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CHILD AND FAMILY DISASTER PSYCHIATRY (B PFEFFERBAUM, SECTION EDITOR)

Cultural Factors in Disaster Response Among Diverse Children and Youth Around the World

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Abstract

Purpose of Review Disasters and traumatic events are ever present globally but disproportionally impact culturally diverse low resource environments. Culture is an important context through which people experience disasters, develop adaptive strategies, and process external aid and support. This is even more critical for children and youth who are in the process of forming their cultural/ethnic identities. This review identifies literature on these important aspects of culture in disaster response.

Recent Findings The literature supports that culture influences the experience of disasters, the development of coping and adaptational approaches, and the acceptability of external aid and support, especially mental health services.

Summary Cultural humility, awareness, and sensitivity are crucial in addressing the traumatic impact of disasters in children and youth, especially in the areas of the world that are most at risk for them.

Keywords Disasters · Culture · Trauma

Introduction

The United Nations Office for Disaster Risk Reduction estimates that every year over 100 million young people including children are affected by disasters [1]. Natural disasters kill an average of 45,000 people per year globally and are responsible for an average of 0.1% of deaths over the past decade, ranging from 0.01 to 0.4%. There has been a large decline in deaths from natural disasters over the past century, ranging in some years from millions to an average of 60,000 over the past decade. In the most fatal years — which tend to be those with major earthquakes or cyclones — fatalities can reach tens to hundreds of thousands. For example, the estimated global death toll from storms in 2008 was approximately 141,000, with 138,366 of these deaths occurring in Cyclone Margis, which struck Myanmar. In 2019, 321 disaster events occurred globally. In 2020, 274 disaster events occurred globally, which included 189 natural disasters and 85 man-made disasters [2]. In 2021, 401 natural disaster events occurred globally, with the Asian Pacific region having experienced the highest number of natural disasters, most likely due to its size and geographic susceptibility [3].

Highly developed countries are relatively resilient to disaster events and therefore have a consistently low death rate from natural disasters. Low-income countries on the other hand are more vulnerable to the effects of natural disasters. Large spikes in death rates occur almost exclusively for countries with a low or low-middle socio-demographic index [4•]. The impact of disasters on humans is not fully captured in mortality rates. Injury, homelessness, and displacement resulting from disasters can all have a significant impact on populations. Global direct disaster losses as a share of GDP have a notable year-to-year variability in costs — ranging from 0.15 to 0.5% of global GDP. However, in recent decades there has been no clear trending increase in damages when we take account of economic growth over this period [2].

This article is part of the Topical Collection on *Child and Family Disaster Psychiatry*

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Culture in Human Behavior and Disaster Response: Conceptual Premises

Culture is the lens through which the impact of disasters and the basis of response and recovery are viewed in this article. Culture is the shared collective knowledge, beliefs, skills, and traditions that allow a group of people and families to adapt successfully to their ecological contexts over multiple generations and often millennia. Cultural value orientations are, in part, shaped by human acclimation to their environment and then guide the process of adaptation and response to that environment, including disasters.

Kluckhohn and Strodtbeck's [5, 6] Values Orientation Theory proposes that all human societies must answer a limited number of universal problems, that the value-based solutions are limited in number and universally known, and that different cultures have different preferences among them. They posit that the *environment* value orientation domain in cultures guides populations on whether they adopt a submissive/fatalistic response to disasters (left to the devices of the spiritual), a harmonious/co-existent approach (adapt their practices to live with changes brought about by disasters), or a mastery/dominance over nature approach (attempting to conquer the forces of nature). These orientations guide the cognitive skills (instrumental, analytical, social, etc.) and psychological skills used in responding and adapting to disasters. Acculturation and assimilation can impact the degree to which these orientations are adopted by a population, and there can be inter-generational changes as a result of both immigration and globalization [7]. Another value orientation domain, *relating*, guides cultures in their adaptational approach to stressful and traumatic events, with some cultures adopting a hierarchical approach (which is authoritarian and top-down), others a collateral (where many people and agencies have the authority to make a difference) or collectivist (lateral rather than top-down) approach, and still others an individualistic approach (in which individual survival is prioritized over the society's survival). It is fair to posit that the collateral or collectivist approach, with some element of hierarchical organization, is usually implemented in the acute response to disasters, especially those with mass casualties, and is the basis of most trauma/disaster recovery and response approaches.

Similar to a culture's value orientations, explanatory models and beliefs influence psychological and behavioral response and adaptation to traumatic events. These can include the explanatory narratives for experiencing the traumatic event or disaster, the symptoms or expressions of distress both acutely and chronically post-event, and the adaptive approaches used to cope and recover. Ungar [8] posited a social-ecological definition of resilience in the face of trauma which is a result of *Environment X Individual interactions*, where the environment, influenced by culture, facilitates individuals in engaging in behaviors that help them to navigate their way to the resources they need to flourish, and purposely decenters individuals to avoid blaming them for not flourishing when there are few opportunities to access resources.

Children, adolescents, and young adults are more vulnerable to the negative impact of disasters than older adults [9]. The United Nations Development Program estimates that women and children are 14 times more likely than men to die during a disaster [10]. The 2004 to 2005 National Epidemiologic Survey of Alcohol and Related Conditions collected data on 27,129 individual ages 21–64 years and showed that experiencing a natural disaster by age 5 significantly increases the risk of psychiatric disorders in adulthood [11].

A review study showed that 60% of the pediatric disaster preparedness resources in the US did not contain culturally sensitive information and more than 60% of the resources did not contain preparedness information for children with disabilities [12••]. It is imperative for health professionals to recognize the cultural factors involved in children's and youth's response to disasters, some of which are described below.

Culture and Disaster Impact and Response: Literature Review

Below, we will review the recent literature on different aspects of disaster impact and response and how culture influences each of them. For each we combine the reports and experiences associated with different types of disasters.

