

## Review

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# Barriers and facilitators to the implementation of mental health and psychosocial support programmes following natural disasters in developing countries: A systematic review

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## Abstract

Climate change is leading to more frequent and intense natural disasters, with developing countries particularly at risk. However, most research concerning mental health and natural disasters is based in high-income country settings. It is critically important to provide a mental health response to such events, given the negative psychosocial impacts they elicit. The aim of this systematic review is to explore the barriers and facilitators to implementing mental health and psychosocial support (MHPSS) following natural disasters in developing countries. Eight databases were searched for relevant quantitative and qualitative studies from developing countries. Only studies reporting barriers and/or facilitators to delivering MHPSS in response to natural disasters in a low- or middle-income country were included and full texts were critically appraised using the McGill University Mixed Methods Appraisal Tool. Reported barriers and facilitators were extracted and analysed thematically. Thirty-seven studies were included in the review, reflecting a range of natural disaster settings and developing countries. Barriers to implementing MHPSS included cultural relevance, resources for mental health, accessibility, disaster specific factors and mental health stigma. Facilitators identified included social support, cultural relevance and task-sharing approaches. A number of practical approaches can be used to facilitate the implementation of MHPSS in developing country settings. However, more research is needed on MHPSS in the developing country natural disaster context, especially in Africa, and international policies and guidelines need to be re-evaluated using a decolonial lens.

## Impact statement

This paper explores barriers and facilitators to delivering mental health and psychosocial support in developing countries following natural disasters. Given the vulnerability of the Global South to climate change, including increasingly frequent and intense natural disasters, this paper offers important learnings for both policy and programme delivery to build climate resilience and facilitate disaster response. It also addresses a key gap in the literature, which to date has predominantly focused on high-income country settings or in humanitarian contexts in general rather than specifically natural disasters.

## Background

Climate change is leading to more frequent and intense natural disasters in some regions of the world, with developing countries most at risk (Ludwig et al., 2007; IPCC, 2022). Developing countries are more exposed to the threat of natural disasters because of the geographical vulnerability of the global south in addition to the impact of disasters on existing challenges like poverty (IPCC, 2014).

Natural disasters are consistently associated with negative mental health impacts, including higher rates of psychological distress and mental disorders such as post-traumatic stress disorder (PTSD), depression, anxiety and suicidal ideation (Beaglehole et al., 2018; Cianconi et al., 2020; Palinkas and Wong, 2020). It is estimated that 25–50% of individuals impacted by natural disasters will experience negative mental health outcomes, with those living in developing countries more vulnerable due to increased exposure to natural disasters, increased levels of poverty and limited access to mental health services (Palinkas and Wong, 2020).

The risk factors that natural disasters pose to mental health can be both direct and indirect. Direct risk factors include exposure to the natural disaster itself, and indirect risk factors include

the impacts of natural disasters such as economic loss, poor physical health, displacement and civil conflict (Palinkas and Wong, 2020). These risks are further amplified in developing countries through the bidirectional relationship between poverty and mental illness (poverty is a risk factor for poor mental health and poor mental health is a risk factor for poverty) (Lund et al., 2011).

The worrying impact of natural disasters on mental health in developing countries sits against a backdrop of pre-existing, significant challenges concerning the prevalence, treatment and stigmatisation of mental disorders in developing countries (Horton, 2007). Low- and middle-income countries (LMICs) hold 75% of the global burden of mental illness, and an estimated 76–85% of those living with a mental disorder in LMICs do not receive treatment (Lopez et al., 2006; WHO, 2019a).

Mental health and psychosocial support (MHPSS), defined as ‘any type of local or outside support that aims to protect or promote psychosocial well-being and/or prevent or treat mental disorder’ are recommended by the United Nations (UN) Interagency Standing Committee (IASC) for implementation in response to emergencies, including natural disasters (IASC, 2007, p. 1). Most people will be able to recover from experiencing a disaster through basic MHPSS services like the provision of shelter, food and community support; however, a minority of individuals will require more focused or specialised care (DeWolfe, 2000).

MHPSS programmes, including basic services, community support and focused care, have been found to be effective in improving mental health outcomes in individuals affected by humanitarian emergencies in developing countries, including by improving psychological functioning and reducing the prevalence of PTSDs (Bangpan et al., 2019). However, there have been limited attempts to synthesise the literature on MHPSS delivery in response to natural disasters in developing countries. The existing literature often conflates natural disasters and conflict (Roudini et al., 2017; Troup et al., 2021). This is problematic because they are fundamentally different in nature with differing impacts on mental health (Altmaier, 2019), for example, the anger and paranoia following the Mumbai riots in 1992–1993 compared to persistent grief following the Indian Ocean tsunami (Makwana, 2019). Furthermore, different natural disasters may have different psychosocial impacts. For example, anxiety following flooding (Makwana, 2019) and psychological distress about radioactive materials following the Fukushima nuclear disaster (Harada et al., 2015). It is therefore reasonable to assume that the barriers and facilitators to the delivery of MHPSS in natural disaster settings may differ from that of other humanitarian settings, strengthening the rationale for the specificity of this review.

Furthermore, the majority of MHPSS research is conducted in higher-income country (HIC) settings despite in practice the overwhelming majority of MHPSS interventions taking place in LMIC humanitarian settings (Tol et al., 2011; Roudini et al., 2017). MHPSS programmes introduced in response to natural disasters can springboard transformational change in mental health systems. For example, the MHPSS response to the 2004 tsunami in Sri Lanka provided the impetus for a mental health system reform, which led to a significant scale up human resources for mental health and doubled the number of districts in Sri Lanka with mental health services infrastructure (WHO, 2022).

There are numerous challenges to delivering MHPSS which are particularly specific to a developing country context. The aim of this review is to understand the barriers and facilitators to the delivery of MHPSS programmes following natural disasters in developing countries. Understanding context-specific barriers and facilitators

to delivering MHPSS can offer useful insights for evidence-based policy making to address global mental health inequities.

## Methodology

### Design

Systematic review. The review protocol was registered a priori on PROSPERO (registration number: CRD42022348958).

### Eligibility criteria

**Population:** The target population includes individuals living in LMICs which had been indirectly or directly impacted by natural disasters or professionals who have delivered MHPSS support to said individuals.

**Intervention:** Only studies reporting barriers and/or facilitators to delivering MHPSS in response to natural disasters were included.

**Geographical location:** Only studies conducted in a LMIC were included.

**Study design:** Study designs included interviews/focus groups, cross-sectional studies, prospective studies, randomised controlled trials (RCTs), quasi-experimental studies, case studies and observational research.

**Language:** Only articles written in English or French were included in the review due to the linguistic competencies of the primary researcher.

**Date:** There were no date limitations for the research.

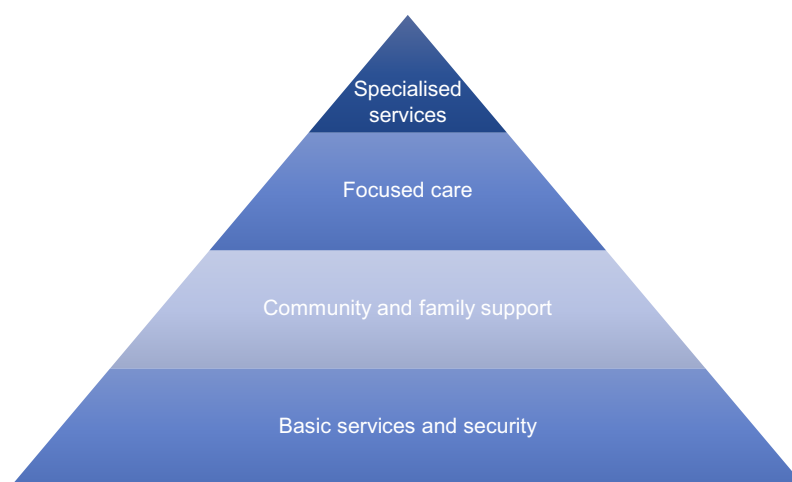
MHPSS programmes were defined in their broadest sense, covering basic services up to specialised psychological support (see Figure 1).

Developing countries were defined as LMICs as categorised by the *World Bank* for the most recent fiscal year (The World Bank Group, n.d.). The use of the term ‘natural disaster’ has been criticised by the academic community because it releases blame for disasters on manmade factors like preparedness policies and socioeconomic inequalities (Chmutina and von Meding, 2019). However, the term ‘natural disasters’ was used in this review due to its overwhelming use in the literature and because alternative phrases such as ‘extreme weather events’ exclude important disasters like earthquakes. Natural disasters were defined broadly as unavoidable environmental events that create fear of injury, loss of property and dislocation of residence and a wide range of search terms were used to reflect this (Altmaier, 2019). While the WHO defines mental health broadly as a state of wellbeing, for the purposes of a targeted search strategy, common mental disorders and their symptoms associated with natural disasters were focused on – depression, anxiety and PTSD. This led to a focus on MHPSS programmes with the explicit aim of alleviating the symptoms of mental disorders.

