.60%) did not have a mental illness. While 255 (34.60%) of the participants were physically injured in the earthquake, 483 (65.40%) were not physically injured in the earthquake.

It is seen that 402 (54.30%) of the participants had one of their relatives or acquaintances physically injured in the earthquake, while 338 (45.70%) did not have one of their relatives or acquaintances physically injured in the earthquake. While 702 (94.90%) of the participants think that their lives were in danger in the earthquake, 38 (5.10%) think that their lives were not in danger. 703 (95.00%) of the participants thought that the life of one of their relatives or acquaintances was in danger in the earthquake, while 37 (5.00%) did not think that the life of one of their relatives or acquaintances was in danger. While 698 (94.30%) of the participants stated that they felt helpless during the earthquake, 42 (5.70%) stated that they did not feel helpless. 708 (95.70%) of the participants experienced great fear during the earthquake, while 32 (4.30%) did not experience great fear. 182 (24.60%) of the participants were buried under the earthquake, while 558 (75.40%) were not buried under the earthquake. While 188 (25.40%) of the participants participated in rescue operations, 552 (74.60%) did not participate in rescue operations.

478 (64.60%) of the participants had a relative or acquaintance die in the earthquake, while 262 (35.40%) did not experience any loss of life. While 311 (42.00%) of the participants experienced some property loss, 410 (55.40%) experienced a lot of property loss and 19 (2.60%) experienced a lot of property loss. In addition, all respondents (100%) stayed in tents after the earthquake.

Table 3: Correlation Analysis.

		1	2	3	4
1. Post Traumatic Stress Disorder	r	1			
2. Impact of Events	r	0.59**	1		
3. Depression	r	0.29**	0.24**	1	
4. Anxiety	r	0.09*	0.07	0.14**	1

**p<.001, *p<.05

Table 4: Multiple Regression Analysis.

Predicted Variable	**B**	**R**	**R^2**	**Standard Error$_\beta$**			**F**	**p**
Post Traumatic Stress Disorder	-11.767	0.614	0.377	2.381			148.193	0.000
Predictor Variables	**B**			**Standard Error$_\beta$**	**β**	**t**		**p**
Impact of Events	0.736			0.040	0.553	18.432		0.000
Depression	0.219			0.044	0.152	5.005		0.000
Anxiety	0.055			0.025	0.066	2.242		0.025

A Pearson correlation analysis was performed to determine the relationships between the variables (Table 3). According to Table 3, a positive and significant relationship was found between PTSD and the impact of the events experienced (r=59, p<0.001). There was also a positive and significant relationship between PTSD and depression (r=29, p<0.001). Similarly, a positive and significant relationship was found between PTSD and anxiety (r=09, p<0.05).

According to Table 3, there is a positive and significant relationship between the impact of the events and depression (r=24, p<.001). However, no significant relationship was observed between the impact of events and anxiety levels (p>0.05). A positive and

significant relationship was found between depression and anxiety levels (r=0.14, p<0.001).

To determine the variables predicting the level of posttraumatic stress disorder in the study, multiple regression analysis was performed using the "Enter" method (Table 4). A statistically significant result was obtained after multiple regression analysis to predict the level of posttraumatic stress disorder based on the independent variables (impact of events, depression and anxiety) and it was seen that all of the independent variables explained 37% of the dependent variable (posttraumatic stress disorder) (F(3,736)=148.193, R2=37, p<0.001). Considering the significance of the regression coefficients, the impact of the events (t=18.43, p<.001), depression (t=5.00, p<001) and anxiety (t=2.24, p=025) variables positively and significantly predicted the level of posttraumatic stress disorder. This result indicates that the independent variables have a cumulative effect on the level of posttraumatic stress disorder. According to the standardized beta coefficients, the relative order of the predictor variables is the impact of the events (β=553), depression (β=152) and anxiety (β=06).

Discussion

The study examined the relationships between the effects of the earthquake, depression, anxiety, and PTSD experienced by earthquake survivors after the disaster. According to the results of the study, it was found that participants who experienced involuntary thoughts and avoidance behaviors after the earthquake had more symptoms of post-traumatic stress disorder. Natural disasters such as earthquakes affect people suddenly and severely. During these events, a person's physical safety is threatened and their ability to survive is severely challenged. This sense of uncertainty and danger can trigger involuntary thoughts and avoidance behaviors in individuals, which can be effective in the development of posttraumatic stress disorder (23).