Understanding of Disasters

Different cultures hold different world views about the causality of disasters. For example, Native American culture emphasizes harmony and co-existence with natural environment [13] and attributes natural disasters to the human exploitation of natural resources [14]. Based on their observations and experiences with natural disasters, Native Americans developed folklore that was passed from generation to generation to help them survive, for example, folktales about animals seeking low terrain indicating an impending wind storm [14]. Fatalism, a belief that all events are predetermined and unavoidable, is a dominant attitude in many Middle Eastern, South American, and Asian countries, and contributes to learned helplessness and inadequate disaster preparedness [15, 16]. In some countries, such as Iran, Haiti, Sri Lanka, and Indonesia, people may attribute disasters to retribution for their sins [16–19]. In the context of these

disparate world views, children's egocentricism, magical thinking, and developmental lack of understanding of causality can lead them to assume excessive responsibility and guilt for disasters and their aftermath, including the death of a family member [20].

Infrastructure

Cultures that value interconnectivity prioritize investment in their infrastructure. For example, European countries have developed extensive railway networks for the transportation of people and trade goods. Cultures that value preservation of their traditional heritage over globalization may not prioritize investment in infrastructure that connects them with the rest of the world. The lack of pre-disaster infrastructure in developing countries contributes to global disparities associated with disasters, and the damage to existing infrastructure during disasters, can hinder children and youth's access to recovery efforts. Further, a scarcity of resources in developing countries may hinder conducting disaster preparedness drills, causing a disconnect between protocols that exist on paper versus what happens on the ground [21]. Such disconnect is even observed in developed countries. For example, following a disaster, shelters and resources normally directed toward homeless people in the USA are redirected toward the general population, worsening the homelessness crisis [22]. Damage to sewage infrastructure during the Russia-Ukraine conflict has disrupted clean water supply, making individuals including children susceptible to preventable illnesses [23]. A cross-sectional survey consisting of questionnaires and face-to-face interviews with 264 students at two junior high schools 5 years after the Great East Japan Earthquake (GEJE) showed that those with evacuation experience and still living in temporary housing had significantly higher oppositional behaviors and 11% of them had a high suicide risk [24]. In the absence of evacuation and still living in temporary housing, disaster experience was not associated with posttraumatic stress disorder (PTSD), depression, and anxiety in youth.

Communication

Communication between youth and family members, as well as communication between communities and disaster response agencies, is paramount for youth's health. While on the one hand, incessant, repetitive media exposure to disasters is known to heighten anxiety levels in youth who have previous real-life exposure to disasters [25], insufficient dissemination of information also leads to negative outcomes. For example, during natural disasters and crises, the deaf and hard of hearing community might not have full accessibility to all of the information shared with the larger hearing community [26]. Empirical data drawn from a case study of foreign national residents in Japan for the 2011 Great East Japan Earthquake (GEJE) highlighted the importance of using multiple languages and translations to communicate disaster related information broadly [27]. A case study of Latin and indigenous individuals affected by the 2017 Thomas Fire in California, US, revealed that the emergency warnings detailing evacuation areas and the need for respirator masks were initially provided only in English, which led to thousands of immigrant and undocumented farmworkers to continue working in the fields without masks leading to significant health problems [28]. Indigenous youth in Canada who had to evacuate their homes due to wildfires reported social isolation, lack of Wi-Fi, and separation from family and friends as quite distressing [29].

Regardless of their culture, young children may not have the vocabulary to express their feelings, especially grief [30]. In some cultures, talking about negative emotions is discouraged for a variety of reasons including to protect the sufferer from further distress. After the 2005 earthquake in Pakistan, families dealt with tragedy by withholding information from the seriously injured about their losses [31]. Limited communication skills also impaired the emergency responders' and doctors' ability to obtain information from parents and to explain the risks of various medical and surgical procedures. As another example, after the 1995 earthquake in Kobe, Japan, there were few studies and interventions focusing on psychological interventions, likely due to the Japanese culture of avoiding discussion about emotionally difficult issues [32, 33]. Interviews with Bosnian refugee families in Chicago showed that sometimes children do not wish to talk about past trauma and prefer to focus on their new life in the host country, while some family members hesitate to express their feelings about past trauma due to their concern of burdening others [34]. A survey of 485 parent–child dyads following severe floods affecting Texas in 2015–2016 showed that high avoidance, but not low avoidance, of talking about the floods was associated with a significant, positive association between flood exposure and child anxiety and depression [35•].

Nutrition and Emergency Food Supply

The COVID-19 pandemic has negatively impacted the procurement and dissemination of emergency food aid around the world [36, 37]. Although the US Federal Emergency Management Agency (FEMA) has identified preparation and distribution of halal, kosher, vegan, and other culturally appropriate meals as a best practice during Emergency Support Function [38], Muslims in the USA encounter barriers in obtaining halal food through food assistance programs [39] in routine times. One can extrapolate that the deficiency of foods meeting people's religious standards is worse during times of disasters. A study in Iraq showed that locals

perceived canned food as halal-incompliant, low quality, and high in chemical content [40]. Immigrants from Afghanistan in Australia reported anxiety due to challenges in accessing halal foods [41]. A study in Ethiopia showed that during humanitarian crises, people with type 2 diabetes mellitus struggled with adhering to a diabetic diet, resulting in high HbA1C levels [42]. A systematic review of the effects of droughts in India has shown that girls' nutrition had a greater decline than boys', likely due to preferential feeding of sons [43]. A study of families affected by drought in Zimbabwe showed that children of women who were the spouse or daughter-in-law of the head of a household, and thus had higher social standing, were less likely to experience malnutrition. On the other hand, children who were born out of wedlock or whose mothers were daughters of the head of the household and thus had lower social standing were more likely to experience malnutrition [44].

Lapses in Preventive Healthcare

Cultural factors such as health beliefs, local customs, stigma, and health literacy affect individuals' and families' decisions to obtain preventative healthcare. Lack of information, mistrust of healthcare system, and conspiracy theories contribute to low immunization rates in infants and children in some countries in routine times [45, 46] and decrease further during times of disasters. For example, infant vaccination rates decreased during the war in Yemen between 2013 and 2016 including a 36.4% decrease in rates of measles vaccination [47]. Similar findings were noted among Syrian refugee children in Germany who were born after the beginning of civil unrest in 2011 [48]. Low immunization rates make children vulnerable to preventable infectious diseases. Such has been the case of measles outbreaks after the war in Bosnia and Herzegovina [49]. A study of high school students from Croatia showed that limited social activities during war negatively affect adolescents' knowledge and understanding of sexual health including HIV and sexually transmitted infections [50].