Barriers are defined as factors which prevent or impede the delivery of MHPSS, either through impacting the delivery of the intervention itself or the causal pathway between the intervention and its impact on mental health outcomes. Facilitators, on the other hand, are defined as factors which make the delivery of MHPSS easier.

### Search strategy

The three concepts of ‘MHPSS programmes’, ‘developing countries’ and ‘natural disasters’ were initially searched. The mitigation strategy for excessive results was to add the further concept of ‘mental



**Figure 1.** IASC intervention pyramid for MHPSS in emergencies (IASC, 2007).

health’ and then ‘disaster victim’ if further narrowing of search results was needed. Detailed search strategy is described in [Supplementary Appendices 1 and 2](#).

Embase, Medline, PsycInfo and Global Health databases were searched and the PRISMA<sup>1</sup> reporting guidelines were followed (Moher et al., 2009) ([Appendix 3](#)). Regional databases, African Journals Online, Latin American and Caribbean Health Sciences Literature, Nepal Journals Online and Sri Lanka Journals Online were also searched to capture more articles focused on developing countries and because Nepal and Sri Lanka are specifically very vulnerable to natural disasters (Eckstein et al., 2021).

Each database was searched in turn using the search strategy described above, duplicate studies were removed and final search returns were imported into the bibliographic software Mendeley. Titles and abstracts were screened according to the inclusion and exclusion criteria. Any studies that did not meet the inclusion criteria were excluded along with studies with unavailable English full text. Backward citation chaining was then conducted using references of included studies.

Data from the eligible studies were extracted into an extraction sheet designed to select data relevant to meet the objectives of the review (country and date of natural disaster; study design; sample; natural disaster; target mental health conditions; intervention; barriers; facilitators; [Table 1](#)).

### Analyses

A narrative synthesis was conducted in two stages in line with Bach-Mortensen and Verboom’s (2020) recommendations on conducting systematic reviews of barriers and facilitators in health. Study characteristics were synthesised and descriptively summarised to generate a snapshot of the literature. Information on barriers and facilitators was analysed and each statement in the data extraction table was codified into a summary statement. The codes were then collated and categorised into broader themes, and the final results were summarised according to each theme.

Full texts were critically appraised using the McGill University Mixed Methods Appraisal Tool ([Appendix 4](#)) and no texts were excluded on this basis (Hong et al., 2018).

<sup>1</sup>PRISMA refers to Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

### Results

[Figure 2](#) describes the systematic review screening process. After screening out ineligible papers, 37 studies were eligible for inclusion in our review.

#### Study characteristics

The included studies were cross-sectional surveys ( $n = 11$ ), RCTs ( $n = 7$ ), quasi-experimental studies ( $n = 7$ ), interviews/focus groups ( $n = 7$ ), mixed methods research ( $n = 4$ ) and a case study ( $n = 1$ ). Participants were almost all survivors of natural disasters ( $n = 33$ ); with two studies each with a mixture of both survivors and humanitarian responders and only humanitarian responders. The majority of studies focused on the top layer of the MHPSS pyramid, specialised interventions or layer 4 ( $n = 14$ ), followed by community and family support or layer 2 ( $n = 9$ ), basic services or layer 1 ( $n = 5$ ) and focused care interventions or layer 3 ( $n = 5$ ), with the remaining studies incorporating a mix of MHPSS approaches ( $n = 4$ ).

The country in focus was most often China ( $n = 11$ ), followed by Haiti ( $n = 7$ ) and Turkey ( $n = 4$ ). Only two studies were conducted on the African continent, one in Burundi and one in Zimbabwe (Crombach and Siehl, 2018; Mhlanga et al., 2019).

The majority of natural disasters reported were earthquakes ( $n = 24$ ) followed by tsunamis ( $n = 6$ ). Other disasters reported on include hurricanes/cyclones ( $n = 3$ ), flooding ( $n = 2$ ), a mixture of flooding and tsunami ( $n = 1$ ) and volcanic activity ( $n = 1$ ).

A range of MHPSS programmes were implemented in the included studies. These included interventions at the higher end of the MHPSS pyramid like Narrative Exposure Therapy (NET) ( $n = 7$ ) and Eye Movement Desensitisation and Reprocessing (EMDR) ( $n = 2$ ), to more basic interventions like group psychoeducation and psychotherapy ( $n = 7$ ), social work, for example, using social workers to connect different stakeholders and members of the community ( $n = 2$ ) and shelter ( $n = 2$ ).

#### Barriers to delivering MHPSS ([Table 2](#))

##### Cultural relevance

Some MHPSS programmes relied on western psychological practices, sometimes inappropriate to the specific developing country cultural context. For example, an MHPSS intervention for tsunami-

**Table 1.** Barriers and facilitators for implementation of MHPSS

References	Country and date of natural disaster	Study design	Sample	Natural disaster	Target mental health conditions/symptoms	Intervention <sup>a</sup>	Barriers	Facilitators
Başoğlu et al. (2007)	Turkey, 1999	RCT	Survivors	Earthquake	PTSD	Layer 4: Exposure therapy	Accessibility	
Başoğlu et al. (2005)	Turkey, 1999	RCT	Survivors	Earthquake	PTSD	Layer 4: Cognitive Behavioural Therapy		Task sharing
Becker (2009)	India, 2004	Quasi-experimental	Survivors	Tsunami	General mental health symptoms	Layer 3: Training lay persons to provide psychosocial support	Shortage of mental health professionals	Task sharing.
Berliner et al. (2011)	Haiti, 2010	Case study	Survivors	Earthquake	General mental health symptoms	Layer 1: Psychological First Aid	Non-local emergency responders, Disaster-specific factors	Normalisation of suffering, Social support
Catani et al. (2009)	Sri Lanka, 2004	RCT	Survivors	Tsunami	PTSD	Layer 4: Exposure therapy and meditation-relaxation		Social support, Task sharing
Chung (2017)	China, 2008	Mixed method	Survivors	Earthquake	General mental health symptoms	Layer 2: Mix of psychoeducational groups	Accessibility, Short-term nature of response, Shortage of mental health professionals	
Crombach and Siehl (2018)	Burundi, 2014	Quasi-experimental	Survivors	Flooding	PTSD, Depression	Layer 4: Narrative exposure therapy	Mental health stigma	Cultural relevance, Task sharing
Doocy et al. (2006)	Indonesia, 2004	Mixed method	Survivors	Tsunami	General mental health symptoms	Layer 1: Cash for Work programme	Short-term nature of response, Non-local emergency responders	Social support
Farrell et al. (2011)	Pakistan, 2005	Quasi-experimental	Survivors	Earthquake	Depression Anxiety	Layer 4: Eye Movement Desensitisation and Reprocessing (EMDR)	Short-term nature of response	Cultural relevance
Gao et al. (2013)	China, 2008	Interviews	Survivors	earthquake	General mental health symptoms	Layers 2 and 3: Music therapy	Mental health stigma	
Gelkopf et al. (2008)	Sri Lanka, 2004	Cross-sectional	Survivors	Tsunami	General mental health symptoms	Layer 3: Training lay persons to provide psychosocial support	Western psychological practices	Cultural relevance, Social support
Goenjian et al. (2021)	Armenia, 1988	Prospective study	Survivors	Earthquake	PTSD, depression	Layer 3: Group psychotherapy	shortage of mental health professionals, Disaster-specific factors, Lost social networks	Social support
Ho et al. (2017)	China, 2008	Cross-sectional	Survivors	Earthquake	anxiety	Layer 2: Art and play therapy		Task sharing
Huang and Wong (2013)	China, 2008	Focus groups	Survivors	Earthquake	General mental health symptoms	Layer 2: Social work (group recreational activities led by social workers)	Lack of prioritisation of mental health, Short-term nature of response	Social support

(Continued)

Table 1. (Continued)

