

# Psychosocial Intervention Programs in Natural Disaster Affected Individuals: A Systematic Review

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**Citation:** Comez İkican T, Mor E. Psychosocial intervention programs in natural disaster affected individuals: a systematic review. CURARE - Journal of Nursing 2023;3:41-51. <https://doi.org/10.26650/CURARE.2023.1293930>

## ABSTRACT

The aim of this study is to systematically analyze the psychosocial intervention programs applied to individuals affected by disasters.

This study was conducted through a systematic review of the databases including "Web of Science Core Collection, Pubmed, Science Direct, Ovid, Scopus, CINAHL, Embase, Cochrane, Google Scholar, and Tubitak-ULAKBIM." Relevant articles between January 1999 and April 2023 were retrospectively analyzed.

There are 27 national and international studies related to the subject. Two researchers evaluated this study using the Joanna Briggs Institute's control list. A review profile was presented in the context of the "PRISMA-Preferred Reporting Items for Systematic Reviews and Meta-Analyses" schema.

As a result of this systematic review, it was observed that psychosocial intervention programs carried out after a disaster are highly effective.

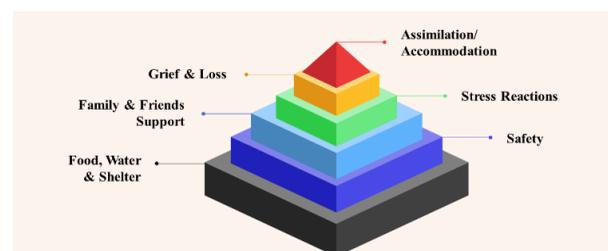
**Keywords:** Disaster, psychosocial intervention, systematic review

## INTRODUCTION

Disaster is defined as "great catastrophe, trouble, and destruction" (1). The COVID-19 pandemic, the 2022 earthquake in Indonesia, the 2022 floods in Pakistan, the 2023 tornadoes and storms in the US, the 2023 floods in Brazil, the 2023 New Zealand floods and Cyclone Gabrielle, and the 2023 earthquake in Turkey-Syria are some recent disasters that have significantly impacted human life in the last few years. These are only a few of the thousands of disasters that occur annually and tend to increase (2,3) in recent years. The frequency of disasters has started to increase with the changing ecological conditions and environmental factors (4,5). According to where they originate, disasters fall into three major categories: technical, environmental deterioration, and natural. Natural disasters also include five types of disasters: "geophysical" (earthquakes, eruptions, and tsunamis), "hydrological," "meteorological," "climatological," and "biological hazards" (6).

Natural disasters are generally characterized by high mortality. This may cause major traumas for affected people (7). Victims

who suffer trauma from disasters may experience additional stress as a result of their displacement and sheltering, in addition to the loss of lives (8). A natural disaster's first three days are known as the 'crucial period' which is crucial for finding survivors without food or aid (9). Besides core needs like food and aid disaster victims also have specific needs that need to be attended to. Jordan (2015) created a hierarchy of needs triangle for survivors (Figure 1) to identify disaster survivors' core needs based on his disaster relief and Maslow's (1943)



**Figure 1:** Hierarchy of Needs Triangle for Survivors to Identify Disaster Survivors

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**Submitted:** 08.05.2023 • **Revision Requested:** 13.06.2023 • **Last Revision Received:** 08.08.2023 • **Accepted:** 14.08.2023 • **Published Online:** 00.00.0000



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hierarchy of needs. Basic needs (or deficiencies) are at the bottom of the pyramid, while complex needs (higher recovery and growth) are at the top (8).

The cost of the disasters is generally measured by social and economic damage, but the victims are also affected by emotional suffering and pain, and psychological effects outweigh the physical effects in most people. The “psychological footprint” of a disaster is larger than the “medical footprint” (10,11). Even though many people in the hazard field will escape physically unharmed, they will still suffer from stress reactions, distress, fear, and bereavement. Persons who are physically injured will also experience a psychological overlay of “injury-related distress” and an elevated risk for Posttraumatic-Stress Disorder (PTSD) (12,13). Along with PTSD, people might experience different types of psychological instabilities (Figure 2), such as anxiety, acute stress disorder, traumatic grief, adjustment disorders, and depression (14)

All health professionals must play an “active role” in the process of coping with negative life experiences that may occur in individuals after a disaster (15). In this context, especially nurses are very effective in post-disaster care due to their high number and accessibility. Nurses play an active role in the whole process of the disaster (before, during, and after). They

have the roles of informing, risk identification, and protective activities before the disaster, and assessment, diagnosis, planning, and caregiving roles during and after the disaster. Nurses are always present in disaster situations and play a vital role in their response (16-18). With their special knowledge and skills, they minimize the factors that negatively affect the health of the victims and the factors that threaten their lives (19,20). When we look at the studies conducted around the world, it is seen that the presence of nurses in case of disaster can reduce the death rate (21,22).

In addition, nurses support the psychosocial empowerment of disaster-affected individuals with post-disaster psychosocial intervention programs (23). Nurses focus on mainly seven subjects: Raising public awareness of mental health, developing human resources to improve response opportunities for “Mental Health and Psychosocial Support-MHPSS,” support for “MHPSS” providers, support for collective activities, one-to-one support for individuals in need, living conditions and income support and facilitating collaborations between “MHPSS” activities provided to affected communities (24). In this context, nurses can ensure that individuals affected by disasters protect and maintain their mental health through psychological first aid, psychoeducational programs, and therapies in which they are experts.