Armed Conflict

Differences in cultural ideologies and prejudices often underlie political conflicts and violence. Youth in developing countries are at higher risk of exposure to war than youth residing in first world countries. Man-made disasters (such as forced displacement due to armed conflict) appear to have more traumatic effect on children and young adults than natural disasters [51]. Firearm availability in regions affected by armed conflict is also associated with increase in firearm suicides [52]. A study of 529 war-affected Sierra-Leonean youth ages 10–17 shows that having injured or killed another person in the war and experiencing physical abuse and neglect after the war were predictors of a deteriorating course of externalizing problems [53]. Interviews with 23 mothers who were Syrian refugees in Jordan indicated that displacement exposed their children to poverty, hostility from local peers, educational and recreational challenges, child labor, and domestic violence [54]. The same study also showed that parent's mental health problems predicted children's mental health problems.

Mourning the Deceased

Cultural factors affect how different people mourn the loss of their loved ones during and after disasters. For example, females may grieve in more intuitive and emotionally expressive ways than males in some situations such as spousal death [55]. In some African cultures, women are discouraged from grieving the loss of an infant due to the belief that it may affect their fertility in the future [56]. In times of disaster, retrieval of dead bodies may be delayed and morgues may exceed their capacity, leading to storage of bodies in other places, lack of proper identification, and delays in culturally sensitive rituals for the deceased. This can cause psychological stress for the survivors [57] and complicate their mourning [58]. For example, a study in Sri Lanka showed that not knowing whether a missing family member was dead or alive predicted major depressive disorder and prolonged grief disorder in the surviving young adult family members [59]. A cross-sectional survey of 78 bereaved individuals ages 14–50 in Lubumbashi, Democratic Republic of Congo, showed that being accused of witchcraft, especially witchcraft that directly led to the death of a person, was a major disruptor in normal bereavement [60].

Family Hierarchy

It is important to understand the family structure when working with culturally diverse communities. For example, in some South Asian countries such as Bangladesh, married women are more likely to identify one of their parents rather than their spouse as the primary attachment figure [61]. In some Asian cultures, the patriarch or matriarch of the family makes healthcare decisions [62] which requires healthcare providers to be mindful of privacy laws as well as individual preferences. In American Indian and Alaska Native cultures, consulting and seeking guidance from the elderly is considered a sign of respect [63]. In some Roma (gypsy) communities, older males are considered more credible than younger females [64]. After the 2005 earthquake in Pakistan, children and young adults keen to discuss their traumatic experiences were noted to seek (non-verbal) permission from their parents to do so [31]. Cultural solidarity, belief in parents' right to discipline their child, and the expectation of children to be

subservient to patriarchal authority has benefits but also has downsides, such as hindering the reporting of child abuse in some cultures [65, 66].

Culturally Bound Syndromes

During and after disasters, it is important to recognize culturally sanctioned stress reactions for which individuals and families may not seek mental health care. Healthcare providers also need to be mindful of their ethical duty to provide culturally informed treatments. For example, in 2006, the United Nations criticized Sweden for not offering medical care to "those children, associated with the asylum process who experience severe withdrawal symptoms" [67].

In Hispanic cultures, Ataques de nervios, which include symptoms of crying spells, screaming, anxiety, depression, fearfulness, trembling, heart palpitations, weakness, and hallucinations, often occur in the presence of others, and bring forth social support from the afflicted person's social network [68]. Neighborhood violence is known to be a risk factor for Ataque de nervios [69]. In Puerto Rican children and youth, relationships with family and peers mediated the relationship between their exposure to Hurricane Georges in 1998 and experiencing Ataques [68, 70].

In some Asian and African countries such as India, Pakistan, Sudan, and Egypt, both religious and nonreligious individuals may attribute psychotic symptoms to possession by a spirit or a jinn [71–73], seeking spiritual healing and exorcism rather than psychiatric treatment. In East Asian cultures, Taijin-kyōfushō, a specific type of anxiety involving fear of offending others and of embarrassing themselves in public, has recently increased due to people fearing that they would infect others with COVID19 or be rejected by others due to their COVID positive status [74].

Local Customs, Beliefs, and Preferences and Disaster Aid

Local customs also affect people's willingness to obtain healthcare in times of disaster. For example, in some African countries such as Ghana people prefer private transportation over ambulance because the latter is used to transport the dead [75]. In some Asian countries such as Pakistan, people prefer to use the ambulance only for those who are critically ill [75]. In some cultures folk medicine and traditional healing are preferred over hospital treatment [75]. A study of 379 Sri Lankan women showed that widowhood resulting from war and disasters is associated with being deemed unlucky and loss of social status and respect, leading to depression and anxiety [76].

A survey of 160 tsunami-affected mothers in Sri Lanka showed that the use of cultural rituals in the family or community setting, such as recital of scriptures, dance, music, and chanting, was associated with lower levels of posttraumatic stress symptoms [18]. A survey of 669 Sri Lankan Buddhist, Hindu, Muslim, and Christian youth ages 11 to 20 showed that although religious coping was the highest reported type of coping for all four groups, it did not affect any of the measured outcomes such as posttraumatic stress, psychosocial distress, and life satisfaction [77]. A survey of 111 Nepalese children ages 12–17 years who lived in temporary tent villages after the 2015 earthquake showed that those children who prayed less frequently had higher rates of social withdrawal and anxiety, possibly due to their awareness of not praying frequently in a religious culture [78]. A systematic review of children's and young adults' beliefs about mental health services, albeit not specific to disasters, showed that 83% of Palestinians, 83% of Egyptians, and 67% of Israeli Arab groups believed in prayer as a remedy for mental health problems [79].

Stigma and Shame

Stigma and pride play a role in disaster response not only at the community level but even at a higher government level. For example, a survey experiment in India of 756 subjects asked about the prestige of their country after the 2005 earthquake showed that rejection of foreign aid by a country signals competence to their domestic populations and earns international respect [80].

Shame and fear of discrimination are known to affect healthcare-seeking behaviors in many cultures even in the absence of disasters [81]. One can extrapolate that this remains an important factor in disaster response in culturally diverse youth. In some conservative cultures, women may hesitate to breastfeed infants in the presence of people, especially male family members. This has been the case in mothers' displaced natural disasters in Iran and Pakistan, where the lack of privacy in shelters was a barrier to breastfeeding [82, 83]. In some cultures, medical examinations requiring indecent exposure in the presence of others, especially the opposite gender, can cause deep embarrassment [31] and even make some reluctant to seek medical care [84]. In Gaza, girls displaced due to violence reported distress at having to stay in mixed-sex shelters. In gender segregated societies, some male providers are known to decline treating girls unless they have a chaperone [85].