References	Country and date of natural disaster	Study design	Sample	Natural disaster	Target mental health conditions/symptoms	Intervention <sup>a</sup>	Barriers	Facilitators
James and Noel (2013)	Haiti, 2010	Cross-sectional	Survivors	Earthquake	PTSD	Layer 3: Training lay persons to provide psychosocial support	Transitory lives of survivors	Task sharing
James et al. (2014)	Haiti, 2010	Cross-sectional	Emergency responders	Earthquake	PTSD	Layer 2: Psychoeducation	Mental health stigma	Task sharing, Social support
James (2012)	Haiti, 2010	Cross-sectional	Survivors	Earthquake	PTSD	Layer 3: Group psychotherapy	Disaster-specific factors	Task sharing
Jha et al. (2017)	Nepal, 2015	Quasi-experimental	Survivors	Earthquake	PTSD	Layer 4: Cognitive Behavioural Therapy and Narrative Exposure Therapy	Lack of prioritisation of mental health	Task sharing
Jiang et al. (2014)	China, 2008	RCT	Survivors	Earthquake	PTSD, depression	Layer 4: Interpersonal psychotherapy		Social support, Task sharing
Konuk et al. (2006)	Turkey, 1999	Quasi-experimental	Survivors	Earthquake	PTSD	Layer 4: Eye Movement Desensitisation and Reprocessing (EMDR)		Task sharing
Krishnaswamy et al. (2012)	Malaysia, 2004	Quasi-experimental	Survivors	Tsunami	Range of internationally recognised common mental disorders	Layer 4: Mix of psychotherapies like CBT		Cultural relevance
Lane et al. (2016)	Haiti, 2010	Cross-sectional	Survivors	Earthquake	PTSD	Layer 4: Narrative exposure therapy		Task sharing
Leitch and Miller-Karas (2009)	China, 2008	Cross-sectional	Survivors	Earthquake	General mental health symptoms	Layer 4: Trauma Resiliency Model	Shortage of mental health professionals	Cultural relevance
Madfis et al. (2010)	Haiti and the Solomon Islands, 2007	Cross-sectional	Survivors	Flooding and Tsunami	General mental health symptoms	Layer 2: Safe Spaces (protection, education and psychosocial support to children)	Shortage of mental health professionals, Lack of prioritisation of mental health	Outreach activities, Cultural relevance
Meng et al. (2012)	China, 2008	RCT	Survivors	Earthquake	PTSD	Layer 2: Chinese herbal medicine	Transitory lives of survivors	Cultural relevance
Mhlanga et al. (2019)	Zimbabwe, 2017	Mixed method	Survivors	Cyclone	General mental health symptoms	Layers 1–3: Social work interventions including resource mobilisation, networking, counselling	Disaster-specific factors	Social support
Pérez-Sales et al. (2005)	El Salvador, 2001	Interviews	Survivors	Earthquake	General mental health symptoms	Layer 1: Shelter Management	Lost social networks	Social support
Rodríguez-Sanjurjo (2021)	Puerto Rico, 2017	Mixed Methods	Emergency responders/survivors	Hurricane	depression anxiety	Layer 1: Aid programme	Lost social networks	
Saint-Jean (2015)	Haiti, 2010	Interviews/focus groups	Survivors	Earthquake	General mental health symptoms	Layer 2: Mix of MHPSS approaches including church initiatives, education	Short-term nature of response	Task sharing, Cultural relevance

(Continued)

**Table 1.** (Continued)

References	Country and date of natural disaster	Study design	Sample	Natural disaster	Target mental health conditions/symptoms	Intervention <sup>a</sup>	Barriers	Facilitators
Tasdik Hasan et al. (2020)	Bangladesh, 2007 and 2009	Interviews	Survivors	Cyclone	PTSD Depression	Layer 1 and 4: Mix of MHPSS approaches including materialistic help and one psychiatrist	Shortage of mental health professionals, Accessibility, Mental health stigma, Lack of prioritisation of mental health	Task sharing, Cultural relevance
Vijayakumar and Kumar (2008)	India, 2004	Cross-sectional	Survivors	Tsunami	PTSD, Depression	Layer 2: Emotional support via befriending		Cultural relevance, Task sharing
Wolmer et al. (2005)	Turkey, 1999	Quasi-experimental	Survivors	Earthquake	General mental health symptoms	Layer 2: School-based intervention	Short-term nature of response	Task sharing
Wu et al. (2019)	China, 2016	Interviews	Emergency responders	Flooding	Not reported	Layer 1: Shelter	Lack of prioritisation of mental health, shortage of mental health professionals, Mental health stigma	
Xu and Deng (2013)	China, 2008	Interviews	Survivors	Earthquake	PTSD	Layer 4: Professional mental health services	Accessibility	Outreach activities
Zahlawi et al. (2019)	Vanuatu, 2017	Cross-sectional	Survivors	Volcanic activity	General mental health symptoms	Layer 3 and 4: Mix of MHPSS approaches including professional and traditional community		Cultural relevance, Task sharing
Zang et al. (2013)	China, 2008	RCT	Survivors	Earthquake	PTSD, Depression, anxiety	Layer 4: Narrative Exposure Therapy	Transitory lives of survivors	
Zang et al. (2014)	China, 2008	RCT	Survivors	Earthquake	PTSD	Layer 4: Narrative Exposure Therapy	Accessibility	Social support

<sup>a</sup>MHPSS: Layer 1, basic services; Layer 2, community and family support; Layer 3, focused care; Layer 4, specialised services (United Nations Children's Fund, 2022).

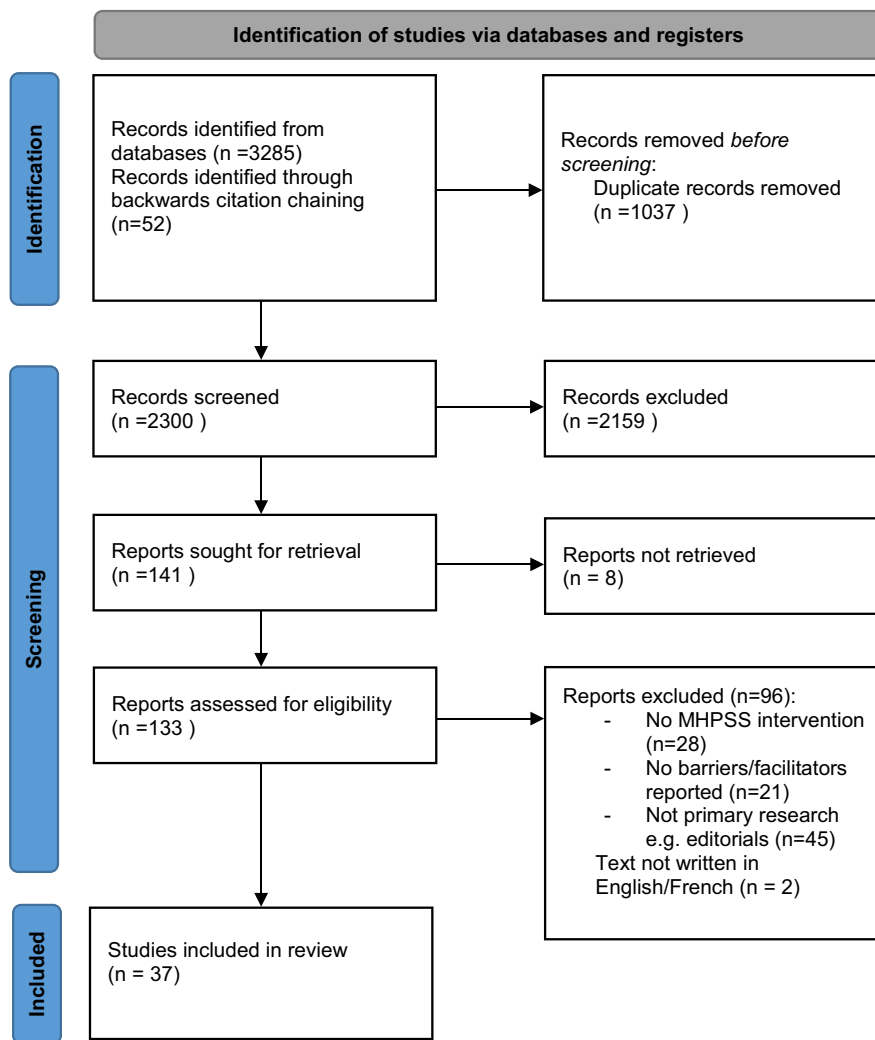


Figure 2. PRISMA flow diagram.

Table 2. Overview of barriers and facilitators

Barriers	Facilitators
Cultural relevance	Social support
Resources for mental health	Cultural relevance
Accessibility	Task-sharing approaches
Stigma	
Disaster specific barriers	

survivor children in Sri Lanka found that Western models of cognitive behavioural treatment (CBT) were found to be inappropriate in the local cultural context (Gelkopf et al., 2008). This was because CBT practices like self-affirmations and challenging negative thoughts were looked upon in Sri Lankan culture as a sign of weakness and against the Buddhist belief that trauma and distress should be accepted as a natural experience.

