Trends in Health Sciences

Article

https://doi.org/10.47626/ths-2025-0007

Improving access to evidence-based psychological interventions for adults affected by climate-related disasters

Aumentando o acesso a intervenções psicológicas baseadas em evidência para adultos expostos a desastres relacionados ao clima

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ABSTRACT | Extreme climate events, such as wildfires and floods, are associated with exposure to primary and secondary stressors, disproportionately affecting vulnerable populations. While most individuals exhibit resilience following exposure to extreme climate events, many develop symptoms of post-traumatic stress disorder, depression, or anxiety, as well as other psychosocial issues. These effects are exacerbated in low- and middle-income countries due to inadequate mental health infrastructure. This brief literature review highlights evidence-based psychological interventions for adults exposed to extreme climate events, proposing a sequential multilevel intervention framework. Individual and community-based interventions that can be implemented before, during, and after such events are exemplified. Additionally, barriers to access are reviewed, and strategies for improving access to evidence-based interventions are outlined.

Keywords | Extreme climate events; psychological interventions; resilience; mental health; natural disasters

RESUMO | Eventos climáticos extremos (ECE), como incêndios e enchentes, são associados à exposição a estressores primários e estressores secundários, afetando especialmente populações vulneráveis. Embora a maioria das pessoas demonstre resiliência após a exposição a ECE, uma parcela significativa desenvolve sintomas de transtorno de estresse pós-traumático, depressão e ansiedade, entre outros problemas psicossociais. Esses efeitos são exacerbados em países de renda baixa e média devido à infraestrutura inadequada de saúde mental. A partir da proposição de um quadro de referência sequencial multinível de intervenção, essa revisão rápida da literatura destaca as intervenções psicológicas baseadas em evidência para adultos expostos a ECE. São exemplificadas intervenções individuais e comunitárias que podem ser empregadas pré-, peri- e pós-ECE. Adicionalmente, são revisadas as barreiras e indicadas as estratégias para aumentar o acesso a intervenções baseadas em evidência.

Palavras-chave | Eventos climáticos extremos; intervenções psicológicas; resiliência; saúde mental; desastres naturais.

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Submitted Aug 27 2024. Accepted Jan 19 2025.

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How to cite this article: Kristensen CH. Improving access to evidence-based psychological interventions for adults affected by climate-related disasters. Trends Health Sci. 2025;67(1):e20250007.

Introduction

Global climate change is associated with significant effects on mental health (1,2) through both direct and indirect pathways (3). Long-term climate change, such as rising sea levels, or climate events lasting months or years, such as droughts and heatwaves, can lead to chronic stressors, displacement, and economic loss, exacerbating mental health conditions (4). The direct effects of climate change on mental health, however, predominantly occur following exposure to extreme climate events (ECE) (5).

Exposure to ECE, such as hurricanes (6), wildfires (7), or floods (8), is associated with deleterious mental health impacts through various processes. ECE are linked to potential exposure to primary stressors, such as severe injuries, bereavement, or deprivation of essential resources (e.g., food and potable water) (9). These extreme events are often accompanied by secondary stressors, such as loss of housing or employment (or sources of income), which may increase the risk of psychological problems, particularly among vulnerable individuals or groups (9,10). Exposure to primary stressors (as well as secondary stressors), along with social contagion processes that are amplified by social media (11), leads to heightened psychological distress, even in individuals not directly exposed (12), and an increased risk of symptom exacerbation in those with preexisting psychopathological conditions.

Direct exposure to ECE is associated with heightened acute stress reactions (emotional, cognitive, physical, and interpersonal) that tend to be transient (13). In a typical trajectory of adjustment following exposure to potentially traumatic stressors, these reactions become less frequent and intense as individual and collective resources are mobilized toward recovery and resilience (14,15).

It is crucial to understand and widely disseminate the fact that most people do not develop psychopathology following exposure to ECE (9). Therefore, resilience appears to be a modal human response following exposure to potentially traumatic stressors (12,16). Resilience following ECE exposure has been empirically verified in cross-sectional studies (17), longitudinal studies (18), and reviews (19).

However, not all individuals follow the trajectories of recovery and resilience (16). Thus, ECE exposure is associated with an increased prevalence of symptoms of post-traumatic stress disorder (PTSD), depression, anxiety, substance use, and other psychological problems (10,20-22). Finally, empirical evidence indicates that exposure to ECE may increase the risk of other potentially traumatic events, including intimate partner violence, child and elder abuse, family violence, and various forms of gender-based and community violence (23,24).

