

# Posttraumatic Stress Disorder-Related Mental Health Problems and Risk Factors After an Earthquake

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## ABSTRACT

Earthquakes can have a substantial impact on communities, leading to severe economic losses, structural damage, casualties, and displacement, as well as adverse psychological effects on survivors. Previous studies have highlighted a broad spectrum of adverse psychological effects following disasters, such as sleep disturbances, emotional distress, depression, suicidal thoughts, anxiety, posttraumatic stress disorder (PTSD). Posttraumatic stress disorder is particularly common among disaster survivors. It is characterized by the emergence of specific symptoms following direct exposure (experiencing a traumatic event firsthand or witnessing it happen to others) or indirect exposure (learning about a traumatic event involving loved ones or repeatedly being exposed to distressing details of the event). Disasters, crises, and traumas are difficult life experiences that require individuals to seek support. It is crucial to identify key factors such as individuals' location, emotional state, and their specific needs during these times to provide effective assistance. Addressing these aspects is essential in preventing trauma from worsening or becoming more entrenched. Post-earthquake psychosocial support should include comprehensive, long-term, and sustainable interventions to improve the mental health of both individuals and society. The aim of this article is to evaluate PTSD and related mental health issues following earthquakes.

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## INTRODUCTION

Disasters are life events as old as human history, constantly reminding people of their existence.<sup>1</sup> These events—whether natural, technological, or anthropogenic—cause significant physical, economic, and social losses; disrupt communities by halting or interrupting daily life and human activities; and often overwhelm the affected community's ability to cope with them using its own resources.<sup>1</sup> In fact, one could argue that all of these events are, to some extent, anthropogenic in nature. Such events threaten an individual's life, health, and well-being, rendering one helpless in the face of unexpected danger. They overwhelm coping mechanisms; invalidate basic assumptions about survival; and expose the stress, uncontrollability, and unpredictability of the world.<sup>2</sup>

Earthquakes are one of the most devastating and feared natural disasters of humanity. The last decade has witnessed numerous catastrophic earthquakes of magnitude 7 and above around the world. It has been observed that such earthquakes occurred mostly in 2023 (Table 1).

In Türkiye, there have been 20 earthquakes with a magnitude above 7 in the country since 1900.<sup>3</sup> These

earthquakes brought about many economic, sociological, and health problems in the country and led to wounds that are difficult to heal among humans' mental health. Between 1900 and 2023, a total of 269 earthquakes causing loss of life and damage occurred in Türkiye, which is situated in the Himalayan, Alpine, and Mediterranean earthquake zones. The biggest earthquakes, in terms of magnitude of destruction, level of impact, loss of life, and severe damage are the 2023 Kahramanmaraş, 1939 Erzincan, and 1999 Gölcük-centered Marmara earthquakes, respectively. It is clearly seen that, in addition to being among the countries where earthquakes occur most frequently, Türkiye is not only among the top countries that experience a high frequency of earthquakes, but it also ranks highly among the nations that suffer the most damage from these seismic events.<sup>4,5</sup> In addition, earthquakes are the natural disaster that inflicts the most significant loss of life and property in Türkiye. About 60% of the people who lost their lives due to the natural disasters in the country are attributed to earthquakes. According to recent data (2024), Türkiye ranks among the countries with the highest number of earthquake-related deaths

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**Table 1.** Number of Earthquakes Worldwide for 2014-2024<sup>3</sup>

Magnitude	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
8.0-9.9	1	1	0	1	1	1	0	3	0	0	0
7.0-7.9	11	18	16	6	16	9	9	16	11	19	3
6.0-6.9	143	127	131	104	118	135	111	141	117	128	29
5.0-5.9	1580	1413	1550	1447	1671	1484	1315	2046	1603	1637	423
4.0-4.9	15 817	13 777	13 700	10 544	12 782	11 897	12 135	14 643	13 707	13 816	3 345
Total	17 552	15 336	15 397	12 102	14 588	13 526	13 570	16 489	15 438	15 600	3800

globally. The “Our World in Data” report, based on the National Geophysical Data Center / World Data Service database, confirms this by analyzing earthquake fatalities from ancient times to recent years. Furthermore, another source indicates that Türkiye has experienced numerous devastating earthquakes over the years, such as the 1939 Erzincan, 1999 İzmit, and 2011 Van earthquakes. In total, Türkiye has suffered approximately 320 000 earthquake casualties, making it one of the countries most affected by earthquake-related deaths. This positions Türkiye as one of the most earthquake-prone nations worldwide, underscoring the significant impact that seismic activities have had on the country over time.<sup>6</sup>