After Hurricane Katrina, some adolescents dealt with the embarrassment of being displaced by telling their peers at school that they were living in an apartment rather than at a church shelter [86]. The same adolescents also preferred the term *evacuees* which they considered less stigmatizing than the term *refugees*.

Self-stigma and parental beliefs are known barriers for adolescents accessing mental health services in the aftermath of a disaster especially in minorities [87]. A

prospective study of American university students showed that prior use of mental health services, and not the pre-existing mental health status, was a predictor of utilizing mental health services after an incident of mass violence [88]. One possible explanation for this finding, although not proven in this study, is that stigma may hinder young people from accessing psychiatric treatment. A qualitative study involving interviews of 26 mothers of children with special needs who had experienced the Great East Japan Earthquake in 2011 or the Kumamoto Earthquake in 2016 revealed that it was easier to get help for children with physical disabilities but not with invisible disabilities such as epilepsy and developmental disorders [89].

Racial and Geographic Disparities

Geographical disparities in mortality rates and psychological health of a population are often related to cultural and/or racial differences. Although there are some reports of natural disasters breaking the barriers of race and culture as they affect all communities, several studies show disparities in disaster impact and response. For example, non-Hispanic Blacks are twice as likely and non-Hispanic American Indian/Alaska Native people are seven times as likely to experience mortality from natural disasters and extreme weather in the US compared to non-Hispanic Whites [90]. These disparities are the highest in the South, Southwest, Mountain West, and Upper Midwest, USA [90].

Historically forced concentration of Native Americans on federal Indian reservations makes them particularly vulnerable to wildfire disasters [91]. Certain Native American tribes in the US have lost their land including the land barriers to protect them from flooding, which combined with their status not being federally recognized makes them vulnerable to devastating effects of hurricanes including challenges with housing [92]. A study of First Nation people who evacuated their homes due to wildfires in Canada noted a disparity in poor communication from government agencies before and during the evacuation and lack of government support and aid after evacuees returned to their home as compared to those who lived in the cities [29]. The same study also noted reports of disparities in distribution of food and aid to people of color in rural communities compared to Whites living in urban areas.

Focus groups and interviews with 35 Florida parents and professionals impacted by Hurricanes Irma, Maria, and Michael showed that compared to metropolitan areas, those in rural areas experienced more lapses in available childcare, health care, and schools and had an increased need for post-disaster mental health services [93]. Data collected from 306 Latinx high school students from immigrant families in Texas and Rhode Island showed that immigration enforcement fear was related to heightened fear of discrimination and increased somatic and separation anxiety [94]. One can extrapolate that these fears impact help-seeking behavior of Latinx youth during times of crises.

A cross-sectional study of 860 children between 12 and 24 months of age from villages that had been affected by the Kashmir Earthquake of 2005 showed that compared to a male and a Pahari ethnic child, a female child and a child belonging to a minority ethnic group was 1.7 times less likely to have completed immunization [95].

Gender and Sexual Orientation-based Disparities

Different cultures have different beliefs about gender roles and sexuality. During times of disaster, pre-existing gender disparities may become even more prominent. For example, males are less likely than female to be prioritized for post-disaster aid because they are considered less vulnerable than females [96]. Financial assistance may even be prioritized for families without a male adult [97]. Despite these efforts, females remain at high risk for discrimination and exploitation after disasters, which makes them vulnerable to the development or exacerbation of psychiatric illnesses. A survey of 96,108 Puerto Rican students from grades 3 through 12 showed that girls were more likely than boys to develop PTSD and depression after Hurricane Maria [98]. This study was limited by several factors including relying on self-report rather than objective data, the use of a Spanish translation of a questionnaire which was not validated at the time of the study, and the lack of pre-disaster mental health data of the sample.

There is limited literature on gender-based violence in the context of disasters, possibly due to shame and stigma that prevent survivors from sharing their experiences. Interviews with 29 female Bangladeshi survivors of gender-based violence ages 17–50 years indicated during severe weather such as cyclones, they experienced increase in harassment, physical abuse, rape, and inappropriate touching by men, both in their own homes and in shelters [99]. A prospective study of 529 war-affected Sierra Leonean youth aged 10–17 showed that girls were more likely to report experiences of rape and sexual abuse than boys (45% versus 7%) [53]. In some cultures, such as Muslim communities in Sri Lanka, cases of rape and pregnancy of adolescent girls are resolved by ordering the perpetrator to marry the survivor [85].

A cross-sectional study based on routine data collected from three hospitals in Afghanistan, Haiti and Sierra Leone showed that women and children were more likely to experience a delay in arrival (> 24 h) to the hospitals than adult men [100]. A review of population data for individuals born during the Great Chinese Famine (1959–1961) showed that exposure to famine in utero increases the likelihood of illiteracy for rural female survivors relative to rural male survivors, likely due to preferential treatment of sons [101]).

Interviews with health professionals who worked with adolescents after natural disasters in Nepal and China indicated no gender difference in psychological distress among Chinese adolescents, but among Nepalese adolescents, females were more likely to show psychological distress than males [102]. This study may have limited by implicit biases of the healthcare professionals as well as differential stigma in seeking psychiatric services for males and females.

Children often receive post-disaster interventions at school. Those cultures that prioritize male children's return to school may have female children in need of interventions that they cannot access. Armed conflict and displacement increase financial stress on families, which leads some families to remove their children from school so they can work to meet family expenses [103]. Some families forcibly marry off their minor daughters primarily to decrease the financial burden worsened during and after a disaster [104, 105].

A cross-sectional study of Syrian refugee working children residing in Lebanon using self-reported questionnaires showed that girls were less likely to take a weekly vacation off work than boys, less likely to receive their wages on time, and more likely to work long hours in the sun. More girls (85.8%) worked in agriculture than boys (66.3%), and girls were more likely to have musculoskeletal problems related to labor (84.5% versus 63.2%) [106].