Although methodological challenges may arise when studying ECE survivors, particularly events spanning large geographic areas such as earthquakes and floods, the prevalence of PTSD in adults 12 months post-exposure varies widely across review studies, with rates ranging from 5 to 60% (25), 0 to 75.1% (26), and 2.6 to 52% (27). Individuals in low- and middle-income countries are particularly vulnerable to the effects of ECE, which are exacerbated by a lack of adequate mental health support (28). Unsurprisingly, the estimated prevalence of PTSD at 12 months post-ECE in Global South countries was 26% (95% confidence interval [95%CI] 18.5-36.3); I^2 = 99% (29).

A broad range of factors increases the risk for the onset or worsening of PTSD following ECE, including individual variables (e.g., female sex, maladaptive coping strategies), community variables (e.g., low social cohesion), pre-ECE factors (e.g., preexisting mental illness, history of exposure

to potentially traumatic stressors), peri-ECE factors (e.g., degree of exposure to the event), and post-ECE factors (e.g., secondary stressors such as housing loss and social support) (9,19,30,31). Despite the multifactorial nature of this risk, the degree of exposure to ECE is a strong and consistent predictor of psychopathology risk and frequently involves a dose-dependent effect (9,19,28,32,33).

Given the significant mental health burden faced by individuals directly affected by ECE, evidence-based interventions for this population will be discussed with a focus on adults. These interventions will be proposed within a sequential multilevel framework. In the final section, strategies to increase access to interventions are suggested.

Evidence-based psychological interventions

Intervention strategies must be tailored to the specific type of ECE, considering the unique characteristics of the event, its temporal dynamics, the pre-existing resources and sociocultural processes of the affected community, and the resources mobilized by governmental agencies, non-governmental organizations, and volunteers. A general framework can be drawn from the core principles outlined in the Inter-Agency Standing Committee's Guidelines on Mental Health and Psychosocial Support in Emergency Settings (34,35)], and, in Brazil, in the guidelines outlined in Gestão Integrada de Riscos e Desastres (Integrated Risk and Disaster Management) (GIRD)(36). This framework can be further enriched by incorporating a comprehensive view of pre-, peri-, and post-ECE risk factors (9), as well as insights into human response trajectories following exposure to potentially traumatic stressors (12,16). By integrating these perspectives, a sequential multilevel intervention framework emerges, which is illustrated in Figure 1.

Risk and disaster management based on systemic processes involves three strategic pillars: 1) risk knowledge, 2) risk prevention and reduction, and 3) disaster and emergency management (36,37). Considering the human factors in climate change processes, broadly defined, there are opportunities for psychological intervention in each of these pillars. According to GIRD recommendations, it is crucial to understand the temporal and spatial patterns of the effects of ECE, as well as to grasp the vulnerabilities and resilience capabilities of institutions and communities in susceptible regions. The sequence of floods in the state of Rio Grande do Sul, Brazil, in September 2023 and April/May 2024 (affecting 2.39 million people) underscores the need to advance knowledge about community risks, including mental health assessment and monitoring of populations in high-risk areas. To effectively manage risk prevention and reduction, prospective preventive interventions and corrective mitigation strategies (which can reduce or control risk factors) are necessary (36).

Evidence-based psychosocial strategies for preventing mental health problems in individuals and communities at risk for ECE include both individual and community-based actions. Psychoeducational initiatives to address disaster risks and coping strategies at individual and community levels can enhance preparedness and responses. For instance, schools can be better leveraged to disseminate psychoeducational interventions to children and adolescents through parental involvement and interventions beyond unidirectional information communication (see review in Midtbust et al. [38]). Educational strategies can also be applied preventively to adults to foster resilience trajectories in ECE risk settings (39). Training initiatives using participatory methodologies that engage at-risk populations, researchers, and public

agencies can support risk prevention and reduction (36). Strengthening community bonds and promoting social support networks can significantly boost resilience. High community social capital reduces individual stress and facilitates post-disaster challenges by preserving individual psychosocial resources (40). Community cohesion also promotes psychosocial well-being and reduces the risk of PTSD (41). Individual resilience trajectories can be supported by developing optimism, cognitive flexibility, adaptive coping strategies, maintaining social support networks, and engaging in practices that enhance subjective well-being (42). Regulatory flexibility is central to resilience trajectories (12), and there are well-documented strategies for developing this capacity (see review in Bonanno et al. [43]). Pre-event training and the widespread dissemination of psychological first aid (PFA) protocols for healthcare professionals and community members enhance immediate response capacity (44,45).