In addition, earthquakes often cause severe physical damage and loss. The loss of loved ones, homes, possessions, or perhaps jobs can lead to cognitive and behavioral impairments. These losses may trigger the onset of PTSD symptoms (24). Indeed, examining the demographic findings, many participants believed that their lives or the lives of their relatives were in danger, felt helpless and anxious after the earthquake, and experienced property loss. In this context, it can be said that the events experienced after the earthquake may trigger involuntary thoughts and avoidance behaviors in individuals, and they may tend to avoid being in the place where the

earthquake occurred and avoid thoughts that the event may be repeated. It can be said that this situation may increase the person's stress level and cause PTSD symptoms to be experienced more intensely (25). Therefore, it seems understandable that there is a positive relationship between the impact of the experienced events and symptoms of posttraumatic stress disorder. Carmassi et al. (2013) conducted a study after the 2009 L'aquila earthquake with 512 participants and found that involuntary thoughts and avoidance behaviors increased as the level of PTSD increased in these individuals (26).

Another finding of the research is that there is a positive relationship between the impact of the events experienced and depression in earthquake survivors. This finding suggests that depressive feelings may increase in individuals due to the impact of the events experienced. Earthquakes are generally traumatic events that cause fear and anxiety. The sudden and unexpected nature of the shaking can severely disrupt people's sense of security. Traumatic experiences such as panic, loss, injury, or homelessness during or after an earthquake can lead to emotional instability. Following these traumatic experiences, depressive feelings may increase as individuals attempt to cope with feelings of helplessness, fear, and hopelessness. In addition, earthquakes often cause large-scale destruction and loss (5). This destruction may cause people to lose their homes, family members, jobs, or important possessions. Such losses can increase people's feelings of grief, sadness, and helplessness. In particular, the pain of lost loved ones can increase the risk of depression and negatively affect people's ability to carry out normal daily activities. All the participants in the study had to leave their homes and live in tents after the earthquake. It was also found that the participants experienced the loss of a loved one after the earthquake and felt helpless. In this context, it is understandable that the participants were more depressed due to the intense negativity they experienced. Jin et al. (2018) examined the relationship between PTSDand depression levels of participants after the 2013 earthquake in Ya'an, Lushan County, and concluded that the participants' involuntary thoughts and avoidance behaviors had a positive relationship with depressive feelings (27).

The study found a positive correlation between the level of PTSD and the anxiety experienced by participants because of the earthquake. This finding suggests that there is a positive correlational relationship between PTSD and anxiety. Earthquakes are moments when the individual loses control and feels unsafe. During these events, the individual's concern for their own safety and the safety of their loved

ones, the severity and unpredictability of the earthquake may undermine people's efforts to ensure their safety, and this may increase their anxiety levels (5). As individuals lose their sense of control after the earthquake, it seems natural that PTSD and anxiety levels would increase. In addition, people often experience concerns about the future after an earthquake. These concerns may include issues such as when the next earthquake will occur, the possibility of a larger earthquake, and the safety of infrastructure and buildings. These uncertainties can cause people to feel anxiety and fear. In addition, earthquakes not only cause physical effects, but also create economic uncertainty. This uncertainty can include factors such as the risk of homelessness, job loss, and economic hardship. Such stressors can increase anxiety levels and lead to long-term emotional difficulties. Many of the participants in the study have very low-, low-, or moderate-income levels. Therefore, the economic uncertainties that the participants experienced or may experience after the earthquake are also among the factors associated with anxiety. In their study, Tang et al. (2018) tested the relationship between PTSD and anxiety levels of the participants after the earthquake that occurred in Ya'an, Lushan District in 2013, found a positive relationship between PTSD and anxiety levels (28).

The study found a positive relationship between levels of PTSD and depression. A traumatic event such as an earthquake affects people emotionally and psychologically. Such events cause severe stress with the fear of feeling threatened and losing control of their lives. With these stressors, PTSD can develop and manifest itself with symptoms such as constant reminders of the event, persistent fear and anxiety caused by the traumatic experience, insomnia, and difficulty concentrating. These symptoms can negatively affect the person's quality of life and functionality and may facilitate the onset of psychopathology such as depression (29). Depression is a mental disorder that is often seen after a traumatic event such as an earthquake. It may be caused by difficulties in coping with the consequences of the traumatic event. Earthquake survivors may face several stressors, such as the losses they have suffered, the pain of losing damaged property or their community, temporary housing problems, and economic hardship. Such stressors can affect a person's overall mood and increase the risk of depression (30). Social factors also play an important role in this relationship. For example, large-scale natural disasters such as earthquakes cause widespread psychosocial stress in the community. In earthquake-affected communities, factors such as limited resources, inadequate relief services, and

weakened social support networks may facilitate the spread of posttraumatic stress and depression (31). It is well known that government aid arrived late to earthquake areas, especially in the first days after the earthquake. This situation is thought to have a negative impact on the mental health of people in the earthquake zone and to facilitate the spread of posttraumatic stress and depression. Gerstner et al. (2020) examined the levels of depression and posttraumatic stress disorder in participants following an earthquake that occurred in the Muisne region of Ecuador in 2016, 316 participants were included in this study, and a positive relationship was found between depression and PTSD levels (32).