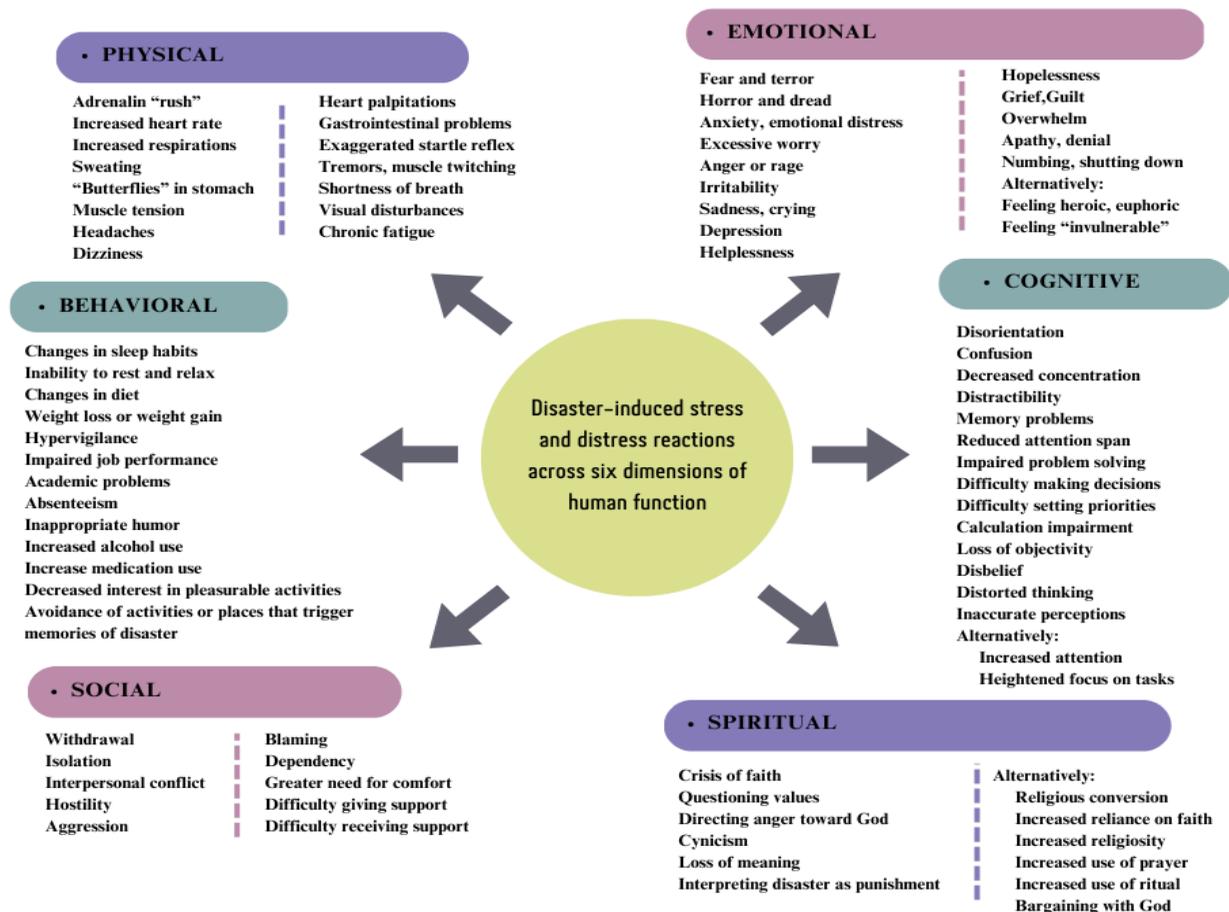


Figure 2: Psychosocial Problems in Natural Disaster Affected Individuals

## MATERIAL AND METHODS

### Study Aim

This systematic analysis was conducted to evaluate the psychosocial intervention programs for individuals affected by disasters. Accordingly, the included studies' aims, years, findings, and results were analyzed.

### Study Design

The research was conducted over the Istanbul University internet access network in April 2023. The searches were collected with a combination of Turkish and English keywords such as “nurses”, “nursing”, “psychosocial intervention”, “psychoeducation”, “therapy”, “psychological first aid”, “motivational interviewing”, “EMDR”, “psychological well-being”, “group studies”, “disaster”, “catastrophe”, “natural disaster”, “man-made disaster”, “hazards”, “earthquake”, “floods”, “tsunamis”, “landslides”, “volcanic eruptions”, “fires”, “wildfire”, “droughts”, “cyclone”, “hurricane”, “tornado”.

Searches were conducted in “Web of Science Core Collection, Pubmed, Science Direct, Ovid, Scopus, CINAHL, Embase, Cochrane, Google Scholar, and Tubitak-ULAKBIM.” In all databases, keywords were searched by making various combinations (such as “nurses” and “psychosocial intervention” and “natural disaster”, “nursing” and “psychoeducation” and “earthquake” etc.).