Furthermore, non-local MHPSS staff were reported to lack understanding of the local cultural context. Doocy et al. (2006) analysis of a Cash for Work programme response to the tsunami in Indonesia reported that programmes delivered by organisations

without previous experience of working in the area had difficulty understanding the local culture and the communities’ needs.

### Resources for mental health

The immediate focus following disaster tended to be on basic necessities like food and shelter with authorities tending to neglect MHPSS interventions (Wu et al., 2019; Tasdik Hasan et al., 2020). Some studies also talked about the importance of prioritising social work for mental health. For example, in Mhlanga et al.’s (2019) study of social work interventions for natural disasters in Zimbabwe, it was reported that there was a critical lack of child protection services in affected districts with significant exposure to verbal and sexual abuse.

A shortage of qualified mental health professionals was consistently reported as a barrier. Leitch and Miller-Karas (2009) reported that as a result of the earthquake in China, many workers were killed or injured, so the number of workers left had very little capacity to engage in MHPSS due to the need to share more workplace responsibilities. Madfis et al. (2010) found the lack of personnel meant it was challenging to provide differentiated support to different age groups of children. The misconception behind this barrier is that only qualified mental health workers are able to

provide MHPSS, when the finding around task sharing described below demonstrates that this is certainly not the case.

Even if resource was dedicated to an MHPSS response, this was often criticised as unsustainable with external mental health professionals (Doocy et al., 2006; Saint-Jean, 2015). Jha et al. (2017) in their study of earthquake survivors with posttraumatic stress in Nepal reported that as the humanitarian mental health response closed, the responsibility of addressing mental health needs was passed to Nepal's Ministry of Health where no plans were made to support the long-term rehabilitation of survivors.

### Accessibility

Accessibility barriers included reports that mental health services were difficult to reach due to limited transport, money or time (Tasdik Hasan et al., 2020). Other studies reported accessibility barriers for particular populations. For example, Madfis et al.'s (2010) emergency safe spaces intervention for children affected by disaster in Haiti and the Solomon Islands commented that disabled children, girls and minority language and ethnic groups participated less in the programme. The lack of access to services for disabled persons was highlighted in Chung's study of a post-earthquake rehabilitation programme in China, due to an unequal power dynamic between health care professionals and programme users and/or participants' limited understanding of their rights to participate (Chung, 2017). Several studies also reported that men were less likely to access the MHPSS intervention because the time of the intervention was during hours when men were typically out for work (Başoğlu et al., 2007; Zang et al., 2014).

### Stigma

Stigma was a frequent barrier to engaging with MHPSS, often exacerbated by poor community knowledge about mental health. For example, Wu et al.'s (2019) study of shelter responses to flooding in China detailed mental health stigma in China, quoting a folk proverb 'Prevent fires, deter thieves and be wary of psychologists'. Furthermore, one study interviewing cyclone survivors in Bangladesh reported one respondent who said going to hospital for mental health reasons was shameful (Tasdik Hasan et al., 2020). This stigmatisation of mental health prevents the uptake of MHPSS services following a natural disaster and is therefore a critical barrier.

### Disaster specific barriers

Sometimes the intervention itself was not physically possible due to the weather (James and Noel, 2013). Furthermore, the long-term nature of some natural disasters like earthquakes, with aftershocks sometimes occurring for months after the initial event, led to continuous fear. Berliner et al.'s (2011) case study of an earthquake survivor in Haiti reported that the individual was constantly afraid of being in the hospital in case another earthquake destroyed the building. However, some studies revealed the challenge of separating the distressing impact of natural versus man-made disasters. For example, in Farrell et al.'s (2011) study of an EMDR intervention following the 2005 earthquake in Northern Pakistan, very few of the participants' distress was focused on the earthquake itself with other factors like terrorism and domestic violence often being the main sources of concern.

Studies also reported delivery barriers to the MHPSS intervention because of the transitory nature of disaster survivors' lives, making longer-term follow up challenging (Başoğlu et al., 2005; Meng et al., 2012; Zang et al., 2013). For example, Meng XianZe and

colleagues found that 45% of participants in their RCT screened for PTSD were lost to follow up (Meng et al., 2012).

## Facilitators to delivering MHPSS (Table 2)

### Social support

Pérez-Sales et al. (2005) research on shelter management after earthquakes in El Salvador compared shelter which grouped tents in order of arrival with another shelter which grouped tents to reflect the original communities of the survivors. In the camp organised according to communities, outcomes such as mental health symptoms and participation in camp activities were superior compared to the comparator. Some studies found explicitly improving social support as part of the MHPSS intervention led to positive mental health outcomes (Doocy et al., 2006; Jiang et al., 2014; Zang et al., 2014). For example, Jiang and colleagues argued that interpersonal psychotherapy was effective in improving mental health because it helped to reconstitute social support which is an essential element of PTSD recovery (Jiang et al., 2014). MHPSS for relatives of survivors was also found to strengthen their ability to support the survivor in question, and training lay people as mental health workers reportedly improved the volunteers' own mental health through the social connections they were able to build (Berliner et al., 2011; James et al., 2014).

### Cultural relevance

Cultural relevance was seen as an important facilitator of effective MHPSS delivery. For example, Saint-Jean and colleagues examined the experiences of Haitian earthquake survivors in relation to the MHPSS disaster response and reported cultural relevance as a facilitator, achieved through local participation in committees (Saint-Jean, 2015). Furthermore, an RCT based in China explored the use of traditional Chinese herbal medicine, a widely used and culturally accepted practice, to improve the mental health of earthquake survivors (Meng et al., 2012). The study found that traditional medicine is cheap and quick to distribute, and is associated with significantly improved mental health symptoms compared to a controlled placebo.

One intervention in post-earthquake China sought to overcome cultural barriers to Western psychological practices by focusing at the biological level instead of using a form of psychotherapy called the trauma resiliency model which focuses on the biological impacts of traumatic symptoms on the nervous system (Leitch and Miller-Karas, 2009). In this study, almost all healthcare workers surveys indicated this biological model of trauma would be useful for their work with earthquake survivors.

The positive impact of culturally relevant MHPSS was also seen for programmes that were able to adapt based on an awareness of local cultural contexts, including mental health stigma and marginalised populations. For example, Gao's study of music therapy for Sichuan earthquake survivors reported that music therapists deliberately avoided the word 'therapy' to increase engagement (Gao et al., 2013). Crombach and Siehl's (2018) study of natural disasters in Burundi found that the use of local counsellors helped to combat mental health stigma. Furthermore, Berliner's study of Haitian earthquake survivors found that the normalisation of suffering was seen to tackle prominent mental health stigma (Berliner et al., 2011). Interestingly, Xu and Deng's (2013) study of mental health service use in post-earthquake China reported that outreach activities like home visits as well as low service charges for lower income groups could support accessibility of MHPSS.



### Task-sharing approaches

The most frequently reported facilitators of MHPSS interventions were task-sharing approaches, often called ‘train-the-trainer’ interventions ( $n = 14$ ). This method aims to deliver MHPSS in a resource-poor environment and overcome cultural barriers by training laypersons in the community in basic psychotherapy and psychoeducation practices to provide MHPSS to their communities. Lane et al.’s (2016) study of the task sharing approach for delivering trauma therapy to Haitian earthquake survivors described the model as a ‘force multiplier’ in areas with significant mental health needs and insignificant professional resources. Zahlawi’s survey of survivors of volcanic activity in Vanuatu found that a significant minority of respondents (18%) used traditional and community networks as their only source of psychosocial support as opposed to more professional MHPSS, suggesting that the train the trainer model could be an important facilitator of MHPSS in areas where individuals either cannot or do not want to access professional services (Zahlawi et al., 2019). The model was reported as beneficial for the community trainers’ own mental health, with one intervention in post-earthquake Haiti associated with decreased PTSD symptoms, significant posttraumatic growth and positive qualitative accounts from trainers about their experiences delivering MHPSS (James et al., 2014). Task-sharing interventions were also suitable for overcoming some of the barriers to accessibility, such as language barriers.

### Discussion

This review has highlighted a range of natural disaster settings and developing countries, with China ( $n = 11$ ) and earthquakes ( $n = 24$ ) being the most common areas of focus. Barriers to implementing the MHPSS included cultural relevance, resources for mental health, accessibility, disaster specific factors and mental health stigma. Facilitators identified included social support, cultural relevance and task-sharing approaches.

Our biggest overarching finding is the need for an in-depth understanding of the local sociocultural, political and economic context in order to sensitively adapt an MHPSS intervention to maximise effectiveness.

The importance of cultural relevance mirrors the existing IASC guidelines on MHPSS delivery in emergency settings (IASC, 2007). However, what is perhaps missing from current IASC guidance is the relevance of western psychological approaches to disaster settings in LMICs. It may not be sufficient to understand the local context if the MHPSS you are using is founded upon the western cultural context and not adapted to the culture in which it is being implemented, such as CBT with an individualistic focus which has not been adapted for use in a more collectivist culture (Gelkopf et al., 2008).