In a sequential multilevel intervention framework following ECE exposure, immediate actions (i.e., within days to weeks) at the community level must focus on providing basic services and safety,

		Pre-ECE	Peri-ECE	Post-ECE
Individual	Knowledge about vulnerable individuals and families	Promoting individual and family factors for resilience trajectories	Specialized mental health care (if symptom exacerbation)	Tertiary mental health care
		Strengthening connections with health facilities in the community	Psychological first aid	Low-intensity interventions
			Emotional and practical support provided by community health workers	Strategies for promoting resilience
	Assessment and Monitoring			
Community	Knowledge of community vulnerabilities and resilience factors	Psychoeducation on ECE risks and coping strategies	Strengthening community and family support	Low-intensity group interventions
		Community efforts to reduce risk	Social networks engagement	Community strategies to foster resilience
		Psychological first aid training for community agents and health professionals in the area	Promoting basic services and safety	
			Dissemination of information and evidence-based recommendations	

Figure 1. Sequential multilevel intervention framework. ECE = extreme climate event.

promoting social support networks for individuals and families, and leveraging traditional community support (34,35). Accessible, culturally sensitive information about the ECE, its expected psychosocial consequences, coping strategies (what to do, what not to do), and the available resources should be disseminated.

At the individual level, mental healthcare within primary health settings and the provision of PFA should be prioritized (46). Several empirically validated intervention principles are shared across different PFA protocols, promoting safety, calm, efficacy (individual and community), connection, and hope (47,48). Common elements include active listening, emotional stabilization and relaxation (when needed), problem-solving assistance for practical needs, social support network facilitation, and referral to services (49). While PFA is recommended in practice guidelines (34,35), evidence regarding its effects on post-traumatic symptom trajectories is limited (50). Recent reviews provide more substantive evidence for the efficacy of PFA in mitigating anxiety and enhancing adaptive functioning during or immediately following exposure, while offering comparatively less robust evidence for reduced PTSD and depression symptoms (49).

For individuals without significant post-traumatic symptoms, resilience promotion strategies or programs may be employed, although the evidence is less robust (42). These programs use mindfulness training as an emotion regulation strategy to address rumination about past events and associated negative emotions, to foster acceptance of potentially traumatic events, to find meaning in life, or even to cultivate gratitude (42,51). Finally, addressing modifiable stressors, alleviating stress, and helping survivors restore routine and pre-ECE functioning levels can be immediate intervention strategies (9). Efforts should also be made to ensure that media communication about ECEs minimizes fear, insecurity, and psychological distress, especially given the association between sustained media exposure (amplified by social media) and worsening post-traumatic symptomatology (9).

Additional interventions encompass low-intensity strategies that can be implemented in the weeks or months following exposure to ECE. Programs such as Problem Management Plus and Group Problem Management Plus have shown efficacy in high-, low-, and middle-income countries (52). These transdiagnostic five-session interventions incorporate various therapeutic techniques designed for delivery by non-specialists (53), and their effectiveness has been tested in humanitarian disaster contexts (54).

It is important to distinguish resilience promotion or secondary prevention interventions from therapeutic interventions to treat psychological symptoms arising from or exacerbated by ECE exposure (42,55). Although resilience is the modal trajectory following stressor exposure, attention must be paid to signs of severe psychological distress and functional impairment among exposed individuals. Within this sequential multilevel intervention framework is the provision of mental health care by mental health specialists (psychiatric nurses, psychologists, psychiatrists, etc.) (35).