The August 17 and November 12, 1999, Marmara Earthquakes have been a significant milestone in Türkiye’s earthquake history. Significant epidemiological studies were conducted in Kocaeli and neighboring provinces following the August 17 earthquake. The earthquake caused significant loss of life and property in Kocaeli, Gölcük, Düzce, Sakarya, Istanbul, and Yalova. According to official reports, 17 480 individuals lost their lives, and tens of thousands were injured. Kocaeli, the region most affected by the Marmara earthquake, experienced the loss of 9477 lives, with an additional 9881 people injured. In the aftermath of the earthquake, 35 180 residential buildings and 5770 workplaces were either destroyed or severely damaged. Furthermore, 40 757 residential buildings and 6057 workplaces sustained moderate damage, while 45 086 residential buildings and 6128 workplaces were recorded as having sustained minor damage.<sup>7</sup>

The Marmara earthquakes of August 17 and November 12, 1999, vividly illustrated the profound negative effects of disaster-related trauma. Despite various methodological differences in these studies, it has been shown that

mental health problems developing after the earthquake are quite prevalent and can persist for many years. Both community-based studies and those conducted with high-risk populations frequently report the occurrence of posttraumatic stress disorder (PTSD) and major depression (MD). In community-based studies at various time points after the Marmara Earthquake, the prevalence of PTSD ranges from 8% to 63%, while MD ranges from 11% to 42%. Among high-risk groups such as healthcare workers and rescue teams, these rates are 2.7% to 8.5% for PTSD and 1% to 4.5% for MD.<sup>8</sup>

The most recent large earthquake was in Kahramanmaraş, February 2023. A series of destructive earthquakes occurred in an area affecting eleven provinces and impacting over 13.5 million people in Türkiye. The initial earthquake measured 7.8 Mw, and a subsequent tremor measured 7.7 Mw. According to official statements made by AFAD (Disaster and Emergency Management Authority) after the earthquakes that affected a very wide geography, 53 537 people lost their lives and 107 213 people were injured due to the earthquake.<sup>9</sup> Although these figures are for those who could be identified, it is possible that the number of deaths and injuries is higher.

Cross-sectional study conducted 12 months after the devastating earthquake in Kahramanmaraş revealed that significant relationship between the level of exposure to the adverse effects of the earthquake and post traumatic stress disorder symptoms.<sup>10</sup> In the research on the prevalence of PTSD, depression, and anxiety disorder after the earthquake centered in Kahramanmaraş, it was found that 24% of the participants experienced severe anxiety, 5.5% experienced severe depression, and 12.20% experienced PTSD.<sup>11,12</sup> Another research conducted after the Kahramanmaraş earthquake, the results indicate a point prevalence of 35.3% for probable PTSD, emphasizing the significant psychological impact on disaster relief teams. Factors like age, residence in affected regions, and active participation in search and rescue (SAR) operations were found to notably influence the rates of probable PTSD. Interestingly, SAR members who were actively involved had lower rates of probable PTSD, likely due to their training. In contrast, individuals who directly experienced the earthquakes had higher scores, underscoring the effects of firsthand exposure.<sup>13</sup> It is anticipated that these rates will likely be higher in future studies.

**MAIN POINTS**

- 17 August and 6 February are global earthquakes (effects all the country on all the areas and in different levels) for Turkey
- Definition of the risk factors and their impacts are important topics
- Psychosocial support models have emerged in response to the impact of earthquakes, and they are designed to be flexibly implemented in earthquake-affected regions.