Another finding of the study, a positive relationship was found between depression and anxiety levels in earthquake survivors. Natural disasters such as earthquakes disrupt people's daily routines and create uncertainty in their lives. Factors such as loss of home, loss of job, and difficulty meeting basic needs can increase feelings of anxiety and uncertainty about the future. These feelings of uncertainty can fuel anxiety and increase the risk of depression in people struggling with anxiety about the future. Situations such as homelessness and financial loss following an earthquake can cause individuals to become depressed (33).

In addition, natural disasters such as earthquakes can weaken social support networks. Disasters can often lead to chaos in society and make it difficult for individuals to access social support networks. This can increase individuals' feelings of abandonment and helplessness (34). The weakening of social support networks can facilitate the emergence of anxiety and depression symptoms. In the aftermath of the earthquake, individuals may have experienced these feelings of abandonment and helplessness since telephone lines were out of service for long periods of time and individuals were therefore unable to reach their loved ones, or they were unable to contact anyone due to being under the collapse. In this context, it seems understandable that individuals would develop depression and anxiety psychopathologies together after the earthquake. Bavafa et al. (2019) examined the relationship between depression and anxiety levels of participants after an earthquake in the Kermanshah region of Iran in 2017 (34). The study found a positive relationship between depression and anxiety levels of participants (999 in total) after the earthquake.

The study did not find a relationship between the impact of the events and anxiety levels. However, it was observed that many participants experienced great

fear during the earthquake. It is thought that this dissociation occurred because of the nature of the concepts of fear and anxiety. Anxiety is generally associated with uncertainty, worry, and fear of the future. The person tends to think constantly about potential dangers, uncertainties, or stressful situations. Anxiety is usually related to possible future situations, not the current situation. Fear, on the other hand, occurs in the face of an existing danger or threat. Fear is directly related to the present dangerous situation and requires a quick response. During an earthquake, people may feel that they are facing a situation that directly endangers their lives. Therefore, individuals may often experience direct fear rather than anxiety during an earthquake. In addition, emergencies such as earthquakes can trigger a biological response in individuals known as the "fight or flight" response. This response makes people feel that they are in imminent danger and that they need to respond immediately. Therefore, the fear experienced during an earthquake is a natural response to imminent danger. For this reason, it is likely that the participants in this study experienced more fear than anxiety during the earthquake, which is why there was no relationship between the impact of the event and the level of anxiety in this study.

In the study, regression analysis was performed to find the factors that trigger PTSD in earthquake survivors, and it was found that depression, anxiety, and the impact of the events experienced were among the factors that predicted post-traumatic stress disorder. Depression and anxiety were chosen as independent variables in this relationship. This is because anxiety is usually characterized by symptoms such as excessive worry, fear, and intense feelings of dread associated with certain situations or objects. Increased arousal, a common symptom in PTSD, can also be a feature of anxiety disorders. In depression, symptoms such as hopelessness, helplessness, sleep disturbances, and loss of interest can be observed (35). Therefore, in the current study, it was considered that considering these symptoms as an independent variable may help to better understand the relationship between PTSD and depression. In PTSD, unwanted and recurrent thoughts related to the traumatic event are common. These thoughts invade the person's mind and usually consist of elements that recall or trigger the moment of the trauma. These thoughts can cause the person to have difficulty coping with the traumatic experience and experience intense emotional distress (33).

In PTSD, people tend to avoid places, people, or activities that may be associated with their traumatic experiences. This avoidance behavior is used to prevent or reduce the emotional pain and suffering that may be associated with the traumatic event. However, this avoidance behavior can limit the person's normal life and lead to social isolation (36). In addition, a traumatic experience can affect a person's mood and cause symptoms of depression. Posttraumatic depression can cause the person to experience symptoms of hopelessness, helplessness, and malaise. These symptoms can negatively affect the person's functioning and may require treatment (37). PTSD is also often associated with anxiety disorders. The fear, anxiety, and arousal experienced by the person after the trauma can trigger or increase anxiety symptoms. Anxiety symptoms can include a constant feeling of worry, irritability, insomnia, and physiological symptoms (e.g., heart palpitations, sweating) (38). In this context, it is understandable that the impact of the events, avoidance behaviors, depression and anxiety are predictive of posttraumatic stress disorder (29, 39, 40).