Members of the LGBTQ+community also face discrimination which is expounded in times of disaster. A review by Goldsmith et al. revealed that Sect. 308 of the Robert T. Stafford Emergency Management and Disaster Assistance Act, which prohibits discrimination in disaster programs based on race, color, and other factors, mentions neither sexual orientation nor gender identity, leaving LQBTQ+individuals vulnerable to discrimination in federally supported disaster relief programs [107]. LGBTQ+community is also known to experience discrimination against housing, shelters, and aid provided by faith-based organizations [107].

Conclusions

The current literature supports the significance of culture in understanding and impact of disasters, the development of coping and resilience, and the effectiveness of disaster response, particularly for children, youth, and families. It also supports the importance of cultural values, beliefs, and practices not only in mental health response but also the implementation of humanitarian relief and reconstruction. It is critical that values and beliefs are respected and leveraged to maximize disaster response effectiveness.

Governments and international agencies need to pay special attention to geographic, economic, cultural, racial, ethnic, and gender/sexual disparities in the adverse impact of disasters and in the access and effectiveness of aid and response. Scarcity of resources in the context of disaster response often reflect the pre-existing biases, discrimination, and disparities already inherent. Such differences will only be heightened in the future with growing inequalities amongst different regions across the globe as well as the disparate impact of climate change-related disasters worldwide [108]. Wealthier nations bemoan the rising tide of immigrants and refugees coming to their borders as a result of these disparities, especially immigration of children, youth, and families. However, these wealthier nations need to engage in collective global action to address the disparities giving rise to these mass migratory movements [109].

Cultural values, beliefs, and practices are critical in the mental health response to disasters, ranging from the assessment, pre-existing trauma and vulnerability, acceptability of and evidence for mental health interventions, and delivery of services within the family-oriented context most cultures endorse. Tools such as the Cultural Formulation within the DSM 5 [110, 111] and the Practice Parameter for Culturally Competent Child Psychiatric Practice from the American Academy of Child and Adolescent Psychiatry [112] are useful guides for culturally competent disaster relief, in addition to seeking guidance from the local populations and cultural groups that have been impacted to enhance the acceptability and effectiveness of such services.

Declarations

Conflict of Interest The authors declare no competing interests.

References

Papers of particular interest, published recently, have been highlighted as:
• Of importance
•• Of major importance

1. United Nations Office for Disaster Risk Reduction (UNISDR). UNISDR says the young are the largest group affected by disasters. 2011. Brussels: Author. Retrieved from http://www.unisdr.org/archive/22742.
2. Ritche H, Roser M. Natural disasters. In: Our world in data. https://ourworldindata.org/natural-disasters#link-between-poverty-and-deaths-from-natural-disasters. Last accessed on 26 Apr 2022.
3. Facts + Statistics: Global catastrophes. Insurance Information Institute. https://www.iii.org/fact-statistic/facts-statistics-global-catastrophes. Last accessed on 26 Apr 2022.
4. • Janganmohan M. Annual number of natural disaster events globally from 2007 to 2021. Statistica. https://www.statista.com/statistics/510959/number-of-natural-disasters-events-globally/. Last accessed on 26 Apr 2022. **In 2021, there was a total of 401 natural disasters events worldwide. The Asian Pacific region experienced the highest number of natural disasters, most likely due to its size and susceptibility.**