Exposure to devastating natural disasters such as an earthquake led individual to have various adversities and obstacles due to the immense physical devastation and sense of loss and this can result in long-term psychological problems and serious traumatic effects.<sup>10</sup> Posttraumatic stress disorder is characterized by the emergence of specific symptoms following direct exposure (personally experiencing a traumatic event or witnessing it happen to others) or indirect exposure (learning about a traumatic event that affected close ones or repeatedly encountering distressing details of the event)<sup>14</sup> Flashbacks, a hallmark of PTSD, can be triggered by both internal and external cues, causing individuals to feel as if they are reliving the traumatic event.<sup>15</sup> Posttraumatic stress disorder can severely affect both mental and physical well-being, leading to reduced psychosocial functioning, sleep disturbances, elevated emotional distress, and other psychological challenges.<sup>16</sup> Studies have indicated that PTSD is one of the most common issues experienced by earthquake survivors, with prevalence rates varying between 4.10% and 67.07%.<sup>16</sup>

Given the widespread psychological consequences of earthquakes, understanding their mental health and psychosocial impacts is crucial, especially in earthquake-prone countries like Türkiye. Over the past 3 decades, Türkiye has faced significant natural, man-made, and technological disasters, making it an important example for disaster mental health research. The country serves as a bridge between Western nations, the European Union, and the developing world, and it represents a unique intersection of human sciences and disaster management practices.

In this context, the objective of this article is to synthesize the literature on PTSD and associated mental health issues following earthquakes.

#### POSTTRAUMATIC STRESS DISORDER AND RELATED RISK FACTORS OF EARTHQUAKE

Earthquakes can have a substantial impact on communities, leading to severe economic losses, structural damage, casualties, and displacement,<sup>3,18</sup> as well as adverse psychological effects on survivors.<sup>40</sup> Previous studies have highlighted a broad spectrum of adverse psychological effects following disasters, such as sleep disturbances, emotional distress, depression, suicidal thoughts, anxiety, PTSD, and increased alcohol consumption.<sup>19</sup> Among these, PTSD is particularly common among disaster survivors.<sup>20</sup> According to research, even a decade after the Wenchuan earthquake, survivors in the most severely affected areas continued to experience intense psychological trauma. Factors such as low income, chronic illnesses, and the loss of immediate family members in the earthquake were significantly linked to long-term PTSD symptoms.<sup>19</sup> Post-earthquake PTSD prevalence ranges from 2.5% to 60% in children and adolescents and from 4% to 67% in adults.<sup>17</sup>

Risk factors are attributes, variables, or hazards that occur prior to or elevate the probability of developing a disorder.<sup>42</sup> Various studies<sup>42</sup> have categorized PTSD risk factors into 4 key groups: (1) socio-demographic factors (e.g., gender); (2) pre-trauma factors (conditions existing before the traumatic experience, such as a history of mental health issues); (3) peritraumatic factors (elements occurring during or immediately after the trauma, like the severity of the event); and (4) post-trauma factors (circumstances following the traumatic experience, such as low social support).

The most challenging aspect of the earthquake experience for many survivors is not the event itself but the subsequent living conditions. The lack of adequate housing, social support, and the continuous struggle to meet basic necessities can result in feelings of hopelessness and despair. This highlights the need for comprehensive post-disaster support to address the ongoing needs of survivors.<sup>22</sup> Additionally, Norris et al<sup>2</sup> observed that the prolonged stress linked to post-disaster recovery can result in elevated rates of PTSD and depression among survivors. The ongoing challenge of rebuilding lives amidst continuous hardship often makes individuals more susceptible to mental health problems than the initial impact of the earthquake.

A low level of education and financial hardships (such as low socio-economic status, insufficient income, and unemployment) can serve as significant risk factors for PTSD,<sup>17</sup> as they are often linked to reduced coping abilities, lower social status, limited social networks, and unhealthy behaviors.