This finding relates to an issue recently brought to light in the global mental health discourse; decolonialising global mental health (Weine, 2021). The evidence base for WHO treatment guidelines for mental health care are founded upon western psychological practice (Horton, 2007; Mills, 2014). While there is increasing recognition of the effectiveness of alternative non-Western practices like yoga on mental health, the evidence base, particularly for an LMIC disaster setting, is arguably yet to fully emerge (Kirkwood et al., 2005; Butterfield et al., 2017; Weine et al., 2020). Examples like Meng et al.’s (2012) Chinese herbal medicine to support Sichuan earthquake survivors with PTSD highlight an emerging evidence base for future research to build on. The implications for disaster

policy include building in local participation in MHPSS disaster preparedness and response planning, and looking beyond western research and international guidelines to the local evidence base on MHPSS to inform policies. Ensuring the availability of quality mental health services and community support structures in advance of natural disasters is an important part of disaster preparedness and a key mechanism to empower culturally relevant community responses instead of relying on non-local emergency responders. Indeed, this review highlights barriers regarding resources and personnel for mental health, which corroborate the stark known mental health treatment gaps in LMICs (WHO, 2019a).

This review also adds to the strong existing evidence base on task sharing in resource-poor contexts and particularly communities where mental health stigma is rife (Padmanathan and De Silva, 2013; Hoelt et al., 2018). Mental health stigma is a global phenomenon, illustrating that lessons learned from mental health approaches in LMICs should not be siloed to the developing world (Lasalvia et al., 2013). Nevertheless, this review demonstrates that the stigmatisation of mental health continues to be a significant challenge in developing countries. This finding supports the IASC guidelines recommendation to ‘implement strategies for reducing discrimination and stigma of people with mental illness’ (IASC, 2007). The continued criticality of global mental health stigma has been recently highlighted in the Lancet commission to end stigma and discrimination in mental health, co-produced with persons with lived experience (Lancet, 2022). This review has highlighted specific programmatic and policy approaches to achieve this, such as psychoeducation and the normalisation of mental health responses to natural disasters.

A barrier to many MHPSS interventions included in this review was accessibility. Our findings support emerging research that disabled individuals in particular are often left behind in responses to disasters worldwide (Quaill et al., 2018). Implications for MHPSS practice include the need for proactive engagement with hard-to-reach communities. This is in line with IASC guidelines which place human rights and equity as the first principle of delivering MHPSS in emergency settings (IASC, 2007). Furthermore, this finding supports the launch of the WHO QualityRights Initiative in 2019, a comprehensive training package which aims to promote a human rights approach in the area of mental health, including the rights of persons with disabilities to access quality mental health services, in line with the UN Convention on the Rights of Persons with Disabilities (WHO, 2019b). Future research on MHPSS responses to disaster in LMICs needs to disaggregate results by different population groups in order to build the evidence base on which groups are left behind, and methods for improving accessibility. Policies should also reflect vulnerable groups to be targeted in MHPSS outreach activities. For example, Indonesia’s disaster management policy specifies pregnant women and children as vulnerable groups for psychosocial services (Law of the Republic of Indonesia Number 24 of 2007 Concerning Disaster Management, 2007).

Social support is frequently reported in the wider literature as a critical factor supporting mental health and wellbeing (Fasihi Harandi et al., 2017). Furthermore, recent research on the role of social cohesion and community resilience in the context of the COVID-19 pandemic, demonstrates that strong social cohesion prior to disaster is a strong predictor of recovery (Jewett et al., 2021). This review corroborates this wider finding by illustrating how social support and social cohesion can facilitate the effectiveness of MHPSS interventions. Enabling social networks, such as through organising camps around existing community structures, can

relinquish the power of the community and strengthen the MHPSS response to disasters. This finding also has important implications for community engagement in MHPSS and participatory programme design.

This review brings newfound attention to natural disaster-specific barriers and facilitators MHPSS and this is a major strength. Differentiation between natural disasters and conflict is omitted from current international guidance and policy, with the IASC and the World Health Organisation often conflating natural disasters and conflict into the catch-all term ‘emergency settings’ (IASC, 2007; WHO, 2021). The literature sheds light on natural disaster-specific considerations including both physical barriers and emotional barriers related to delivering MHPSS following natural disasters specifically. Although it is acknowledged that natural disasters and conflict are not always mutually exclusive, these findings provide a basis for further research in this area.

Critically, further research on MHPSS in relation to both natural disasters and the developing country context is needed. Africa is one of the most vulnerable continents to the impacts of climate change, especially drought, and yet only two African studies were eligible for this review and neither focused on drought as an issue (IPCC, 2007). The authors included in this systematic review also highlighted the paucity of literature in this space in the Asian context- China will soon be classified by the World Bank as a higher-income country, and studies focused on China accounted for over half of the Asian studies in this review (Xuanmin, 2022). The methodology in this systematic review was also dominated by cross-sectional survey studies which may also reflect the general difficulty of conducting research in disaster settings (Mezinska et al., 2016).

In the current review, maximising the sustainability of the intervention through supporting local mental health infrastructure was a key facilitator to the long-term success of MHPSS. This mirrors similar findings in HICs and the frequently cited dilemma of the humanitarian-development nexus (Ando et al., 2017; Strand, 2020). However, there is a greater imbalance between government mental health spending and mental health disease burden in developing countries compared to developed countries (ranging from 3:1 in Canada to 435:1 in Haiti) (Vigo et al., 2019). While the WHA target for 80% of countries to have a system in place for MHPSS in emergencies is a key step forward, the implementation of this target in the context of other national and international priorities remains to be seen (WHO, 2021). Indeed, research in HIC settings overwhelmingly points to barriers with the utilisation and coordination of existing clinical services rather than the creation of new services and task-sharing programmes that have dominated this review, perhaps reflecting the vastly different socioeconomic contexts (Witteveen et al., 2012; Satinsky et al., 2019).

### Strengths and limitations

Single screening of abstracts was undertaken; however, this was necessary due to the solo undertaking of the project and numerous relevant databases were searched to mitigate against accidental exclusion of relevant studies. For a similar rationale, limited search terms were used, for example, focusing on disaster victim instead of providers too, and focusing on mental health conditions instead of mental health more broadly. This may have limited the number of titles and abstracts retrieved. The MHPSS interventions included were skewed towards specialised interventions meaning that the findings of this review may be less applicable to interventions at the bottom of the MHPSS pyramid. This review overcomes

methodological critiques of previous similar reviews because it clearly defines what is meant by ‘barrier’ and ‘facilitator’, outlines a clear approach to synthesis and analysis, and engages critically with the reliability of the factors identified (Bach-Mortensen and Verboom, 2020).

### Conclusion

MHPSS programmes in developing countries following natural disasters should incorporate local participation and proactive engagement with marginalised communities, build social networks, normalise mental health responses to natural disasters, strengthen local mental health infrastructure and adapt to natural disaster-specific barriers to delivery. MHPSS disaster policies should focus on decolonialising existing guidance, building resilience through task sharing approaches and establishing long-term funding streams for mental health. Ultimately, with the high likelihood of increasingly severe and frequent natural disasters, disproportionately affecting the Global South, the need to further the academic literature on MHPSS interventions in this context and build disaster preparedness in relation to mental health is imperative.

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**Data availability statement.** The original data extraction table used in this study is available from O.R. on reasonable request. All information used to generate the thematic analysis are from the publicly available studies listed in this paper.

**Author contribution.** O.R. conceptualised the study and developed the review methodology under the supervision of A.N. O.R. ran the search strategy, identified eligible papers, extracted and curated the data and conducted the formal analysis. O.R. prepared the original draft of the manuscript and made subsequent revisions. A.N. reviewed and edited the original manuscript and its subsequent versions. Both authors approved the final version of the manuscript before submission.