As previously noted, in the immediate aftermath of an ECE, there is often an exacerbation of pre-existing psychopathological conditions. Tertiary mental health care for these individuals must be provided immediately when needed. However, exposure to ECE is also associated with acute stress reactions in individuals without premorbid trauma-related psychopathology. These reactions

should be closely monitored, as they may indicate two potential trajectories: chronic response (where reactions develop into signs and symptoms that comprise syndromes included in trauma- and stressor-related disorders, such as PTSD, acute stress disorder, or adjustment disorders, among other possible psychopathological responses) and delayed onset (where diagnostic symptoms emerge after several months, as in PTSD with delayed expression) (16,56). It is precisely in psychological interventions aimed at treating post-traumatic symptoms that we find the strongest evidence of effectiveness. Practice guidelines from professional organizations such as the American Psychological Association (57), the International Society for Traumatic Stress Studies (58), and Phoenix Australia (59), as well as government agencies, such as the UK National Institute for Health and Care Excellence (60) and the US Departments of Veterans Affairs and Defense (61), recommend trauma-focused cognitive-behavioral therapy as the intervention with the strongest evidence for PTSD treatment. This includes prolonged exposure therapy, cognitive processing therapy, and eye movement desensitization and reprocessing therapy (62,63). Specific disaster-related interventions have been developed based on these approaches, such as cognitive-behavioral therapy for post-disaster distress (64) and Skills Training in Affective and Interpersonal Regulation/Modified Prolonged Exposure (65).

The ongoing evaluation of mental health conditions in individuals, families, and communities is essential within this framework. Mental health assessment and monitoring of populations in high-risk areas are critical for primary prevention and mitigation interventions (risk reduction) (36). For individuals in low- and middle-income countries, the negative effects of ECE are disproportionately pronounced (28) and are further compounded by a frequent lack of mental health service infrastructure (66). In the first days and weeks following exposure to an ECE, the assessment of mental health conditions among directly or indirectly exposed individuals is a key factor in decision-making regarding the intensity of the intervention required. This can be achieved by screening for common symptoms and psychosocial functioning after ECE (67). Screening should also be conducted among professionals (such as first responders) who are involved in rescue operations or immediate healthcare responses.

As previously mentioned, community-based interventions, single-session interventions (e.g., PFA), and even low-intensity interventions (e.g., Problem Management Plus for individuals or groups) can be provided by community agents or healthcare professionals, not exclusively mental health specialists. Continuous documentation and monitoring of post-ECE reactions enable the identification of individuals who need high-intensity interventions, such as trauma-focused cognitive-behavioral therapy and/or pharmacological treatment (50). Finally, assessing and tracking the effectiveness of the intervention program is equally crucial (see detailed Inter-Agency Standing Committee recommendations [34]).

Improving access to evidence-based psychological interventions

Despite the existence of evidence-based psychological interventions for adults exposed to ECE, numerous barriers hinder or prevent access to these interventions, particularly in low- and middle-income countries (68). For instance, only 20% of

adults with PTSD in low- and middle-income countries have had contact with a mental health specialist or a general practitioner in the past 12 months, compared with 51% in high-income countries (69). It is essential to overcome barriers such as low perceived need for treatment, attitudinal barriers (e.g., stigma-related concerns), and structural barriers (e.g., a lack of specialized mental health professionals) (70) to increase access to evidence-based interventions (see review in Kaminer et al. [68]).

In the context of ECE exposure, while evidence supports the use of PFA immediately post-ECE, many intervention settings in low- and middle-income countries lack professionals trained in PFA. Thus, increasing access to this intervention necessarily involves training community agents and healthcare professionals in PFA protocols (46). Greater standardization of interventions and the development of skills and competencies can be achieved by incorporating PFA into the curricula of health-related undergraduate and graduate programs.

Training and supervising non-specialist community volunteers to provide basic mental health interventions can substantially increase access to evidence-based interventions (71). Moreover, adopting task-sharing practices can enhance the capacity to deliver interventions in peri- and post-ECE contexts by reducing structural barriers and the stigma associated with psychological issues (68,72).

A culturally sensitive approach to posttraumatic conditions (73) is essential for reducing access barriers. This involves recognizing and validating diverse expressions of psychological distress, as well as facilitating conditions for a community's cultural, spiritual, and religious practices (74). It also includes making cultural adaptations to interventions initially developed in other contexts. For example, one study demonstrated that the cultural adaptation of a PFA training program to the local context, compared to the non-culturally adapted version, improved the competence and well-being of medical first responders in a post-ECE intervention setting (74). Evidence suggests that culturally adapted mental health interventions can increase acceptance and effectiveness (75).

Finally, providing mental health services in ECE settings can be particularly challenging, as the event often affects both mental health professionals and physical infrastructure. However, information and communication technologies are an alternative means of increasing access. For example, mobile devices and online PFA training (synchronous or asynchronous) can expand access to this type of intervention (31) and assist PFA providers in monitoring the psychological response of individuals exposed to ECE. Text messaging programs have also been shown to be effective, feasible, and well-accepted for promoting mental health in various contexts, including post-ECE interventions (76). Additionally, growing evidence supports the effectiveness of online cognitive-behavioral interventions (77,78), including ECE contexts (79).