### Inclusion criteria in the study,

- The sample group was affected by the disaster,

- Between the years January 1999 – April 2023 and national or international publications,
- Original, qualitative, and quantitative research,
- The full text of articles to be accessible,
- Turkish or English to be the language of publication.

### Exclusion criteria in the study,

- **Reason 1:** Thesis studies and oral or poster papers presented at congresses were not included in the scope of the study.
- **Reason 2:** Studies with a lack of a summary were not included in the review.

As a result of these inclusion criteria, 4710 publications were reached. Abstracts or full texts were read and assessed to identify whether they met the research inclusion criteria. The study also has exclusion criteria. Finally, a total of 27 publications were retrieved. The detailed flowchart of the study is shown in “PRISMA” **Figure 3**.

The Preferred reporting items for “PRISMA”, a valid and reliable guide for systematic reviews, were used to summarize the data. Then also, studies were evaluated with a data summarization form developed based on “PRISMA”. Two independent researchers reviewed the studies to ensure consistency among the researchers. Scoring was 1 point (appropriate) and 0 (unsuitable). The lowest score was 7, and the highest score was 11. Kappa analysis was then performed to determine consistency between each investigator. The Kappa value was found to be as high as 0.85.

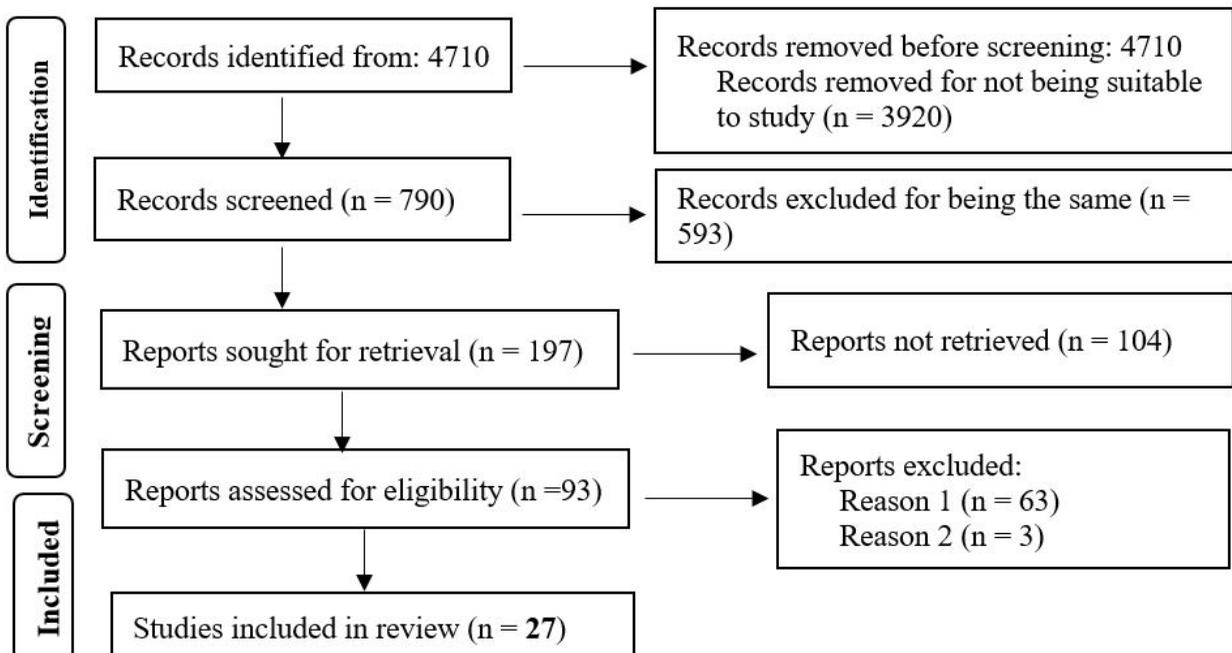


Figure 3: Flow Diagram

### Data summarization form items

- Title of the study,
- Summary of the study,
- Method of the study (Design of the study, Sample size, the sample group in which the study was conducted, Data collection tools used, Statistical analyses used),
- Findings of the study,
- Discussion of the study,
- Limitations of the study,
- Conclusion of the study.

### Ethical Consideration

This study was not conducted on any individual or animal. Document analysis was used as the data collection method. Therefore, ethics committee approval is not required.

### RESULTS

This systematic review includes data from 27 studies published between January 1999 and April 2023. The characteristics of the studies (Author/s, Study year, Country, Psychosocial intervention, and Disaster features) are given in Table 1, and a review of the studies (Aims, Sample, Methods, and Results) are given in Table 2. The findings are examined under three main headings: Characteristics of the studies, Characteristics of psychosocial intervention programs, and Characteristics and effects of disasters.

#### Characteristics of the Studies

When the studies included in the systematic review are examined according to the years they were made, it is seen that the studies were carried out between 2002-2022, since there are no publications published in 2023 yet. In addition, 19 of the studies included in the review were conducted between 2002-2019, and 8 studies between 2020-2022 (Table 1).