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### References

- Altmaier EM (2019) An introduction to trauma. In *Promoting Positive Processes after Trauma*. Amsterdam: Elsevier Academic Press, pp. 1–15. <https://doi.org/10.1016/B978-0-12-811975-4.00001-0>.
- Ando S, Kuwabara H, Araki T, Kanehara A, Tanaka S, Morishima R, Kondo S and Kasai K (2017) Mental health problems in a community after the great East Japan earthquake in 2011: A systematic review. *Harvard Review of Psychiatry* 25(1), 15–28. <https://doi.org/10.1097/HRP.0000000000000124>.
- Bach-Mortensen AM and Verboom B (2020) Barriers and facilitators systematic reviews in health: A methodological review and recommendations for reviewers. *Research Synthesis Methods* 11(6), 743–759. <https://doi.org/10.1002/jrsm.1447>.
- Bangpan M, Felix L and Dickson K (2019) Mental health and psychosocial support programmes for adults in humanitarian emergencies: A systematic review and meta-analysis in low and middle-income countries. *BMJ Global Health* 4(5), e001484. <https://doi.org/10.1136/bmjgh-2019-001484>.
- Başoğlu M, Şalcıoğlu E and Livanou M (2007) A randomized controlled study of single-session behavioural treatment of earthquake-related post-traumatic

- stress disorder using an earthquake simulator. *Psychological Medicine* 37(2), 203–213. <https://doi.org/10.1017/S0033291706009123>.
- Başoğlu M, Şalcıoğlu E, Livanou M, Kalender D and Acar G** (2005) Single-session behavioral treatment of earthquake-related posttraumatic stress disorder: A randomized waiting list controlled trial. *Journal of Traumatic Stress* 18(1), 1–11. <https://doi.org/10.1002/jts.20011>.
- Beaglehole B, Mulder RT, Frampton CM, Boden JM, Newton-Howes G and Bell CJ** (2018) Psychological distress and psychiatric disorder after natural disasters: Systematic review and meta-analysis. *The British Journal of Psychiatry: The Journal of Mental Science* 213(6), 716–722. <https://doi.org/10.1192/bjp.2018.210>.
- Becker SM** (2009) Psychosocial care for women survivors of the tsunami disaster in India. *American Journal of Public Health* 99(4), 654–658. <https://doi.org/10.2105/AJPH.2008.146571>.
- Berliner P, Gongóra JN and Espaillet V** (2011) Immediate psycho-social support for disaster survivors. *Psyke & Logos* 32(2), 22. <https://doi.org/10.7146/pl.v32i2.8732>.
- Butterfield N, Schultz T, Rasmussen P and Proeve M** (2017) Yoga and mindfulness for anxiety and depression and the role of mental health professionals: A literature review. *The Journal of Mental Health Training, Education and Practice* 12(1), 44–54. <https://doi.org/10.1108/jmhtep-01-2016-0002>.
- Catani C, Kohiladevy M, Ruf M, Schauer M, Elbert T and Neuner F** (2009) Treating children traumatized by war and tsunami: A comparison between exposure therapy and meditation-relaxation in north-East Sri Lanka. *BMC Psychiatry* 9, 22. <https://doi.org/10.1186/1471-244X-9-22>.
- Chmutina K and von Meding J** (2019) A dilemma of language: “Natural disasters” in academic literature. *International Journal of Disaster Risk Science* 10(3), 283–292. <https://doi.org/10.1007/s13753-019-00232-2>.
- Chung EY** (2017) The outcomes and impact of a post-earthquake rehabilitation program in China: A qualitative study. *Qualitative Health Research* 27(2), 170–181. <https://doi.org/10.1177/1049732316650414>.
- Cianconi P, Betrò S and Janiri L** (2020) The impact of climate change on mental health: A systematic descriptive review. *Frontiers in Psychiatry* 11, 74. <https://doi.org/10.3389/fpsy.2020.00074>.
- Crombach A and Siehl S** (2018) Impact and cultural acceptance of the narrative exposure therapy in the aftermath of a natural disaster in Burundi. *BMC Psychiatry* 18(1), 1–15. <https://doi.org/10.1186/s12888-018-1799-3>.
- DeWolfe DJ** (2000) *Training Manual for Mental Health and Human Service Workers in Major Disasters*. U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services. Available at <https://books.google.co.uk/books?id=v5aVfWG7bIEC> (accessed 10 Aug 2022).
- Doocy S, Gabriel M, Collins S, Robinson C and Stevenson P** (2006) Implementing cash for work programmes in post-tsunami Aceh: Experiences and lessons learned. *Disasters* 30(3), 277–296. <https://doi.org/10.1111/j.0361-3666.2005.00321.x>.
- Eckstein D, Künzel V, Schäfer L and Körperschaft G** (2021) Global climate risk index 2021 who suffers most extreme weather events? Weather-related loss events in 2019 and 2000–2019. Available at <https://www.germanwatch.org/en/19777> (accessed 10 Aug 2022).
- Farrell DP, Keenan PS, Ali MW, Bilal S, Tareen SM, Keenan L and Rana MH** (2011) Training Pakistani mental health workers in EMDR in the aftermath of the 2005 earthquake in northern Pakistan. *Counselling Psychology Quarterly* 24(2), 127–137. <https://doi.org/10.1080/09515070.2011.589599>.
- Fasihi Harandi T, Mohammad Taghinasab M and Dehghan Nayeri T** (2017) The correlation of social support with mental health: A meta-analysis. *Electronic Physician* 9(9), 5212–5222. <https://doi.org/10.19082/5212>.
- Gao T, O’Callaghan C, Magill L, Lin S, Zhang J, Zhang J, Yu J and Shi X** (2013) A music therapy educator and undergraduate students’ perceptions of their music project’s relevance for Sichuan earthquake survivors. *Nordic Journal of Music Therapy* 22(2), 107–130. <https://doi.org/10.1080/08098131.2012.691106>.
- Gelkopf M, Ryan P, Cotton SJ and Berger R** (2008) The impact of “training the trainers” course for helping tsunami-survivor children on Sri Lankan disaster volunteer workers. *International Journal of Stress Management* 15(2), 117–135. <https://psycnet.apa.org/doi/10.1037/1072-5245.15.2.117>.
- Goenjian AK, Steinberg AM, Walling D, Bishop S, Karayan I and Pynoos R** (2021) 25-year follow-up of treated and not-treated adolescents after the Spitak earthquake: Course and predictors of PTSD and depression. *Psychological Medicine* 51(6), 976–988. <https://doi.org/10.1017/S0033291719003891>.
- Harada N, Shigemura J, Tanichi M, Kawaida K, Takahashi S and Yasukata F** (2015) Mental health and psychological impacts from the 2011 great East Japan earthquake disaster: A systematic literature review. *Disaster and Military Medicine* 1(1), 17. <https://doi.org/10.1186/s40696-015-0008-x>.
- Ho RTH, Lai AHY, Lo PHY, Nan JKM and Pon AKL** (2017) A strength-based arts and play support program for young survivors in post-quake China: Effects on self-efficacy, peer support, and anxiety. *The Journal of Early Adolescence* 37(6), 805–824. <https://psycnet.apa.org/doi/10.1177/0272431615624563>.
- Hoefl TJ, Fortney JC, Patel V and Unützer J** (2018) Task-sharing approaches to improve mental health care in rural and other low-resource settings: A systematic review. *The Journal of Rural Health* 34(1), 48–62. <https://doi.org/10.1111/jrh.12229>.
- Hong QN, Fàbregues S, Bartlett G, Boardman F, Cargo M, Dagenais P, Gagnon M-P, Griffiths F, Nicolau B, O’Cathain A, Rousseau M-C, Vedel I and Pluye P** (2018) The mixed methods appraisal tool (MMAT) version 2018 for information professionals and researchers. *Education for Information* 34(4), 285–291.
- Horton R** (2007) Launching a new movement for mental health. *Lancet (London, England)* 370(9590), 806. [https://doi.org/10.1016/S0140-6736\(07\)61243-4](https://doi.org/10.1016/S0140-6736(07)61243-4).
- Huang Y and Wong H** (2013) Effects of social group work with survivors of the Wenchuan earthquake in a transitional community. *Health & Social Care in the Community* 21(3), 327–337. <https://doi.org/10.1111/hsc.12022>.
- Inter-Agency Standing Committee (IASC)** (2007) IASC guidelines on mental health and psychosocial support in emergency settings. Available at <https://interagencystandingcommittee.org/iasc-task-force-mental-health-and-psycho-social-support-emergency-settings/iasc-guidelines-mental-health-and-psycho-social-support-emergency-settings-2007> (accessed 7 Aug 2022).
- Intergovernmental Panel on Climate Change (IPCC)** (2007) Climate change 2007: Impacts, adaptation and vulnerability. In Parry ML, Canziani OF, Palutikof JP, van der Linden PJ and Hanson CE (eds.), *Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press, p. 976. Available at <https://www.ipcc.ch/site/assets/uploads/2018/03/ar4-wg2-intro.pdf> (accessed 14 Nov 2022).
- IPCC** (2014) Impacts, adaptation, and vulnerability. Part A: Global and sectoral aspects. In Field CB, Barros VR, Dokken DJ, Mach KJ, Mastrandrea MD, Bilir TE, Chatterjee M, Ebi KL, Estrada YO, Genova RC, Girma B, Kissel ES, Levy AN, MacCracken S, Mastrandrea PR and White LL (eds.), *Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press, p. 1132. Available at [https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-PartA\\_FINAL.pdf](https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-PartA_FINAL.pdf) (accessed 20 Jan 2023).
- IPCC** (2022) Climate change 2022: Impacts, adaptation, and vulnerability. In Pörtner H-O, Roberts DC, Tignor M, Poloczanska ES, Mintonbeck K, Alegria A, Craig M, Langsdorf S, Löschke S, Möller V, Okem A and Rama B (eds.), *Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press, p. 3056. <https://doi.org/10.1017/9781009325844>.
- James L** (2012) “Relief for the spirit” in post-earthquake Haiti: The development, implementation, and evaluation of a lay mental health worker project.
- James LE and Noel JR** (2013) Lay mental health in the aftermath of disaster: Preliminary evaluation of an intervention for Haiti earthquake survivors. *International Journal of Emergency Mental Health* 15(3), 165–178.
- James LE, Noel JR and Roche Jean Pierre YM** (2014) A mixed-methods assessment of the experiences of lay mental health workers in postearthquake Haiti. *American Journal of Orthopsychiatry* 84(2), 152–163. <https://psycnet.apa.org/doi/10.1037/h0099387>.
- Jewett RL, Mah SM, Howell N and Larsen MM** (2021) Social cohesion and community resilience during COVID-19 and pandemics: A rapid scoping review to inform the United Nations research roadmap for COVID-19 recovery. *International Journal of Health Services* 51(3), 325–336. <https://doi.org/10.1177/0020731421997092>.
- Jha A, Shakya S, Zang Y, Pathak N, Pradhan PK, Bhatta KR, Sthapit S, Niraula S and Nehete R** (2017) Identification and treatment of Nepal 2015 earthquake survivors with posttraumatic stress disorder by nonspecialist volunteers: An