DISCLOSURE: The author reports no conflicts of interest.

References

1. Doherty TJ, Clayton S. The psychological impacts of global climate change. Am Psychol. 2011;66:265-76.
2. Hayes K, Blashki G, Wiseman J, Burke S, Reifels L. Climate change and mental health: risks, impacts and priority actions. Int J Ment Health Syst. 2018;12:28.
3. Berry HL, Bowen K, Kjellstrom T. Climate change and mental health: a causal pathways framework. Int J Public Health. 2010;55:123-32.
4. Palinkas LA, Wong M. Global climate change and mental health. Curr Opin Psychol. 2020;32:12-16.
5. Ramadan AMH, Ataallah AG. Are climate change and mental health correlated? Gen Psychiatr. 2021;34:e100648.
6. Galea S, Brewin CR, Gruber M, Jones RT, King DW, King LA, et al. Exposure to hurricane-related stressors and mental illness after Hurricane Katrina. Arch Gen Psychiatry. 2007;64:1427-34.
7. Bryant RA, Waters E, Gibbs L, Gallagher HC, Pattison P, Lusher D, et al. Psychological outcomes following the Victorian Black Saturday bushfires. Aust N Z J Psychiatry. 2014;48:634-43.
8. Fernandez A, Black J, Jones M, Wilson L, Salvador-Carulla L, Astell-Burt T, et al. Flooding and mental health: a systematic mapping review. PLoS One. 2015;10:e0119929.
9. Goldmann E, Galea S. Mental health consequences of disasters. Annu Rev Public Health. 2014;35:169-83.
10. Augustinavicius JL, Lowe SR, Massazza A, Hayes K, Denckla C, White RG, et al. Global climate change and trauma: An International Society for Traumatic Stress Studies Briefing Paper. Chicago: International Society for Traumatic Stress Studies; 2021.
11. Looi JC, Allison S, Bastiampillai T, Maguire P. Fire, disease and fear: Effects of the media coverage of 2019-2020 Australian bushfires and novel coronavirus 2019 on population mental health. Aust N Z J Psychiatry. 2020;54:938-9.
12. Bonanno GA, Chen S, Bagrodia R, Galatzer-Levy IR. Resilience and disaster: Flexible adaptation in the face of uncertain threat. Annu Rev Psychol. 2024;75:573-99.
13. McMillen C, North C, Mosley M, Smith E. Untangling the psychiatric comorbidity of posttraumatic stress disorder in a sample of flood survivors. Compr Psychiatry. 2002;43:478-85.
14. Bonanno GA, Westphal M. The three axioms of resilience. J Trauma Stress. 2024;37:717-23.
15. Litz BT, Maguen S. Early intervention for trauma. In: Friedman MJ, Keane TM, Resick PA, editors. Handbook of PTSD: Science and practice. New York: Guilford Press; 2007. p. 306-29.
16. Galatzer-Levy IR, Huang SH, Bonanno GA. Trajectories of resilience and dysfunction following potential trauma: A review and statistical evaluation. Clin Psychol Rev. 2018;63:41-55.
17. Lowe SR, Sampson L, Gruebner O, Galea S. Psychological resilience after Hurricane Sandy: the influence of individual- and community-level factors on mental health after a large-scale natural disaster. PLoS One. 2015;10:e0125761.
18. Pietrzak RH, Tracy M, Galea S, Kilpatrick DG, Ruggiero KJ, Hamblen JL, et al. Resilience in the face of disaster: prevalence and longitudinal course of mental disorders following hurricane Ike. PLoS One. 2012;7:e38964.
19. Norris FH, Friedman MJ, Watson PJ, Byrne CM, Diaz E, Kaniasty K. 60,000 disaster victims speak: Part I. An empirical review of the empirical literature, 1981-2001. Psychiatry. 2002;65:207-39.
20. Danese A, Smith P, Chitsabesan P, Dubicka B. Child and adolescent mental health amidst emergencies and disasters. Br J Psychiatry. 2020;216:159-62.
21. Diefenthaeler SM, Cacilhas A, Hartmann ML, Prates-Baldez D, Hauck S. Assessing mental health during an extreme weather event in Southern Brazil. Trends Psychiatry Psychother. 2024.
22. Rubens SL, Felix ED, Hambrick EP. A meta-analysis of the impact of natural disasters on internalizing and externalizing problems in youth. J Trauma Stress. 2018;31:332-41.
23. Cerna-Turoff I, Fischer H-T, Mansourian H, Mayhew, S. The pathways between natural disasters and violence against children: A systematic review. BMC Public Health. 2021;21;1249.
24. Gearhart S, Perez-Patron M, Hammond TA, Goldberg DW, Klein A, Horney JA. The impact of natural disasters on domestic violence: An analysis of reports of simple assault in Florida (1999-2007). Violence and Gender. 2018;5:87-92.
25. Galea S, Nandi A, Vlahov D. The epidemiology of post-traumatic stress disorder after disasters. Epidemiol Rev. 2005;27:78-91.
26. Lowe SR, Bonumwezi JL, Valdespino-Hayden Z, Galea S. Posttraumatic stress and depression in the aftermath of environmental disasters: A review of quantitative studies published in 2018. Curr Environ Health Rep. 2019;6:344-60.
27. Keya TA, Leela A, Habib N, Rashid M, Bakthavatchalam P. Mental health disorders due to disaster exposure: A systematic review and meta-analysis. Cureus. 2023;15:e37031.
28. Sharpe I, Davison CM. Climate change, climate-related disasters and mental disorder in low- and