When the countries where the studies were conducted were examined, it was found that they were in a wide variety of geographies. When the countries are examined in general, it is seen that there are countries where various disasters are experienced very frequently. In this context, it was determined that 3 of the earthquake-related studies were conducted in Turkey, 5 in China, 2 in Nepal, 1 in Iran, 1 in Italy, and 1 in Iceland. Hurricane studies were mostly conducted in the United States, tsunami studies were conducted in Japan and Israel, and one in Thailand. In addition, it was observed that there was a study on fire disasters in India (Table 1).

When the sample group in which the studies were conducted was examined, it was seen that the studies were conducted with children, adolescents, and adults. It was determined that the sample group of 9 of the studies consisted of adolescents,

4 of the studies consisted of children and 14 of the studies consisted of adults. It was observed that all individuals included in the studies were directly affected by any type of disaster (earthquake, tornado, hurricane, tsunami, and fire) (Table 2).

### Psychosocial Intervention Programs

When the psychosocial intervention programs used in the studies included in the systematic review were examined, it was determined that very different types of programs were used. First of all, "CBT" was used in four of the studies, the "Brief Intervention Program" in three of them, the "BBN Program" in three of them, and the use of "EMDR" in three of them. In addition, two studies used "Art-based Psychosocial Training, two studies used "Grief and Trauma Intervention", and two studies used the "NET Program" as psychosocial intervention. Also, all these programs, "Stress Intervention Program", "Psychoeducation", "Emotion Regulation Program", "Problem-Solving Skills Enhancement Program" and "Adaptation to Life and Resilience Program" were used (Table 1).

When the durations of the psychosocial intervention programs were examined, it was determined that the longest intervention was 11 sessions, and the shortest intervention program was implemented once (Table 2).

### Characteristics and Effects of Disasters

When we examined the characteristics of the disasters in the studies included in the systematic review; it was seen that earthquake and hurricane disasters were frequently experienced. Thirteen studies were carried out following an earthquake, one study was carried out on earthquake and tsunami, nine studies were carried out following hurricanes, one study was carried out on fire, one study was carried out on typhoons, and two studies were carried out on tsunamis. The disasters in the study are serious disasters that cause significant loss of life and property. Also, these disasters had a serious impact on the country so international calls for help post-disaster (Table 1).

### DISCUSSION

In this systematic review, post-disaster psychosocial intervention programs and their effects were evaluated. Studies on the subject have focused on psychosocial intervention programs after natural disasters such as earthquakes, tsunamis, hurricanes, and fires. A common conceptual language could not be used regarding the use of intervention programs after different disasters, at different time intervals after the disaster, and implemented different data collection tools.

It was observed that the psychosocial intervention programs implemented within the scope of the review were often carried out after the earthquake. The fact that earthquakes, which are among the most common natural disasters in the world, are thought to be a reason for this. In addition, it is thought to be a subject that has been studied more because of the psychosocial effects and trauma on individuals and society, as well as the

**Table 1: Characteristics of the Studies**

|    | Author/s             | Study Year | Psychosocial Intervention  | Disaster Features            | Country          |
|----|----------------------|------------|--|------------------------------|------------------|
| 1  | Chemtob et al.       | 2002       | EMDR   | Hurricane Iniki              | Hawaii           |
| 2  | Hardin et al.        | 2002       | Catastrophic Stress Intervention   | Hurricane Hugo               | United States    |
| 3  | Chemtob et al.       | 2002       | Individual and Group Therapy   | Hurricane Iniki              | United States    |
| 4  | Başoğlu et al.       | 2005       | Single-Session Behavioral Treatment  | Earthquake                   | Turkey           |
| 5  | Konuk et al.         | 2006       | EMDR   | Earthquake                   | Turkey           |
| 6  | Başoğlu et al.       | 2007       | Behavioral Treatment   | Earthquake                   | Turkey           |
| 7  | Shooshtary et al.    | 2008       | Cognitive Behavioral Therapy   | Earthquake                   | Iran             |
| 8  | Salloum e tal.       | 2008       | Grief And Trauma Intervention  | Hurricane Katrina            | United States    |
| 9  | Zhang et al.         | 2011       | Cognitive-behavior therapy<br>Acupoint stimulation   | Earthquake                   | China            |
| 10 | Salloum et al.       | 2012       | Grief and Trauma Intervention  | Hurricane Katrina and Gustav | United States    |
| 11 | Zang et al.          | 2013       | Narrative Exposure Therapy (NET)   | Earthquake                   | China            |
| 12 | Zang et al.          | 2014       | Narrative Exposure Therapy (NET)   | Earthquake                   | China            |
| 13 | Thordardottir et al. | 2014       | Yoga practice  | Earthquake                   | Iceland          |
| 14 | Chen et al.          | 2014       | Cognitive Behavioral Therapy   | Earthquake                   | China            |
| 15 | Ruggiero et al.      | 2015       | Structured interview and program Bounce Back Now (BBN)   | Tornado                      | United States    |
| 16 | Ruggiero et al.      | 2015       | Semi-structured baseline telephone interviews<br>Bounce Back Now (BBN)<br>ASH (Adult self-help) intervention | Joplin tornado               | United States    |
| 17 | Pityaratstian et al. | 2015       | Group Cognitive Behavioural Therapy  | Tsunami                      | Thailand         |
| 18 | Xiaolu et al.        | 2017       | Brief Intervention Program   | Earthquake                   | China            |
| 19 | Saltini et al.       | 2018       | EMDR   | Earthquake                   | Italy            |
| 20 | O'Donnell et al.     | 2020       | The Skills for Life Adjustment and Resilience (SOLAR) Program  | Australian Bushfire          | India            |
| 21 | Gavron               | 2020       | Art-based psychosocial intervention  | Tsunami                      | Japan and Israel |
| 22 | Fukuchi              | 2020       | Psychoeducation  | Earthquake and Tsunami       | Japan            |
| 23 | Sangraula et al.     | 2020       | Group Problem Management   | Earthquake                   | Nepal            |
| 24 | Gilmore et al.       | 2021       | Web-Based Intervention<br>Bounce Back Now (BBN)  | Tornado                      | United States    |
| 25 | Gavron et al.        | 2022       | Arts-based psychosocial training   | Yolanda Typhoon              | Israel           |
| 26 | Powell et al.        | 2022       | Brief Intervention Program   | Hurricane Harvey and Maria   | United States    |
| 27 | Ramaiya et al.       | 2022       | School-Based Emotion<br>Regulation Prevention Intervention   | Earthquake                   | Nepal            |