Potentially traumatic events, such as violence, accidents, disasters, and serious threats, are linked to a higher risk of mental health issues.<sup>1</sup> Cross-sectional and longitudinal studies conducted after natural disasters have shown that adults experiencing financial problems or stress are more likely to suffer from mental health issues following the event compared to those without such problems.<sup>23</sup> This indicates that economic difficulties are not just a consequence of natural disasters but also a contributing factor to the development of long-term psychological disorders. Financial difficulties are also linked to social isolation and loneliness, which may, in turn, elevate the risk of a lack of emotional support.<sup>24</sup> Given that insufficient emotional support can increase the likelihood of mental health issues following a traumatic event,<sup>25,31,33</sup> it raises the question of how financial problems might contribute to a lack of social support after an event, especially when pre-existing support deficiencies are considered.

Experiencing a disaster, such as a major earthquake, is a traumatic event that can significantly impact and negatively affect one's quality of life.<sup>2</sup> Long-term stays in temporary accommodations often lead to discomfort and adverse effects.<sup>28,29</sup> Individuals residing in such accommodations may experience distress, resulting in decreased life satisfaction, and this impact may

continue over time. This distress can be attributed to the temporary nature of their housing, making it challenging for individuals and families to plan for the future, re-establish daily routines, and maintain or form social connections. Additionally, the quality of temporary accommodations may fall short in terms of aspects that support well-being, such as adequate lighting, space, density, thermal and acoustic insulation, and overall placement. The lack of stability, predictability, and quality in these living situations can contribute to ongoing stress and negative emotions, ultimately reducing life satisfaction.<sup>30</sup> A study investigating the quality of life (QOL) and its predictors among individuals who experienced various consequences of earthquakes, in terms of displacement from their homes, identified that the key factors contributing to a perceived decline in QOL were the quality and type of temporary accommodation, attachment to place, and perceived health impairment.<sup>31</sup> Therefore, improving the living conditions and quality of temporary accommodations is essential to alleviate these adverse effects. Therefore, housing satisfaction is an important factor in overall life satisfaction and is related to both the characteristics of the dwelling unit and the surrounding environment.

According to Çelik and Özdemir,<sup>44</sup> the lack of privacy in temporary housing units, such as containers, can lead to increased stress and tension among family members. This confined living space often exacerbates existing domestic conflicts, leading to higher instances of domestic violence. This highlights how inadequate living conditions can create an environment where interpersonal tensions are amplified. After the Van-Erciş earthquake, the prevalence of PTSD was reported as 35.5%. However, it has been stated that the loss of family members or a loved one, experiencing housing and health problems after the disaster, unemployment, temporary relocation, and financial difficulties increase the likelihood of developing PTSD.<sup>28</sup> Another study has shown that being a female, old age, youth (18-24 years old), low education level and unemployment problems during the disaster are associated with PTSD and depression.<sup>29</sup>

Baçoğlu et al<sup>22</sup> found that “survivors who were relocated to temporary housing units experienced increased rates of anxiety and depression. The communal living arrangements and lack of personal space were frequently cited as sources of stress, leading to a negative impact on mental health.” This research points to the importance of considering the psychological needs of disaster survivors when planning temporary housing solutions. Also, this study revealed that “the high noise permeability of container housing exacerbates stress and anxiety among residents. The inability to escape from the constant noise contributes to sleep disturbances and heightened levels of anxiety.” This finding emphasizes the importance of considering the

**Table 2.** Risk Factors of Posttraumatic Stress Disorder Related with Earthquake<sup>1,42</sup>

Risk Factors
<b>Socio-Demographic Variables</b>
<b>Disaster-Related Factors</b>
Trauma severity
Separation from family or beloved one
Property damage
Witnessing someone being killed in the disaster
<b>Post-Disaster Factors</b>
Lack of social support/ Insufficient area to socialize
Privacy issues in a shelter/crowded live in container
Lower household income
Hard/stressful living conditions
<b>Health problems</b>
Alcohol and drug dependence

acoustic properties of temporary housing in post-disaster recovery plans (Table 2).