5. Kluckhohn FR, Strodtbeck FL. Variations in value orientations. Evanston, IL: Row, Peterson; 1961.
6. Hills MD. Kluckhohn and Strodtbeck's values orientation theory. Online Readings in Psychology and Culture. 2022;4(4). https://doi.org/10.9707/2307-0919.1040.
7. Pumariega AJ. Culture and adolescent psychopathology. Pissacroia, M. (Ed.) Textbook of mental and behavioral disorders in adolescence. PICCIN Publishers; 2017;1:1–11.
8. Ungar M. Resilience, Trauma, context, and culture. Trauma Violence Abuse. 2013;14(3):255–66. https://doi.org/10.1177/1524838013487805.
9. Cohen JR, Adams ZW, Menon SV, Youngstrom EA, Bunnell BE, Acierno R, Ruggiero KJ, Danielson CK. How should we screen for depression following a natural disaster? An ROC approach to post-disaster screening in adolescents and adults. J Affect Disord. 2016;202:102–9. https://doi.org/10.1016/j.jad.2016.05.034.
10. United Nations Development Programme. 2013. https://www1.undp.org/content/dam/undp/library/gender/Gender%20and%20Environment/PB3-AP-Gender-and-disaster-risk-reduction.pdf. Accessed 16 May 2022.
11. Maclean JC, Popovici I, French MT. Are natural disasters in early childhood associated with mental health and substance use disorders as an adult? Soc Sci Med. 2016;151:78–91. https://doi.org/10.1016/j.socscimed.2016.01.006.
12.•• Koeffler TJ, Demeter NE, Kysh L, Reeb J, Stayton A, Spears R, Burke RV. Evaluation and gap analysis of pediatric disaster preparedness resources. Disaster Med Public Health Prep. 2019;13(2):330–337. https://doi.org/10.1017/dmp.2018.23. Epub 2018 Mar 7. PMID: 29510775. **A review of US pediatric disaster preparedness resources identified gaps in culturally sensitive resources, especially those for children with disabilities.**
13. Substance Use and Mental Health Services Administration (SAMHSA). https://store.samhsa.gov/sites/default/files/d7/priv/sma14-4867.pdf. Accessed 15 May 2022.
14. U.S. Emergency Management Institute. course title: a social vulnerability approach to disasters. Session 45: emergency management for native americans. 2021. https://training.fema.gov/hiedu/downloads/social%20vul%20approach%20to%20disasters%20-%20session%2045.doc.
15. Baytiyeh H, Naja MK. Can education reduce middle eastern fatalistic attitude regarding earthquake disasters? Disaster Prev Manag. 2014;23(4):343–55. https://doi.org/10.1108/DPM-12-2013-0219.
16. O'Connell E, Abbott RP, White RS. Emotions and beliefs after a disaster: a comparative analysis of Haiti and Indonesia. Disasters. 2017;41(4):803–27. https://doi.org/10.1111/disa.12227. Epub 2017 Jan 30 PMID: 28133773.
17. Nikfarid L, Rassouli M, Borimnejad L, Alavimajd H. Experience of chronic sorrow in mothers of children with cancer: a phenomenological study. Eur J Oncol Nurs. 2017;28:98–106. https://doi.org/10.1016/j.ejon.2017.02.003. Epub 2017 Apr 12 PMID: 28478863.
18. Wickrama T, Wickrama KAS, Banford A, Lambert J. PTSD symptoms among tsunami exposed mothers in Sri Lanka: the role of disaster exposure, culturally specific coping strategies, and recovery efforts. Anxiety Stress Coping. 2017;30(4):415–427. Accessed.
19. Gianisa A, Le De L. The role of religious beliefs and practices in disaster. Disaster Prev Manag. 2018;27(1):74–86. https://doi.org/10.1108/DPM-10-2017-0238.
20. Schonfeld DJ, Demaria T. Committee on psychosocial aspects of child and family health, disaster preparedness advisory council. Supporting the Grieving Child and Family. Pediatrics. 2016;138(3):e20162147. https://doi.org/10.1542/peds.2016-2147. PMID: 27573086.
21. Hall ML, Lee AC, Cartwright C, Marahatta S, Karki J, Simkhada P. The 2015 Nepal earthquake disaster: lessons learned one year on. Public Health. 2017;145:39–44. https://doi.org/10.1016/j.puhe.2016.12.031. Epub 2017 Jan 19 PMID: 28359388.
22. Morris SC. Disaster planning for homeless populations: analysis and recommendations for communities. Prehosp Disaster Med. 2020;35(3):322–5. https://doi.org/10.1017/S1049023X2000027. Epub 2020 Mar 4 PMID: 32127078.
23. de Alencar Rodrigues JAR, Lima NNR, Neto MLR, Uchida RR. Ukraine: war, bullets, and bombs - millions of children and adolescents are in danger. Child Abuse Negl. 2022;128:105622. https://doi.org/10.1016/j.chiabu.2022.105622. Epub ahead of print. PMID: 35366414.
24. Kawahara K, Ushijima H, Usami M, Takebayashi M. No Associations of psychological symptoms and suicide risk with disaster experiences in junior high school students 5 years after the 2011 Great East Japan earthquake and tsunami. Neuropsychiatr Dis Treat. 2020;15(16):2377–87. https://doi.org/10.2147/NDT.S269835 (PMID:33116537;PMCID:PMC7571580).
25. Weems CF, Scott BG, Banks DM, Graham RA. Is T.V. traumatic for all youths? The role of preexisting posttraumatic-stress symptoms in the link between disaster coverage and stress. Psychol Sci. 2012;23(11):1293–7. https://doi.org/10.1177/0956797612446952. Epub 2012 Oct 15. PMID: 23070308.
26. Takayama K. Disaster relief and crisis intervention with deaf communities: lessons learned from the Japanese deaf community. J Soc Work Disabil Rehabil. 2017;16(3–4):247–260. https://doi.org/10.1080/1536710X.2017.1372241. Epub 2017 Oct 4. PMID: 28976290.
27. Cadwell P, O'Brien S. Language, culture, and translation in disaster ICT: An Ecosystemic model of understanding. Perspectives: Studies in Translation Theory and Practice. 2016;24(4):557–575. https://doi.org/10.1080/0907676X.2016.1142588.
28. Méndez M, Flores-Haro G, Zucker L. The (in)visible victims of disaster: Understanding the vulnerability of undocumented Latino/a and indigenous immigrants. Geoforum; journal of physical, human, and regional geosciences. 2020;116:50–62. https://doi.org/10.1016/j.geoforum.2020.07.007.
29. Montesanti S, Fitzpatrick K, Azimi T, McGee T, Fayant B, Albert L. Exploring indigenous ways of coping after a wildfire disaster in Northern Alberta. Canada Qualitative health research. 2021;31(8):1472–85. https://doi.org/10.1177/10497323211009194.
30. Stylianou P, Zembylas M. Dealing with the concepts of "grief" and "grieving" in the classroom: children's perceptions, emotions, and behavior. Omega (Westport). 2018;77(3):240–66. https://doi.org/10.1177/0030222815626717. Epub 2016 Jan 11 PMID: 29940830.
31. Humayun A. South Asian earthquake: psychiatric experience in a tertiary hospital. East Mediterr Health J. 2008;14(5):1205–16. PMID: 19161095.
32. Watanabe T. Illness, mental problems on rise after Kobe quake. LA times. https://www.latimes.com/archives/la-xpm-1995-01-25-mn-24205-story.html. Accessed 22 Mar 2022.
33. Breslau J. Globalizing disaster trauma: psychiatry, science, and culture after the Kobe earthquake. Ethos. 2000;28(2):174–97.
34. Weine S, Muzurovic N, Kulauzovic Y, Besic S, Lezic A, Mujagic A, Muzurovic J, Spahovic D, Feetham S, Ware N, Knafl K, Pavkovic I. Family consequences of refugee trauma. Fam Process. 2004;43(2):147–60. https://doi.org/10.1111/j.1545-5300.2004.04302002.x. PMID: 15603500.
35.• Felix ED, Afifi TD, Horan SM, Meskunas H, Garber A. Why family communication matters: the role of co-rumination and topic avoidance in understanding post-disaster mental Health. J Abnorm Child Psychol. 2020;48(11):1511–1524. https://doi.org/10.1007/s10802-020-00688-7. **Improved parent-child communication, and not avoiding such conversations, is associated with better mental health outcomes.**