physical effects of the earthquake. In addition to all these, witnessing the earthquake and its aftermath through visual, written, or social media, although not primarily affected by the earthquake, causes secondary trauma in individuals. As a result, those directly or indirectly affected by the earthquake experience psychiatric problems and the need for psychosocial intervention.

In the studies reviewed, it was observed that the psychosocial interventions applied were mostly directed toward cognitive processes. In this context, when the studies are examined in detail, it has been concluded that the most commonly used intervention programs are "CBT," "Brief Intervention Program," "BBN Program," and "EMDR". When the literature is examined, it is seen that intervention programs for trauma due to disasters are generally cognitive-based (25-27). CBT is a therapy method with high reliability and validity that aims to intervene in the behaviors of trauma victims and to strengthen them cognitively against the problems they experience.

In the results of intervention programs, it was observed that the goals of the programs were achieved, and the psychiatric symptoms such as depression, dissociation, etc. that developed due to trauma decreased or disappeared. This result has also been proven by follow-up studies. However, although the results were as desired in a few studies, clear results could not be given about the continuity of the intervention program because follow-up was not performed (28,29). In this context, it is thought that it is very important to follow up on trauma studies. Because various psychosocial problems developing due to disaster may occur at different times after the disaster.

Considering the sample group of the studies examined, it was seen that they were carried out with adolescents and children as well as adults. Although disasters affect all members of society, they mostly affect children and adolescents, who are among the vulnerable groups (30-32). Children may not be able to make sense of the disaster and losses. Similarly,

**Table 2: Review of the Studies**

|   | Author/s & Year       | Aim   | Sample  | Method  | Results   |
|---|-----------------------|---|---|---|---|
| 1 | Chemtob et al. (2002) | This study aimed to determine the effectiveness of the "Psychosocial Interventions Program" for affected elementary school children in the disaster.  | 176 persons (group therapy)<br>73 persons (individual therapy)<br><br>6 - 12 years old                                    | This randomized controlled study was carried out two years after the disaster. The program consists of 4 seasons.   | The program is provided to reduce children's stress and trauma-related symptoms.  |
| 2 | Hardin et al. (2002)  | The study aimed to determine the effectiveness of "Long Term Psychosocial Nursing Interventions" for adolescents affected by the disaster.  | 545 adolescents (experimental group)<br>550 adolescents (control group)<br><br>13-18 years old.                           | The study was longitudinal and quasi-experimental. The study determined the mental distress of adolescents every six months over the 3 years. The interventions were carried out three years after the hurricane and consisted of nine protocols  | The study results, that adolescents in the intervention group were decreased mental distress for the first two years.   |
| 3 | Chemtob et al. (2002) | This controlled study aimed to evaluate the effectiveness of a "Brief intervention" for disaster-related PTSD in affected children.   | 32 children (experimental group)<br><br>6 - 12 years old  | This study was implemented using two groups;<br>- The first group was assessed at pre-treatment, provided treatment, and re-assessed at post-treatment.<br>- The second group consisted of wait-listed participants. The second group was assessed at baseline, and then following treatment, the first group was re-assessed at provided treatment. In addition, both groups were re-evaluated six months after the treatment. | As a result of the program, it was observed that there was a small decrease in the children's PTSD symptoms. In addition, these results lasted for 6 months.                    |
| 4 | Başoğlu et al. (2005) | The study aimed to determine the effectiveness of "Single-Session Behavioral Treatment for affected people in the earthquake.   | 31 persons (experimental group)<br>28 persons (waiting list control group)<br><br>16-65 years old                         | The experimental group received a single one-hour session of modified BT and was followed up at weeks 6, 12, and 24. The control group was given the same treatment six weeks after the trial. Interviews consisted of 3 stages. The first stage was 10 minutes, the second stage was 30 minutes, and the final stage was 20 minutes.   | This study results that "Brief behavioral treatment" was a suitable and cost-effective intervention for disaster survivors.   |
| 5 | Konuk et al. (2006)   | The aim of the study is to determine the effects of "EMDR Therapy" on exposed people to the earthquake  | 41 participants (experimental group)<br><br>19-74 years old.  | EMDR application of 5 sessions, 90 minutes each, was carried out with 41 victims of disasters diagnosed with PTSD. The application was carried out 17 months after the earthquake. Participants were divided into the early-treated and late-treated, and these groups were compared.   | After the EMDR application, there was a decrease in PTSD symptoms. It was observed that the decrease in PTSD symptoms continued in the 6-month follow-up after the application. |
| 6 | Başoğlu et al. (2007) | This study aimed to determine the effect of a "Single-session Behavioral Treatment" on people who exposure to "simulated tremors in an earthquake simulator and self-exposure instructions" in reducing PTSD. | 16 persons (experimental group - behavioral treatment)<br>15 persons (repeated assessment group)<br><br>18 - 65 years old | 31 earthquake survivors with PTSD applied a single session of behavioral treatment (n=16) or repeated assessments (n=15) after a 4-6 year post-earthquake.  | The single-session behavioral treatment is effective in reducing fear and PTSD symptoms in earthquake survivors.  |