The aftermath of the Maraş earthquake has seen a significant increase in feelings of anger among survivors due to the reasons such as the sense of being abandoned to die, delays in reaching the victims after the earthquake, feelings of loneliness during and after the earthquake, the helplessness caused by difficulties in accessing basic needs, the hardships of living in container cities, and the indifference of society toward those who experienced the earthquake.<sup>32</sup> These emotional responses may have contributed to exacerbation of symptoms of PTSD and depression. After an earthquake, intense emotions such as anger and feelings of abandonment are common among disaster survivors and are significant predictors of PTSD and depression. The perceived lack of support and delayed rescue efforts can lead to a heightened sense of helplessness and despair.<sup>22</sup> This indicates that the emotional aftermath of the disaster can be as impactful as the trauma.

The lack of adequate socialization spaces in container cities significantly contributes to the emergence of PTSD and depression among survivors. The absence of these spaces can lead to increased feelings of isolation and loneliness, which are critical factors in the development of mental health issues. Empirical research has demonstrated the protective role of social support on health outcomes, including PTSD, depression,<sup>34</sup> subjective well-being, and burnout.<sup>35</sup> The relationship between social support and PTSD has been examined across various populations, such as veterans, patients, firefighters, and survivors of sexual abuse, disasters, and war.<sup>36,37</sup> While numerous studies have consistently shown negative concurrent and prospective associations between social support and PTSD,<sup>38,39</sup> some research has found non-significant<sup>40,41</sup> or even positive

associations. According to the study, the absence of communal areas where individuals can engage in social interactions intensifies feelings of isolation among disaster survivors, highlighting the importance of social spaces in fostering mental well-being.

A study by Norris et al<sup>2</sup> found that “survivors who experience intense anger and feelings of being left to die are more likely to develop severe PTSD symptoms. These emotions can exacerbate the psychological impact of the trauma, leading to long-term mental health issues.” This highlights the critical role of emotional responses in the development and severity of PTSD.

Galea et al<sup>33</sup> also emphasized that the combination of anger and feelings of abandonment can lead to a sense of hopelessness, further intensifying PTSD and depression symptoms. The lack of adequate mental health support in the aftermath of the disaster can prolong and worsen these conditions. This finding reinforces the need for comprehensive mental health services in post-disaster recovery efforts.

Furthermore, Galea et al<sup>33</sup> noted that “the absence of designated social spaces can lead to increased domestic stress and tension, as families have limited outlets for relieving stress. This can result in higher rates of depression and anxiety among residents.” This research points to the broader implications of inadequate socialization opportunities on family dynamics and overall mental health.

### TRAUMATIC GRIEF REACTIONS AND PROBLEMS RELATED TO LOSSES AFTER EARTHQUAKE

Grief refers to the changes in mood and emotions experienced by those left behind in response to significant separations and losses, such as the death of a loved one.<sup>67</sup> After a death, grieving individuals may exhibit symptoms such as being mentally preoccupied with the deceased, repeatedly recalling memories, and crying as a component of sadness and mourning. The bereavement and injury of loved ones are major risk factors for PTSD.<sup>20</sup> Losing a loved one depletes vital support resources from close relationships during a time of great need, intensifying psychological stress.<sup>16</sup> Furthermore, the loss or injury of a loved one can disrupt the affective attachment system of survivors, leading to significant consequences for their well-being.<sup>40</sup>

Survivors of loss after an earthquake exhibit different grief symptoms. It is well-known that physical, emotional, behavioral, and cognitive grief responses are extremely common following the loss of a loved one, and often there is no need for professional support during the grieving process.<sup>67</sup> However, in cases where individuals cannot experience a healthy grieving process and find it difficult to continue with their lives, professional support may be

necessary. Especially in instances of sudden-traumatic deaths and multiple losses, seeking psychological support related to grief is not a choice but a necessity. Therefore, individuals who have had a traumatic experience and those who suffer from psychological issues such as depression and PTSD are considered at-risk groups, and grief support/counseling is recommended for these groups.