- exploratory cross-sectional study. *Indian Journal of Psychiatry* 59(3), 320. [https://doi.org/10.4103/psychiatry.IndianJPsychiatry\\_236\\_16](https://doi.org/10.4103/psychiatry.IndianJPsychiatry_236_16).
- Jiang RF, Tong HQ, Delucchi KL, Neylan TC, Shi Q and Meffert SM (2014) Interpersonal psychotherapy versus treatment as usual for PTSD and depression among Sichuan earthquake survivors: A randomized clinical trial. *Conflict and Health* 8, 14. <https://doi.org/10.1186/1752-1505-8-14>.
- Kirkwood G, Ramples H, Tuffrey V, Richardson J and Pilkington K (2005) Yoga for anxiety: A systematic review of the research evidence. *British Journal of Sports Medicine* 39(12), 884–891. <https://doi.org/10.1136/bjism.2005.018069>.
- Konuk E, Knipe J, Eke I, Yuksek H, Yurtsever A and Ostep S (2006) The effects of eye movement desensitization and reprocessing (EMDR) therapy on posttraumatic stress disorder in survivors of the 1999 Marmara, Turkey, earthquake. *International Journal of Stress Management* 13(3), 291–308. <https://psycnet.apa.org/doi/10.1037/1072-5245.13.3.291>.
- Krishnaswamy S, Subramaniam K, Indran T and Low WY (2012) The 2004 tsunami in Penang, Malaysia: Early mental health intervention. *Asia-Pacific Journal of Public Health* 24(4), 710–718. <https://doi.org/10.1177/1010539512453261>.
- Lane WD, Myers KJ, Hill MC and Lane DE (2016) Utilizing narrative methodology in trauma treatment with Haitian earthquake survivors. *Journal of Loss and Trauma* 21(6), 560–574. <https://doi.org/10.1080/15325024.2016.1159113>.
- Lasalvia A, Zoppi S, van Bortel T, Bonetto C, Cristofalo D, Wahlbeck K, Bacle SV, van Audenhove C, van Weeghel J, Reneses B, Germanavicius A, Econoum M, Lanfredi M, Ando S, Sartorius N, Lopez-Ibor JJ and Thornicroft G (2013) Global pattern of experienced and anticipated discrimination reported by people with major depressive disorder: A cross-sectional survey. *Lancet (London, England)* 381(9860), 55–62. [https://doi.org/10.1016/S0140-6736\(12\)61379-8](https://doi.org/10.1016/S0140-6736(12)61379-8).
- Law of the Republic of Indonesia Number 24 of 2007 Concerning Disaster Management (2007) Available at [https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwj0oeDgo6n0AhUrgv0HHUqMAekQFnoEACAQAw&url=https%3A%2F%2Fwww.ifrc.org%2Fdocs%2FIDRL%2F956EN.pdf&usq=AOvVaw3YYBvg7\\_bEErnjPH5gyO9](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwj0oeDgo6n0AhUrgv0HHUqMAekQFnoEACAQAw&url=https%3A%2F%2Fwww.ifrc.org%2Fdocs%2FIDRL%2F956EN.pdf&usq=AOvVaw3YYBvg7_bEErnjPH5gyO9) (accessed 18 Nov 2022).
- Leitch L and Miller-Karas E (2009) A case for using biologically-based mental health intervention in post-earthquake China: Evaluation of training in the trauma resiliency model. *International Journal of Emergency Mental Health* 11(4), 221–233. Available at <https://pubmed.ncbi.nlm.nih.gov/20524507/> (accessed 7 Aug 2022).
- Lopez AD, Mathers CD, Ezzati M, Jamison DT and Murray CJL (2006) Global and regional burden of disease and risk factors, 2001: Systematic analysis of population health data. *Lancet (London, England)* 367(9524), 1747–1757. [https://doi.org/10.1016/S0140-6736\(06\)68770-9](https://doi.org/10.1016/S0140-6736(06)68770-9).
- Ludwig F, Terwisscha van Shelinga C, Verhagen J, Kruijt B, van Ierland E, Dellink R, de Bruin K, de Bruin K and Kabat P (2007) Climate change impacts on developing countries – EU accountability. Available at [https://www.europarl.europa.eu/thinktank/en/document/IPOL-ENVI\\_ET\(2007\)393511](https://www.europarl.europa.eu/thinktank/en/document/IPOL-ENVI_ET(2007)393511) (accessed 27 Oct 2022).
- Lund C, De Silva M, Plagerson S, Cooper S, Chisholm D, Das J, Knapp M and Patel V (2011) Poverty and mental disorders: Breaking the cycle in low-income and middle-income countries. *Lancet (London, England)* 378(9801), 1502–1514. [https://doi.org/10.1016/S0140-6736\(11\)60754-X](https://doi.org/10.1016/S0140-6736(11)60754-X).
- Madfis J, Martyris D and Triplehorn C (2010) Emergency safe spaces in Haiti and the Solomon Islands. *Disasters* 34(3), 845–864. <https://doi.org/10.1111/j.1467-7717.2010.01172.x>.
- Makwana N (2019) Disaster and its impact on mental health: A narrative review. *Journal of Family Medicine and Primary Care* 8(10), 3090–3095. [https://doi.org/10.4103/jfmpc.jfmpc\\_893\\_19](https://doi.org/10.4103/jfmpc.jfmpc_893_19).
- Meng X-Z, Wu F, Wei P-K, Xiu L-J, Shi J, Pang B, Sun D-Z, Qin Z-F, Huang Y and Lao L (2012) A chinese herbal formula to improve general psychological status in posttraumatic stress disorder: A randomized placebo-controlled trial on Sichuan earthquake survivors. *Evidence-based Complementary and Alternative Medicine* 2012, 691258. <https://doi.org/10.1155/2012/691258>.
- Mezinska S, Kakuk P, Mijaljica G, Waligóra M and O'Mathúna DP (2016) Research in disaster settings: A systematic qualitative review of ethical guidelines. *BMC Medical Ethics* 17(1), 62. <https://doi.org/10.1186/s12910-016-0148-7>.
- Mhlanga C, Muzingili T and Mpambela M (2019) Natural disasters in Zimbabwe: The primer for social work intervention. *African Journal of Social Work* 9(1), 46–54. Available at <https://www.ajol.info/index.php/ajsw/article/view/184232> (accessed 18 Aug 2022).
- Mills C (2014) *Decolonizing Global Mental Health: The Psychiatricization of the Majority World*. New York: Routledge. Available at <https://books.google.co.uk/books?id=MJRhmQEACAAJ> (accessed 23 Aug 2022).
- Moher D, Liberati A, Tetzlaff J and Altman DG (2009) Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *BMJ* 339, b2535. <https://doi.org/10.1136/bmj.b2535>.
- Padmanathan P and De Silva MJ (2013) The acceptability and feasibility of task-sharing for mental healthcare in low and middle income countries: A systematic review. *Social Science & Medicine* 97, 82–86. <https://doi.org/10.1016/j.socscimed.2013.08.004>.
- Palinkas LA and Wong M (2020) Global climate change and mental health. *Current Opinion in Psychology* 32, 12–16. <https://doi.org/10.1016/j.copsyc.2019.06.023>.
- Pérez-Sales P, Cervellon P, Vazquez C, Vidales D and Gaborit M (2005) Post-traumatic factors and resilience: The role of shelter management and survivors' attitudes after the earthquakes in El Salvador (2001). *Journal of Community & Applied Social Psychology* 15(5), 368–382. <https://doi.org/10.1002/casp.827>.
- Quaill J, Barker R and West C (2018) Experiences of individuals with physical disabilities in natural disasters: An integrative review. *Australian Institute for Disaster Resilience* 33(3), 58–63. Available at <https://knowledge.aidr.org.au/resources/ajem-jul-2018-experiences-of-individuals-with-physical-disabilities-in-natural-disasters-an-integrative-review/> (accessed 17 Feb 2023).
- Rodriguez-Sanjurjo J (2021) ProQuest Dissertations Publishing. Available at <https://www.proquest.com/openview/922c722c62435bcee7d264f6616282d6/1?pq-origsite=gscholar&cbl=18750&diss=y> (accessed 14 Aug 2022).
- Roudini J, Khankeh HR and Witruk E (2017) Disaster mental health preparedness in the community: A systematic review study. *Health Psychology Open* 4(1), 2055102917711307. <https://doi.org/10.1177/2055102917711307>.
- Saint-Jean F (2015) After the dust settles: Experiences of Haitian earthquake survivors and implications for psychosocial support. Available at <https://dsc.duq.edu/etd/1139> (accessed 12 Aug 2022).
- Satinsky E, Fuhr DC, Woodward A, Sondorp E and Roberts B (2019) Mental health care utilisation and access among refugees and asylum seekers in Europe: A systematic review. *Health Policy* 123(9), 851–863. <https://doi.org/10.1016/j.healthpol.2019.02.007>.
- Strand A (2020) Humanitarian–Development nexus. In *Humanitarianism: Keywords*. Leiden: BRILL, pp. 104–106. Available at <https://brill.com/display/book/edcoll/9789004431140/BP000048.xml> (accessed 18 Nov 2022).
- Tasdik Hasan M, Adhikary G, Mahmood S, Papri N, Shihab HM, Kasujja R, Ahmed HU, Azad AK and Nasreen M (2020) Exploring mental health needs and services among affected population in a cyclone affected area in coastal Bangladesh: A qualitative case study. *International Journal of Mental Health Systems* 14(1), 1–9. <https://doi.org/10.1186/s13033-020-00351-0>.
- The Lancet (2022) Can we end stigma and discrimination in mental health? *Lancet* 400, 10361. [https://doi.org/10.1016/s0140-6736\(22\)01937-7](https://doi.org/10.1016/s0140-6736(22)01937-7).
- The World Bank Group (n.d.) World Bank Country and Lending Groups. Available at <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups> (accessed 9 November 2021).
- Tol WA, Barbui C, Galappatti A, Silove D, Betancourt TS, Souza R, Golaz A and van Ommeren M (2011) Mental health and psychosocial support in humanitarian settings: Linking practice and research. *Lancet (London, England)* 378(9802), 1581–1591. [https://doi.org/10.1016/S0140-6736\(11\)61094-5](https://doi.org/10.1016/S0140-6736(11)61094-5).
- Troup J, Fuhr DC, Woodward A, Sondorp E and Roberts B (2021) Barriers and facilitators for scaling up mental health and psychosocial support interventions in low- and middle-income countries for populations affected by humanitarian crises: A systematic review. *International Journal of Mental Health Systems* 15(1), 5. <https://doi.org/10.1186/s13033-020-00431-1>.
- United Nations Children's Fund (2022) Global multisectoral operational framework for mental health and psychosocial support of children, adolescents and caregivers across settings. Available at <https://www.unicef.org/reports/global-multisectoral-operational-framework> (accessed 16 Feb 2023).