middle-income countries: a scoping review. BMJ Open. 2021;11:e051908.
29. Kip A, Valencia S, Glunz E, Lowe SR, Tam KP, Morina N. Prevalence of mental disorders in adult populations from the Global South following exposure to natural hazards: a meta-analysis. Epidemiol Psychiatr Sci. 2024;33:e68.
30. Jayaraman P, Jones EC, Stewart HL, McCurdy S. The relationship of prior flood experience to posttraumatic stress and depression in minority communities after Hurricane Harvey. Int J Disaster Risk Sci. 2025;117,105178.
31. Morganstein JC, Ursano RJ. Ecological disasters and mental health: Causes, consequences, and interventions. Front Psychiatry. 2020;11:1.
32. Hrabok M, Delorme A, Agyapong VIO. Threats to mental health and well-being associated with climate change. J Anxiety Disord. 2020;76:102295.
33. Neria Y, Nandi A, Galea S. Post-traumatic stress disorder following disasters: a systematic review. Psychol Med. 2008;38:467-80.
34. Inter-Agency Standing Committee (IASC). Diretrizes do IASC sobre saúde mental e apoio psicossocial em emergências humanitárias. 2007 [cited 2025 Apr 24]. https://interagencystandingcommittee.org/sites/default/files/migrated/2019-03/iasc_mhpss_guidelines_portuguese.pdf
35. Inter-Agency Standing Committee (IASC). Um quadro comum de monitorização e avaliação para a saúde mental e apoio psicossocial em emergências humanitárias. 2017 [cited 2025 Apr 24]. https://interagencystandingcommittee.org/sites/default/files/migrated/2019-03/final_adobe_iasc_mhpss_m_e_30.03.2017_illustrator_web_portugese.pdf
36. Secretaria Nacional de Proteção e Defesa Civil. GIRD +10 – Caderno Técnico de Gestão Integrada de Riscos e Desastres. 2021 [cited 2025 Apr 24]. https://www.gov.br/mdr/pt-br/assuntos/protecao-e-defesa-civil/Caderno_GIRD10__.pdf
37. Narváez L, Lavell A, Ortega GP. La gestión del riesgo de desastres: Um enfoque basado en procesos. 2009 [cited 2025 Apr 24]. https://www.cac.int/sites/default/files/Comunidad_Andina._Gesti%C3%B3n_del_Riesgo_desastres_un_enfoque_basado_en_procesos._2009.pdf
38. Midtbust LGH, Dyregrov A, Djup HW. Communicating with children and adolescents about the risk of natural disasters. Eur J Psychotraumatol. 2018;9:1429771.
39. Höfler, M. Psychological resilience building in disaster risk reduction: Contributions from adult education. Int J Disaster Risk Sci. 2014;5:33-40.
40. Wind TR, Komproe IH. The mechanisms that associate community social capital with post-disaster mental health: a multilevel model. Soc Sci Med. 2012;75:1715-20.
41. Bakic H, Ajdukovic D. Resilience after natural disasters: the process of harnessing resources in communities differentially exposed to a flood. Eur J Psychotraumatol. 2021;12:1891733.
42. Iacoviello BM, Charney DS. Psychosocial facets of resilience: implications for preventing posttrauma psychopathology, treating trauma survivors, and enhancing community resilience. Eur J Psychotraumatol. 2014;5.
43. Bonanno GA, Chen S, Galatzer-Levy IR. Resilience to potential trauma and adversity through regulatory flexibility. Nat Rev Psychol. 2023;2:663-75.
44. Forbes D, O'Donnell M, Bryant RA. Psychosocial recovery following community disasters: An international collaboration. Aust N Z J Psychiatry. 2016;51:660-2.
45. Rao K. Psychosocial support in disaster-affected communities. Int Rev Psychiatry. 2006;18:501-5.
46. Everly GS Jr, Flynn BW. Principles and practical procedures for acute psychological first aid training for personnel without mental health experience. Int J Emerg Ment Health. 2006;8:93-100.
47. Hobfoll SE, Watson P, Bell CC, Bryant RA, Brymer MJ, Friedman MJ, et al. Five essential elements of immediate and mid-term mass trauma intervention: empirical evidence. Psychiatry. 2007;70:283-315.
48. Shultz JM, Forbes D. Psychological first aid: Rapid proliferation and the search for evidence. Disaster Health. 2013;2:3-12.
49. Wang L, Norman I, Edleston V, Oyo C, Leamy M. The effectiveness and implementation of psychological first aid as a therapeutic intervention after trauma: An integrative review. Trauma Violence Abuse. 2024;25:2638-56.
50. Bryant RA. Early interventions for trauma. In: Friedman MJ, Keane TM, Resick PA, editors. Handbook of PTSD: Science and practice. New York: Guilford Press; 2014. p. 406-18.
51. Rose RD, Buckey JC Jr., Zbozinek TD, Motivala SJ, Glenn DE, Cartreine JA, et al. A randomized controlled trial of a self-guided, multimedia, stress management and resilience training program. Behav Res Ther. 2013;51;106-12.
52. Mwangala PN, Makandi M, Kerubo A, Nyongesa MK, Abubakar A. A scoping review of the literature on the application and usefulness of the Problem Management Plus (PM+) intervention around the world. BJPsych Open. 2024;10:e91.