|    |                                      |   |  |  |   |
|----|--------------------------------------|---|--|--|---|
| 7  | Shooshtary et al. (2008)             | This study aimed to determine "Cognitive Behavioral Therapy (CBT)" effectiveness in adolescents exposed to earthquake.  | 135 adolescents (case group) 33 adolescents (comparison group)<br>11 - 20 years old  | Four months after the earthquake, adolescents were evaluated with the Impact of Event Scale-Revised (IES-R). 2 therapists conducted CBT in the case group, and both groups were evaluated again with IES-R.  | Cognitive behavioral therapy is effective in reducing post-traumatic stress symptoms  |
| 8  | Salloum, A., & Overstreet, S. (2008) | This study aimed to determine the effectiveness of a "Community-based Grief" and "Trauma Intervention" for children who were affected by the disaster.                                  | 28 children (group intervention)<br>28 children (individual intervention)<br>7 - 12 years old  | Interventions consisted of 10 sessions of grief and trauma-focused programs and a parent meeting. Measures of scales at pre-intervention, post-intervention, and 3 weeks post-intervention. Interventions were conducted 4 months after the hurricane.   | There were no differences in outcomes between children who participated in group and individual intervention. Each intervention is effective for decreasing childhood grief and trauma post-disaster. |
| 9  | Zhang et al. (2011)                  | This study aimed to determine the effect of "Acupuncture Point Stimulation" and "CBT" on PTSD after an earthquake.  | 24 cases treated by the CBT<br>67 cases treated by CBT and acupoint stimulation<br>4 - 89 years old  | In the control group, using CBT alone and treated for 30 min each time every other day for 1 week. In the case group, both CBT and acupoint stimulation were used. Stimulate left Laogong (PC 8) with a stimulator for 30 min a time every other day for 1 week.   | Acupoint stimulation is more effective than CBT used alone in PTSD patients.  |
| 10 | Salloum et al. (2012)                | This study aimed to determine the effect of the "Grief and Trauma Intervention Program" on post-disaster coping skills and trauma narrative processing in children.                     | 37 children (trauma narrative processing)<br>33 children (coping skills)<br>6 - 12 years old   | Three years post-hurricane, 11 sessions of program and parent meetings were held. The scales were applied before and after the implementation. Follow-up was also performed at 3 and 12 months.  | Children in both groups demonstrated significant improvements in distress-related symptoms and social support. Also, they were maintained up to 12 months post-intervention.                          |
| 11 | Zang et al. (2013)                   | This study aimed to determine the effect of "Narrative Exposure Therapy (NET)" on PTSD after an earthquake.   | 11 persons (experimental group)<br>11 persons (waiting list control group)<br>37 - 75 years old  | 19-23 months after the earthquake, 4 therapy sessions of 60-90 minutes each were held. The scales were applied after the implementation. Follow-up was also performed at 2 months.   | NET is effective on PTSD symptoms post-earthquake. PTSD symptoms showed significant reductions.   |
| 12 | Zang et al. (2014)                   | This study aimed to revise "Narrative Exposure Therapy (NET)" to be adaptable for treating PTSD post-natural disaster.  | 10 persons (experimental group - NET)<br>10 persons (experimental group NET-R)<br>10 persons (waiting list control group)<br>28 - 80 years old | The NET group received 4 or more therapy of 60-90 minutes each, and twice weekly for two weeks and the NET-R group received 3 or more therapy of 60-120 min. each. Therapies started 30-34 months after the earthquake. The scales were applied after the implementations. Follow-up was also performed at 3 months. | Revised NET (NET)-R is a feasible and effective therapy for post-earthquake.  |
| 13 | Thordardottir et al. (2014)          | This study aimed to determine the effect of "Yoga Practice" on perceived stress and stress-related symptoms after an earthquake.  | 31 persons (experimental group)<br>35 persons (waiting list control group)<br>20 - 67 years old  | Yoga practice was conducted twice a week for six weeks. The scales were applied before and after the implementation.   | Participants in groups showed significant improvements in stress and stress-related symptoms from pre- to post-intervention.  |
| 14 | Chen et al. (2014)                   | This study aimed to determine the effectiveness of "Short-term CBT", "General Supportive Intervention (GSI)", and "Non-treatment" in children who lost their parents in the earthquake. | 10 persons (CBT group)<br>10 persons (GSI group)<br>12 persons (non-treatment group)<br>Average age 14   | The short-term CBT program was 6 sessions. The GSI consisted of general supports like listening, reflection, and empathy, and lasted 6 weeks. These programs were conducted two years after the earthquake   | Short-term CBT was more effective than the GSI, and non-treatment group in enhancing resilience and reducing PTSD symptoms.   |