According to Stroebe and Schut,<sup>43</sup> “Grief is a natural response to loss, but the intensity and duration of grief can be exacerbated by the traumatic nature of a disaster. Survivors often experience complicated grief, which can lead to prolonged periods of mourning and difficulty in adjusting to the loss.” This highlights the unique nature of grief in the context of disasters and its potential to hinder recovery.

Bonanno et al<sup>28</sup> found that “bereavement following a disaster often involves not only the loss of loved ones but also the loss of homes, communities, and a sense of security. These compounded losses can result in more severe grief reactions and increase the risk of developing depression and anxiety.” This study underscores the multifaceted nature of loss in the aftermath of an earthquake and its impact on mental health.

Furthermore, Norris et al<sup>2</sup> emphasized that “the social support network plays a crucial role in the grieving process. In the aftermath of a disaster, the disruption of social networks can hinder the grieving process, leading to feelings of isolation and hopelessness.” This indicates the importance of maintaining social connections and support systems for individuals coping with loss.<sup>2</sup>

A study by Shear et al revealed that “individuals experiencing grief after a disaster are at a higher risk of developing complicated grief and PTSD. The traumatic context of the loss can lead to intrusive thoughts, avoidance behaviors, and severe emotional distress.” This finding highlights the need for targeted interventions to address grief and its associated psychological impacts in disaster-affected populations.

Furthermore, Kılıç and Ulusoy<sup>61</sup> indicated that the lack of social support and the disruption of community networks exacerbated grief reactions among earthquake survivors. The breakdown of social structures, which often provide crucial support during times of loss, left many individuals feeling isolated and unable to cope with their grief effectively. This finding emphasizes the importance of social support in the grieving process.

Survivors of the 17 August earthquake exhibited high levels of complicated grief, characterized by prolonged and intense mourning, difficulty in accepting the loss, and persistent emotional distress. These reactions were significantly higher compared to typical grief responses seen in non-disaster contexts.<sup>60</sup> This underscores the unique nature of grief following a catastrophic event.

**FACTORS OF POST-EARTHQUAKE MOURNING REACTIONS<sup>45,67</sup>**

Factor	Description
<b>Severity of loss</b>	The magnitude of the loss, including family members, friends, homes, and community.
<b>Complicated grief</b>	Prolonged and intense mourning, difficulty in accepting the loss, and persistent emotional distress.
<b>Social support</b>	Availability of social networks and community support systems to aid in the grieving process.
<b>Psychological impact</b>	Development of post-traumatic stress disorder, depression, and other mental health issues as a result of compounded losses.
<b>Traumatic context</b>	The traumatic nature of the disaster exacerbates grief reactions and mental health problems.
<b>Community disruption</b>	Breakdown of social structures and networks that typically provide support during times of loss.
<b>Economic hardship</b>	Financial instability and economic difficulties following the disaster, contributing to stress and grief.
<b>Access to resources</b>	Availability and accessibility of mental health services and resources to support grieving individuals.

In traumatic events such as disasters, accidents, terrorist acts, and earthquakes, people lose their lives in traumatic ways. The occurrence of sudden and unexpected deaths, the dismemberment of human bodies, and missing bodies after an earthquake (preventing individuals from seeing their deceased loved ones and saying goodbye) can lead to pathological grief for the survivors. Specifically, in the case of the Kahramanmaraş earthquake, the inability to perform mourning rituals/duties in a healthy and proper manner, as well as mass burials, significantly brings out traumatic grief. Performing tasks such as washing, shrouding, and burying the deceased is essential for a healthy grieving process. Additionally, mourning rituals are said to facilitate and soothe the grief. Rituals are seen as a way of managing grief emotionally, cognitively, and behaviorally.<sup>46</sup> Confronting the belongings and memories of deceased loved ones and visiting their graves are part of a healthy grieving process for survivors. However, when individuals cannot perform mourning rituals, a concept called “disenfranchised grief” arises. This type of grief occurs when individuals’ emotional expressions are not recognized, accepted, or hindered. Disenfranchised grief can disrupt the normal course of the grieving process, negatively affecting individuals’ mental health and social relationships.