53. Dawson KS, Bryant RA, Harper M, Kuowei Tay A, Rahman A, Schafer A, et al. Problem Management Plus (PM+): a WHO transdiagnostic psychological intervention for common mental health problems. World Psychiatry. 2015;14:354-7.
54. Jordans MJD, Kohrt BA, Sangraula M, Turner EL, Wang X, Shrestha P, et al. Effectiveness of group Problem Management Plus, a brief psychological intervention for adults affected by humanitarian disasters in Nepal: A cluster randomized controlled trial. PLoS Med. 2021;18:e1003621.
55. Watson PJ, Gibson L, Ruzek JI. Public mental health interventions following disasters and mass violence. In: Friedman MJ, Keane TM, Resick PA, editors. Handbook of PTSD: Science and practice. New York: Guilford Press; 2014. p. 607-27.
56. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, Text Revision Dsm-5-tr. Arlington: American Psychiatric Association; 2022.
57. American Psychological Association. Clinical practice guideline for the treatment of posttraumatic stress disorder (PTSD) in adults. Washington, DC: American Psychiatric Association; 2017.
58. Forbes D, Bisson JI, Monson CM, Berliner L. Effective treatments for PTSD: Practice guidelines from the International Society for Traumatic Stress Studies. 3rd ed. New York: Guilford Press; 2020.
59. Phelps AJ, Lethbridge R, Brennan S, Bryant RA, Burns P, Cooper JA, et al. Australian guidelines for the prevention and treatment of posttraumatic stress disorder: Updates in the third edition. Aust N Z J Psychiatry. 2022;56:230-47.
60. National Institute for Health and Care Excellence (NICE). Guideline for post-traumatic stress disorder. London: NICE; 2018.
61. The Management of Posttraumatic Stress Disorder Work Group VA/DoD. VA/DoD clinical practice guideline for the management of posttraumatic stress disorder and acute stress disorder. 2017 [cited 2025 Apr 24]. https://www.healthquality.va.gov/guidelines/MH/ptsd/VADODPTSDCPGFinal082917.pdf
62. Hoppen TH, Jehn M, Holling H, Mutz J, Kip A, Morina N. The efficacy and acceptability of psychological interventions for adult PTSD: A network and pairwise meta-analysis of randomized controlled trials. J Consult Clin Psychol. 2023;91:445-61.
63. Tractenberg SG, Silva GR, Kristensen CH, Grassi-Oliveira R. Terapia cognitivo-comportamental no tratamento dos transtornos relacionados a trauma e a estressores. In: Cordioli AV, Grevet EH, editors. Psicoterapias: Abordagens atuais. Porto Alegre: Artmed; 2019. p. 601-18.
64. Hamblen JL, Norris FH, Pietruszkiewicz S, Gibson LE, Naturale A, Louis C. Cognitive behavioral therapy for postdisaster distress: a community based treatment program for survivors of Hurricane Katrina. Adm Policy Ment Health. 2009;36:206-14.
65. Levitt JT, Malta LS, Martin A, Davis L, Cloitre M. The flexible application of a manualized treatment for PTSD symptoms and functional impairment related to the 9/11 World Trade Center attack. Behav Res Ther. 2007;45:1419-33.