- Vigo D, Kestel D, Pendakur K, Thornicroft G and Atun R** (2019) Disease burden and government spending on mental, neurological, and substance use disorders, and self-harm: Cross-sectional, ecological study of health system response in the Americas. *The Lancet Public Health* **4**(2), e89–e96. [https://doi.org/10.1016/S2468-2667\(18\)30203-2](https://doi.org/10.1016/S2468-2667(18)30203-2).
- Vijayakumar L and Kumar MS** (2008) Trained volunteer-delivered mental health support to those bereaved by Asian tsunami—an evaluation. *The International Journal of Social Psychiatry* **54**(4), 293–302. <https://doi.org/10.1177/0020764008090283>.
- Weine S** (2021) Should global mental health decolonize? Psychology today, January 1. Available at <https://www.psychologytoday.com/gb/blog/cafes-around-the-world/202101/should-global-mental-health-decolonize> (accessed 15 Nov 2022).
- Weine S, Kohrt BA, Collins PY, Cooper J, Lewis-Fernandez R, Okpaku S and Wainberg ML** (2020) Justice for George Floyd and a reckoning for global mental health. *Global Mental Health (Cambridge, England)* **7**, e22. <https://doi.org/10.1017/gmh.2020.17>.
- WHO** (2021) Comprehensive mental health action plan 2013–2030. Available at <https://www.who.int/publications/i/item/9789240031029> (accessed 17 Aug 2022).
- WHO** (2022) Mental health in emergencies. Available at <https://www.who.int/news-room/fact-sheets/detail/mental-health-in-emergencies> (accessed 17 Aug 2022).
- Witteveen AB, Bisson JI, Ajdukovic D, Arnberg FK, Bergh Johannesson K, Bolding HB, Elkliit A, Jehel L, Johansen VA, Lis-Turlejska M, Nordanger DO, Orengo-García F, Polak AR, Punamaki R-L, Schnyder U, Wittmann L and Olf M** (2012) Post-disaster psychosocial services across Europe: The TENTS project. *Social Science & Medicine* **75**(9), 1708–1714. <https://doi.org/10.1016/j.socscimed.2012.06.017>.
- Wolmer L, Laor N, Dedeoglu C, Siev J and Yazgan Y** (2005) Teacher-mediated intervention after disaster: A controlled three-year follow-up of children's functioning. *Journal of Child Psychology and Psychiatry, and Allied Disciplines* **46**(11), 1161–1168. <https://doi.org/10.1111/j.1469-7610.2005.00416.x>.
- World Health Organization** (2019a) Mental disorders. Available at <https://www.who.int/news-room/fact-sheets/detail/mental-disorders> (accessed 22 Aug 2022).
- World Health Organization** (2019b) QualityRights materials for training, guidance and transformation, November 12. Available at <https://www.who.int/publications/i/item/who-qualityrights-guidance-and-training-tools> (accessed 13 Aug 2022).
- Wu J, Huang C, Pang M, Wang Z, Yang L, FitzGerald G and Zhong S** (2019) Planned sheltering as an adaptation strategy to climate change: Lessons learned from the severe flooding in Anhui Province of China in 2016. *Science of the Total Environment* **694**, 133586. <https://doi.org/10.1016/j.scitotenv.2019.133586>.
- Xu J and Deng Y** (2013) Mental health service use one year after China 5.12 earthquake: Relationship with post-traumatic stress disorder among survivors. *Journal of Mental Health* **22**(6), 509–518. <https://doi.org/10.3109/09638237.2013.819419>.
- Xuanmin L** (2022) China to become high-income country no later than the end of 2023: Economists. *Global Times*, January 27. Available at <https://www.globaltimes.cn/page/202201/1250099.shtml> (accessed 17 Nov 2022).
- Zahlawi T, Roome AB, Chan CW, Campbell JJ, Tosiro B, Malanga M, Tagaro M, Obed J, Iaruel J and Taleo G** (2019) Psychosocial support during displacement due to a natural disaster: Relationships with distress in a lower-middle income country. *International Health* **11**(6), 472–479. <https://doi.org/10.1093/inthealth/ihy099>.
- Zang Y, Hunt N and Cox T** (2013) A randomised controlled pilot study: The effectiveness of narrative exposure therapy with adult survivors of the Sichuan earthquake. *BMC Psychiatry* **13**(1), 1–11. <https://doi.org/10.1186/1471-244X-13-41>.
- Zang Y, Hunt N and Cox T** (2014) Adapting narrative exposure therapy for Chinese earthquake survivors: A pilot randomised controlled feasibility study. *BMC Psychiatry* **14**(1), 1–12. <https://doi.org/10.1186/s12888-014-0262-3>.