36. Cardwell R, Ghazalian PL. COVID-19 and International Food Assistance: policy proposals to keep food flowing. World Dev. 2020;135: 105059. https://doi.org/10.1016/j.worlddev.2020.105059.
37. Manirambona E, Uwizeyimana T, Uwiringiyimana E, Reddy H. Impact of the COVID-19 pandemic on the food rations of refugees in Rwanda. Int J Equity Health. 2021;20(1):107. https://doi.org/10.1186/s12939-021-01450-1. PMID:33902619;PMCID:PMC8072079.
38. FEMA. Emergency support function #6 – mass care, emergency assistance, temporary housing, and human services. Annex. https://www.fema.gov/sites/default/files/2020-07/fema_ESF_6_Mass-Care.pdf.
39. Nawaz T. Food Justice: Halal Muslims face extraordinary challenges to find Halal at Food Assistance Programs by Tahreem Nawaz, help NYC Communications Associate. Accessed 3 Aug 2022. https://medium.com/helpnyc/halal-challenges-in-food-justice-20ad54a1209f.
40. Muhialdin BJ, Filimonau V, Qasem JM, Algboory H. Traditional foodstuffs and household food security in a time of crisis. Appetite. 2021;165:105298. https://doi.org/10.1016/j.appet.2021.105298. Epub 2021 May 11. PMID: 33989697.
41. Kavian F, Mehta K, Willis E, Mwanri L, Ward P, Booth S. Migration, stress and the challenges of accessing food: an exploratory study of the experience of recent Afghan women refugees in Adelaide, Australia. Int J Environ Res Public Health. 2020;17(4):1379. https://doi.org/10.3390/ijerph17041379.
42. Carruth L, Ateye MJ, Nassir A, Hosh FM, Mendenhall E. Diabetes in a humanitarian crisis: Atypical clinical presentations and challenges to clinical- and community-based management among Somalis in Ethiopia. Glob Public Health. 2020;15(6):828–39. https://doi.org/10.1080/17441692.2020.1718735. Epub 2020 Jan 29 PMID: 31994445.
43. Algur KD, Patel SK, Chauhan S. The impact of drought on the health and livelihoods of women and children in India: a systematic review. Child Youth Serv Rev. 2021;122. https://doi.org/10.1016/j.childyouth.2020.105909.
44. Hoddinott J, Kinsey B. Child growth in the time of drought. Oxford Bulletin of Economics and Statistics. 2001;63(4):409–436. Accessed 12 Apr 2022.
45. Saeed R, Hashmi I. Pakistan ranks third globally with the most unvaccinated children: is the impact of parental perception and attitude on immunization an essential contributing factor to an unsuccessful vaccination coverage? Cureus. 2021;13(11):e19751. https://doi.org/10.7759/cureus.19751. PMID:34938628;PMCID:PMC8684801.
46. Jarrett C, Wilson R, O'Leary M, Eckersberger E, Larson HJ; SAGE Working Group on Vaccine Hesitancy. Strategies for addressing vaccine hesitancy - a systematic review. Vaccine. 2015;33(34):4180–90. https://doi.org/10.1016/j.vaccine.2015.04.040. Epub 2015 Apr 18. PMID: 25896377.
47. El Bcheraoui C, Jumaan AO, Collison ML, Daoud F, Mokdad AH. Health in Yemen: losing ground in war time. Global Health. 2018;14(1):42. https://doi.org/10.1186/s12992-018-0354-9. PMID:29695301;PMCID:PMC5918919.
48. Fozouni L, Weber C, Lindner AK, Rutherford GW. Immunization coverage among refugee children in Berlin. J Glob Health. 2019;9(1): 010432. https://doi.org/10.7189/jogh.09.010432.
49. Arapović J, Sulaver Ž, Rajič B, Pilav A. The 2019 measles epidemic in Bosnia and Herzegovina: what is wrong with the mandatory vaccination program? Bosn J Basic Med Sci. 2019;19(3):210–2. https://doi.org/10.17305/bjbms.2019.4266. PMID:31064166;PMCID:PMC6716099.
50. Puharić D, Borovac JA, Petrov B. Attitudes of adolescents towards sexual health in three cities from Croatia and Bosnia and Herzegovina. Int Nurs Rev. 2015;62(3):294–302. https://doi.org/10.1111/inr.12160. Epub 2014 Dec 17 PMID: 25521534.
51. Myles P, Swenshon S, Haase K, Szeles T, Jung C, Jacobi F, Rath B. A comparative analysis of psychological trauma experienced by children and young adults in two scenarios: evacuation after a natural disaster vs forced migration to escape armed conflict. Public Health. 2018;158:163–75. https://doi.org/10.1016/j.puhe.2018.03.012. Epub 2018 Apr 5 PMID: 29628203.
52. Fajkic A, Lepara O, Voracek M, Kapusta ND, Niederkrotenthaler T, Amiri L, Sonneck G, Dervic K. Child and adolescent suicides in Bosnia and Herzegovina before and after the war (1992–1995). Crisis. 2010;31(3):160–4. https://doi.org/10.1027/0227-5910/a000021. PMID: 20573610.
53. Betancourt TS, McBain RK, Brennan RT. Trajectories of externalizing problems among war-affected youth in Sierra Leone: results from a longitudinal study. Aggress Violent Beh. 2014;19(6):708–14. https://doi.org/10.1016/j.avb.2014.09.003.
54. Rizkalla N, Arafa R, Mallat NK, Soudi L, Adi S, Segal SP. Women in refuge: Syrian women voicing health sequelae due to war traumatic experiences and displacement challenges. J Psychosom Res. 2020;129: 109909. https://doi.org/10.1016/j.jpsychores.2019.109909. Epub 2019 Dec 24 PMID: 31901581.
55. Lange R, Dykeman C, Beckett C. Grieving styles of young Banso widows. Omega (Westport). 2020;81(3):493–506. https://doi.org/10.1177/0030222818785090. Epub 2018 Jun 25 PMID: 29938601.
56. Meyer AC, Opoku C, Gold KJ. They say i should not think about it: a qualitative study exploring the experience of infant loss for bereaved mothers in Kumasi. Ghana Omega (Westport). 2018;77(3):267–79. https://doi.org/10.1177/0030222816629165. Epub 2016 Feb 7 PMID: 29940827.
57. Suwalowska H, Amara F, Roberts N, Kingori P. Ethical and sociocultural challenges in managing dead bodies during epidemics and natural disasters. BMJ Glob Health. 2021;6(11): e006345. https://doi.org/10.1136/bmjgh-2021-006345.
58. Becker CB, Taniyama Y, Sasaki N, Kondo-Arita M, Yamada S, Yamamoto K. Mourners' Dissatisfaction with funerals may influence their subsequent medical/welfare expenses-a nationwide survey in Japan. Int J Environ Res Public Health. 2022;19(1):486. https://doi.org/10.3390/ijerph19010486. PMID:35010746;PMCID:PMC8744719.
59. Isuru A, Hewage SN, Bandumithra P, Williams SS. Unconfirmed death as a predictor of psychological morbidity in family members of disappeared persons. Psychol Med. 2019;49(16):2764–71. https://doi.org/10.1017/S0033291718003793. Epub 2018 Dec 26 PMID: 30585557.
60. Joe KK, Mapatano MA, Manyonga T, Mwadianvita CK, Valérien M, Stanis W, Kavulu M, Espérance K. Normal grief and its correlates in Lubumbashi, an urban city in the Democratic Republic of Congo. Pan Afr Med J. 2016;6(24):24. https://doi.org/10.11604/pamj.2016.24.24.5533. PMID:27583088;PMCID:PMC4992397.
61. Flicker SM, Sancier-Barbosa F, Afroz F, Saif SN, Mohsin F. Attachment hierarchies in Bangladeshi women in couple-initiated and arranged marriages. Int J Psychol. 2020;55(4):638–46. https://doi.org/10.1002/ijop.12619. Epub 2019 Sep 11 PMID: 31506950.
62. Ko A, Turner J. Culturally sensitive care for Asian immigrants: home healthcare perspectives. Home Healthc Now. 2017;35(9):507–13. https://doi.org/10.1097/NHH.0000000000000608. PMID: 28953541.
63. Substance Use and Mental Health Services Administration (SAMHSA). 2018. Behavioral health services for American Indians and Alaska Natives. For behavioral health service providers, administrators, and supervisors. https://store.samhsa.gov/sites/default/files/d7/priv/tip_61_aian_full_document_020419_0.pdf. Accessed 16 May 2022.
64. Vivian C, Dundes L. The crossroads of culture and health among the Roma (Gypsies). J Nurs Scholarsh. 2004;36(1):86–91. https://doi.org/10.1111/j.1547-5069.2004.04018.x. PMID: 15098424.