For instance, during the pandemic, it was noted that mourning rituals and duties related to the losses could not be performed.<sup>63</sup> Similarly, in the Kahramanmaraş earthquake, the inability to perform mourning rituals and the disruptions in mourning duties have made it more likely for survivors to exhibit symptoms of traumatic grief.

**HOW EPIDEMIOLOGICAL DATA ENLIGHTENS THE PSYCHOSOCIAL SUPPORT AND MENTAL HEALTH SERVICES**

Disasters, crises, and traumas are challenging life experiences that necessitate individuals seeking support. It is emphasized that identifying aspects such as where individuals are located, how they are feeling, and what they need during these experiences is crucial for providing support. Addressing these factors is considered vital in preventing the progression and deepening of trauma.<sup>1</sup>

According to Housley and Beutler,<sup>64</sup> when psychosocial intervention is conceptualized as a pyramid, it begins with addressing basic needs, safety, stabilization, and psychological first aid for the entire group during the acute phase. In the medium term, it encompasses psychoeducation activities and support groups for a smaller subset of individuals. In the long term, it focuses on individualized psychological counseling and treatments for an even smaller group with specific needs.<sup>47</sup> At the top of the pyramid, which involves individual psychological interventions, a certain amount of time must pass before trauma-focused work can be effectively conducted. Early intervention in trauma may actually exacerbate the condition, potentially causing more harm than benefit, instead of having a therapeutic effect.<sup>48</sup> In this context, after sufficient time has passed since the trauma, and once the individual is psychologically ready and has decided to seek support, mental health professionals can offer psychological interventions both individually and in group settings.<sup>65</sup>

In a study conducted in 2010 regarding the 1990 Marmara earthquake, interviews with a certain number of earthquake survivors revealed that social support played a significant role in reducing stress and post-traumatic stress. However, it was also observed that issues related to the sustainability of this social support increased levels of stress and anxiety.<sup>66</sup> Another study on the Van earthquake, involving 34 individuals whose homes were destroyed, emphasized the importance of psychological resilience. It was found that PTSD was particularly observed in individuals who lost their homes.<sup>67</sup> Additionally, this study highlighted that psychosocial support contributed to the process of coping and normalization for these individuals after the earthquake. In a similar context, in the Elâzığ earthquake, it was determined that children who experienced the disaster exhibited high levels of anxiety. The study also emphasized that post-earthquake psychosocial support is crucial in mitigating the impact of the disaster.<sup>68</sup>

**CONCLUSION**

Earthquakes are relatively sudden, more or less time-limited, and communal events that extensively impair properties and lives, engendering a systemic, perpetually disruptive impact on the social, psychological, and basic

daily routines of individual lives. Each disaster has unique conditions, and the information and experiences gained will inform responses to future disasters. Post-earthquake psychosocial support should include comprehensive, long-term and sustainable interventions to improve the mental health of both individuals and society.

The consequences of past earthquakes in the same regions or countries can provide valuable insights for planning the establishment of mental health and psychosocial services for future earthquakes. This includes assessing the long-term consequences of disasters, such as PTSD, depression, substance use disorders, and other psychiatric conditions. It also involves identifying vulnerable populations (e.g., children, the elderly, first responders, and individuals with preexisting mental health conditions) and tracking trends in mental health symptoms over time to better understand recovery trajectories. Moreover, detecting spikes in psychological distress or mental health conditions in the aftermath of disasters is crucial for resource allocation, developing evidence-based programs, evaluating mental health interventions, and advancing mental health advocacy.

**Data Availability Statement:** This article is a narrative review based solely on previously published literature. No new data were collected or analyzed, and no human or animal participants were involved; therefore, ethical approval and informed consent were not required. There are no data associated with this review. This article is a review and does not involve any studies with human participants or animals performed by the author(s), therefore ethical approval was not required. This is a narrative review and does not include any interventions or data involving human participants; informed consent was not necessary.

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