Limitations and Strengths

This study has several limitations. Its cross-sectional design only captures data from a specific time point, thus excluding the assessment of long-term psychological effects. The sample was limited to a specific region affected by the earthquake, restricting the generalizability of the results to all survivors. Additionally, the use of self-report scales could introduce biases such as social desirability and recall errors. The study did not fully assess the participants' social support systems and psychosocial resources, limiting the scope of the findings. Finally, the lack of long-term follow-up prevents the examination of the participants' long-term psychological recovery processes after the earthquake.

This study offers several strengths. First, it provides an in-depth analysis of the psychological effects of a significant natural disaster, adding to the limited research on the mental health outcomes following earthquakes, especially in culturally specific contexts like Turkey. The large sample size of 740 participants strengthens the statistical power and the reliability of the findings. Moreover, the use of validated psychological assessment tools (PTSD Checklist-5, Impact of Events Scale, Beck Anxiety Scale, and Beck Depression Inventory) ensures the accurate measurement of PTSD, depression, and anxiety. The study also emphasizes the importance of considering the combined impact of various psychological factors (PTSD, depression, and anxiety),

highlighting the need for holistic mental health interventions for survivors. The findings contribute valuable insights that can be utilized for developing tailored interventions and informing future disaster management policies.

Conclusion

The study reveals that the February 6, 2023, earthquake in Turkey had significant psychological consequences, with survivors experiencing high levels of PTSD, depression, and anxiety. A strong association was found between PTSD, depression, and the severity of traumatic events, indicating that emotional distress escalates with the intensity of experiences. However, the absence of a significant link between anxiety and the impact of events suggests different mechanisms between immediate fear and ongoing anxiety. These findings emphasize the need for comprehensive psychiatric and psychosocial interventions, considering both immediate and long-term support for survivors. Tailored interventions and qualitative research focusing on children and adolescents can further enhance the development of culturally appropriate and effective mental health programs for disaster recovery.

The psychological impact of the February 6, 2023, Türkiye earthquake highlights the urgent need for a robust public health response to address mental health issues such as post-traumatic stress disorder (PTSD), depression, and anxiety among survivors. The study's findings reveal significant relationships between the levels of PTSD, depression, and the perceived impact of events, underscoring the necessity of prioritizing mental health interventions alongside physical recovery efforts (2, 14).

From a public health perspective, immediate and long-term strategies are essential for minimizing the psychological toll of disasters. Screening and identifying vulnerable groups, particularly those with high levels of PTSD and depression, should be an integral part of disaster response plans (1). The establishment of mobile mental health units and the integration of psychological first aid into disaster relief programs can ensure timely access to care. These interventions should be culturally sensitive and include trauma-focused therapies, group counseling, and community-based support systems to address the specific needs of affected populations (3).

Policy implications of these findings are equally critical. Governments and local authorities should institutionalize mental health support in disaster preparedness frameworks. Allocating adequate funding for training mental health professionals in trauma care and scaling up resources for

mental health services can significantly improve outcomes for survivors. Policies must also promote community resilience by strengthening social support networks and fostering awareness of mental health issues (4).

Moreover, the relationship between PTSD, depression, and the perceived impact of events suggests the need for targeted mental health awareness campaigns to destigmatize mental health problems and encourage survivors to seek help. Special attention should be given to high-risk groups such as children, the elderly, and individuals with prior mental health conditions, as they are more vulnerable to the long-term effects of trauma (15).

In conclusion, the findings emphasize the critical role of mental health in disaster recovery. Future policies should integrate psychological well-being into disaster management plans, ensuring that mental health care becomes a fundamental component of public health responses to natural disasters. By addressing the mental health needs of survivors comprehensively, policymakers can enhance individual recovery and strengthen community resilience against future disasters.

The primary limitation of this study is its cross-sectional design. Therefore, it is recommended that future research adopt a longitudinal approach to provide a more comprehensive understanding of the subject matter. A longitudinal study would allow for a deeper exploration of changes over time, enhancing the reliability and validity of the findings.

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Ethics approval: The study was approved by the Research Ethics Committee of Gelişim University Research Ethics Committee (decision number 2023-07-63). Informed consent was obtained from all participants included in the study. This research was conducted in accordance with the Declaration of Helsinki.

Data Availability Statement: The data on which the present results are based are available upon request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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