66. Saraceno B, van Ommeren M, Batniji R, Cohen A, Gureje O, Mahoney J, et al. Barriers to improvement of mental health services in low-income and middle-income countries. Lancet. 2007;370:1164-74.
67. North CS, Pfefferbaum B. Mental health response to community disasters: a systematic review. JAMA. 2013;310:507-18.
68. Kaminer D, Booysen D, Ellis K, Kristensen CH, Patel AR, Robjant K, et al. Improving access to evidence-based interventions for trauma-exposed adults in low- and middle-income countries. J Trauma Stress. 2024;37:563-73.
69. Stein DJ, Kazdin AE, Munthali RJ, Hwang I, Harris MG, Alonso J, et al. Determinants of effective treatment coverage for posttraumatic stress disorder: findings from the World Mental Health Surveys. BMC Psychiatry. 2023;23:226.
70. Thornicroft G, Evans-Lacko S, Koenen KC, Kovess-Masféty V, Williams DR, Kessler RC. Patterns of treatment and barriers to care in posttraumatic stress disorder. In: Bromet EJ, Karam EG, Koenen KC, Stein DJ, editors. Trauma and post-traumatic stress disorder: Global perspectives from the WHO World Mental Health surveys. England: Cambridge University Press; 2018. p. 137-52.
71. World Health Organization. World mental health report: Transforming mental health for all. 2022 [cited 2025 Apr 24]. https://www.who.int/publications/i/item/9789240049338
72. Padmanathan P, De Silva MJ. The acceptability and feasibility of task-sharing for mental healthcare in low and middle income countries: a systematic review. Soc Sci Med. 2013;97:82-6.
73. Schnyder U, Bryant RA, Ehlers A, Foa EB, Hasan A, Mwiti G, et al. Culture-sensitive psychotraumatology. Eur J Psychotraumatol. 2016;7:31179.
74. Peng M, Xiao T, Carter B, Shearer J. Evaluation of system based psychological first aid training on the mental health proficiency of emergency medical first responders to natural disasters in China: a cluster randomised controlled trial. BMJ Open. 2024;14:e078750.

75. Smith JR, Workneh A, Yaya S. Barriers and facilitators to help-seeking for individuals with posttraumatic stress disorder: A systematic review. J Trauma Stress. 2020;33:137-50.
76. Shalaby R, Adu MK, El Gindi HM, Agyapong VIO. Text messages in the field of mental health: Rapid review of the reviews. Front Psychiatry. 2022;13:921982.
77. Ennis N, Sijercic I, Monson CM. Internet-delivered early interventions for individuals exposed to traumatic events: Systematic review. J Med Internet Res. 2018;20:e280.
78. Stefanopoulou E, Lewis D, Mughal A, Larkin J. Digital interventions for PTSD symptoms in the general population: a review. Psychiatr Q. 2020;91:929-47.
79. Belleville G, Ouellet MC, Békés V, Lebel J, Morin CM, Bouchard S, et al. Efficacy of a therapist-assisted self-help internet-based intervention targeting PTSD, depression, and insomnia symptoms after a disaster: A randomized controlled trial. Behav Ther. 2023;54:230-46.