|    |                             |  |  |   |  |
|----|-----------------------------|--|--|---|--|
| 15 | Ruggiero et al. (2015)      | The randomized controlled aimed to determine the efficacy of a "Web-based Intervention Program" for families affected by the disaster.                           | 2000 adolescents and their only one parent<br><br>12 - 17 years old  | The structured program with the affected adolescents and one of their parents lasted 4-12 months. After the first meeting with the participants, they were directed to the website. Then they were randomly assigned to one of the three programs. The programs;<br>- "Web intervention for disaster-affected youth"<br>- "Web intervention for disaster-affected families"<br>- "Only assessment with web comparison." | It was observed that the intervention program was effective and its effectiveness continued in the follow-up studies.  |
| 16 | Ruggiero et al. (2015)      | The aim of the study is to determine the effects of "BBN" and, "ASH (Adult Self Help modules)" for affected adolescents and their parents in tornadoes.          | 364 persons (BBN group)<br>366 persons (BBN+ASH group)<br>257 persons (control group)<br><br>12-17 years old   | Data collection via baseline and follow-up semi-structured telephone interviews. Then children were assigned randomly to three groups: (1) BBN group ("which featured modules for adolescents and parents targeting adolescents' mental health symptoms"); (2) BBN + ASH plus ("modules targeting parents' mental health symptoms"); (3) assessment only.   | Study results that the program was feasible and effective in mental health for adolescents. Also, technology-based solutions have tremendous potential value reduced the mental health burden of post-disasters. |
| 17 | Pityaratstian et al. (2015) | This randomized controlled trial aimed to determine the effectiveness of the "Modified "Version of CBT" for children and adolescents who were affected disaster. | 18 persons (experimental group)<br>18 persons (waiting list control group)<br><br>10 - 15 years old  | CBT was implemented in 3-day, 2-hour-daily, and, group format. Also, followed by 1-month post-treatment self-monitoring and daily homework.   | The intervention was found effective when implemented together with post-treatment self-monitoring and homework.   |
| 18 | Xiaolu et al. (2017)        | This study aimed to determine the effect of "Structured Brief Intervention (BI)" on people who used alcohol after an earthquake.                                 | 118 persons (experimental group - BI and general health education)<br>121 persons (experimental group - only general health education)<br><br>18 and above | BI group (n = 118) received a structured BI (15-30 min.) and general health education. The control group (n = 121) only received general health education. Follow-up interviews were conducted at 12 weeks (3 months) post-intervention.  | The study results demonstrated that BI is effective for problem alcohol users who experienced earthquake.  |
| 19 | Saltini et al. (2018)       | The aim of the study is to determine the effects of "The Effects of Eye Movement Desensitization and Reprocessing (EMDR)" on exposed people the earthquake.      | 529 persons (EMDR group)<br>81 persons (drop out)<br><br>Average age 45  | The study was performed retrospectively to evaluate the acute and post-traumatic effects of EMDR. Also, as a result of the study, the effects of early treatment and late treatment were evaluated.   | Study results suggest that EMDR is an effective treatment for reducing psychological distress after a natural disaster.  |
| 20 | O'Donnell et al. (2020)     | This study aimed to determine the effectiveness of "Brief and Scalable Psychosocial Intervention" for victims' adjustment after disaster and trauma.             | 15 persons bushfire survivors<br><br>39 - 74 years old   | The "Skills for Life Adjustment and Resilience (SOLAR)" program was 6 sessions, and each session runs for 50 min (only the first session was 80 min.). SOLAR, a single-group study was conducted. Assessments were conducted at pre-post intervention, and at 3-month follow-up. These programs were conducted one year after the disaster.   | This study reduced psychological symptoms and impairment among disaster survivors.   |

|    |                         |  |   |  |  |
|----|-------------------------|--|---|--|--|
| 21 | Gavron, T. (2020)       | The aim of the study is to determine the effects of "Art-based Psychosocial Intervention" for teachers affected by the tsunami.  | 9 teachers (experimental group)<br><br>There is no age information  | After the implementation, six main themes emerged. These are; "mutual playfulness and joy, rejuvenation and regaining control, containment of a multiplicity of feelings, encouragement of verbal sharing, mutual closeness and support, and the need to support cultural expression."                                 | As a result of the study, it was observed that "Art-based Psychosocial Intervention" practices realized by taking into account the social characteristics of a particular culture are effective.             |
| 22 | Fukuchi, N. (2020)      | The study aimed to determine the effectiveness of the "Psychoeducation Program" implicated for children after the earthquake and tsunami.  | 11 children (experimental group)<br><br>10-18 years old   | A 2-hour psychoeducation program was conducted with the children one week after the disaster. Psychoeducation was carried out with a slide show followed by a group discussion. The program was implemented with child psychiatrists and specialist nurses.  | The results of this study showed that psychoeducation provided immediately after the disaster would reduce the trauma effects that may develop in children.  |
| 23 | Sangraula et al. (2020) | This study aimed to determine the feasibility and acceptability "Problem Management Plus (PM+) Program" for women and men in an earthquake-affected.   | 61 persons (problem Management Plus Group -PM+)<br>60 persons (enhanced usual care -EUC)<br><br>30 -70+ years old                         | The study was designed randomized controlled trial, comparing PM+ and EUC. Participants in the PM+ were offered five sessions and the EUC received brief psycho-education. The programs took 8-8.5 weeks to complete. Sessions lasted 2.5-3 hours on average. This study was conducted 3-4-years later the earthquake. | The PM+ program was observed acceptable and beneficial to participants in the end. Also, primary clinical outcomes were much more effective than expected.   |
| 24 | Gilmore et al. (2021)   | The study aimed to determine the secondary data analysis of a "Bounce Back Now (BBN)", for adolescents affected by the disaster.   | 361 persons (experimental group - BBN)<br>10 persons (experimental group BBN +ASH)<br>254 persons (control group)<br><br>12- 17 years old | Participants were randomly assigned to, "BBN", "BBN + ASH" and, control group. The interviews lasted approximately 25 minutes. Participants carried out follow-up interviews in both 4 and 12 months. This program was implemented 8.8 months after the hurricane.   | It was observed that the PTSD symptoms of the participants decreased after the "BBN" application.  |
| 25 | Gavron et al. (2022)    | The study aimed to determine the effectiveness of "Arts-based Psychosocial Training" after the typhoon.  | 11 groups<br><br>30 - 50 years old  | The implementations lasted four days a week and eight days in total between July 2014 - May 2015. 11 groups participated in the applications. All interviews were conducted by ten educational and healthcare professionals.   | It has been found that the practice effectively copes with collective traumas and increases resilience.  |
| 26 | Powell et al. (2022)    | The study aimed to determine the effectiveness of "Brief Group Intervention", "Resilience and Coping for the Healthcare Community (RCHC)" and its expanded version, (RCHC+) for health and social care providers affected by the disaster. | 394 persons (experimental group – RCHC)<br>368 persons (experimental group – RCHC+)<br><br>18 and above                                   | Participants received either RCHC or RCHC+. The researchers have implemented two follow-up time points at post-intervention (12 weeks post-baseline) and follow-up (18 weeks post-baseline).   | At the end of the program, it was observed that the psychological stress of the participants decreased.  |
| 27 | Ramaiya et al. (2022)   | This study aimed to determine the effectiveness of "School-Based Emotion Regulation Prevention Intervention (READY-Nepal)" after the earthquake in children.   | 42 persons (experimental group)<br>60 persons (waiting list control group)<br><br>13 - 17 years old                                       | A mixed-method, non-randomized controlled trial was conducted with students in affected post-earthquake districts. The program was 8 sessions, and each session runs for 50 min. This program was conducted 14 months after the earthquake.  | At the end of the program, it was observed that anger management increased and awareness skills improved in children. However, there were no significant differences in outcomes at the four-week follow-up. |

adolescents may experience confusion about meaning. At the same time, material and moral losses in their lives, while they are in their difficult life processes, are among the main reasons for psychological problems after the disaster. For all these reasons, it is thought to work with children and adolescents more frequently in the post-disaster period.

### Limitations

This systematic review is limited to studies scanned with the identified keywords. The psychosocial interventions, disasters, and their types, data collection methods, samples, and research types applied in the studies examined are different from each other. For all these reasons, it is thought that it is necessary to work with children and adolescents more frequently in the post-disaster period.

### CONCLUSION

Disasters are events that seriously affect individuals and societies in physical, social, and psychological terms and cause negative consequences. The psychological symptoms that emerge in a short time after the disaster are among the basic problems that require rapid and effective intervention. Otherwise, it negatively affects the whole life of individuals and can become a problem that is difficult to solve. In this context, this systematic review of psychosocial intervention programs after disasters provides detailed data on the characteristics of the programs, methodology, and results of the studies. The importance and necessity of psychosocial intervention programs after disasters have been revealed with the striking results of the studies. In summary, after meeting the basic needs of individuals after disasters, psychosocial needs should be identified and qualified programs should be implemented.

**Ethics Committee Approval:** This study was not conducted on any individual or animal. Document analysis was used as the data collection method. Therefore, ethics committee approval is not required.

**Peer Review:** Externally peer-reviewed.

**Author Contributions:** Conception/Design of Study- T.Ç.İ., E.M.; Data Acquisition- T.Ç.İ., E.M.; Data Analysis/Interpretation- T.Ç.İ., E.M.; Drafting Manuscript- T.Ç.İ., E.M.; Critical Revision of Manuscript- T.Ç.İ., E.M.; Final Approval and Accountability- T.Ç.İ., E.M.

**Conflict of Interest:** Authors declared no conflict of interest.

**Financial Disclosure:** Authors declared no financial support.

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