65. Antwi WK, Reeves P, Ferris C, Aziato L. Behavioural beliefs of Ghanaian radiographers and reporting of child physical abuse. Radiography (Lond). 2019;25(1):51–7. https://doi.org/10.1016/j.radi.2018.10.002. Epub 2018 Nov 9 PMID: 30599831.
66. Chang J, Rhee S, Weaver D. Characteristics of child abuse in immigrant Korean families and correlates of placement decisions. Child Abuse Negl. 2006;30(8):881–91. https://doi.org/10.1016/j.chiabu.2006.03.002. PMID: 16939691.
67. Bodegård G. Depression-withdrawal reaction in refugee children. An epidemic of a cultural-bound syndrome or an endemic of re-traumatized refugees? Acta Paediatr. 2010;99(7):959. https://doi.org/10.1111/j.1651-2227.2010.01763.x. Epub 2010 Mar 5. PMID: 20219049.
68. Felix ED, You S, Canino G. Family influences on the relationship between hurricane exposure and *Ataques de Nervios*. J Child Fam Stud. 2015;24(8):2229–40. https://doi.org/10.1007/s10826-014-0025-2.
69. Ginzburg SL, Lemon SC, Rosal M. Neighborhood characteristics and ataque de nervios: the role of neighborhood violence. Transcult Psychiatry. 2020:1363461520935674. https://doi.org/10.1177/1363461520935674. Epub ahead of print. PMID: 32693690.
70. Rubens SL, Felix ED, Vernberg EM, Canino G. The role of peers in the relation between hurricane exposure and Ataques de Nervios among Puerto Rican Adolescents. Psychol Trauma Theory Res Pract Policy. 2014;6(6):716–23. https://doi.org/10.1037/a0036701.
71. Lewis CP, Takala CR, Qaadir A, Cowan KE, Borreggine KL, Rackley SJ. Jinn and psychosis: providing culturally informed care to Muslim adolescents and families. J Am Acad Child Adolesc Psychiatry. 2017;56(6):455–7. https://doi.org/10.1016/j.jaac.2017.03.009. PMID: 28545746.
72. Ghaziuddin M. Jinn psychosis: cultural syndrome or religious condition? J Am Acad Child Adolesc Psychiatry. 2017;56(10):894. https://doi.org/10.1016/j.jaac.2017.07.786. PMID: 28942811.
73. Lim A, Blom JD. Tactile and somatic hallucinations in a Muslim population of psychotic patients. Front Psychiatry. 2021;29(12):728397. https://doi.org/10.3389/fpsyt.2021.728397. PMID:34777040;PMCID:PMC8586517.
74. Tei S, Wu HY. Historical reflection on Taijin-kyōfushō during COVID-19: a global phenomenon of social anxiety? Hist Philos Life Sci. 2021;43(2):60. https://doi.org/10.1007/s40656-021-00392-9.
75. Tran TT, Lee J, Sleigh A, Banwell C. Putting culture into prehospital emergency care: a systematic narrative review of literature from lower middle-income countries. Prehosp Disaster Med. 2019;34(5):510–20. https://doi.org/10.1017/S1049023X19004709. Epub 2019 Aug 27 PMID: 31452488.
76. Banford Witting A, Lambert J, Johnson LN, Goodkin C, Wickrama T. The stigma of widowhood in war and disaster affected communities of Sri Lanka: Contextual paths between trauma exposure and mental health distress. Int J Psychol. 2020;55(4):647–56.
77. Fernando GA, Berger DE. The role of religion in youth exposed to disasters in Sri Lanka. J Prev Interv Community. 2017;45(4):238–49. https://doi.org/10.1080/10852352.2016.1197751.
78. Jang M, Ko J-A, Kim E-J. Religion and mental health among Nepal earthquake survivors in temporary tent villages. Ment Health Relig Cult. 2018;21(4):329–35. https://doi.org/10.1080/13674676.2018.1485136.
79. Goodwin J, Savage E, Horgan A. Adolescents' and young adults' beliefs about mental health services and care: a systematic review. Arch Psychiatr Nurs. 2016;30(5):636–44. https://doi.org/10.1016/j.apnu.2016.04.004. Epub 2016 Apr 19 PMID: 27654250.
80. Carnegie A, Dolan LR. The effects of rejecting aid on recipients' reputations: evidence from natural disaster responses. Rev Int Organ. 2021;16:495–519. https://doi.org/10.1007/s11558-020-09393-y.
81. Lachake AV, Desai N, Udani V. 'To reveal or to conceal'- disclosure strategies in parents of children with epilepsy in India. Seizure. 2021;91:507–12. https://doi.org/10.1016/j.seizure.2021.07.026. Epub 2021 Jul 26 PMID: 34371247.
82. Hirani SAA. Facilitators and barriers to breastfeeding practices of internally displaced mothers residing in disaster relief camps in Pakistan: A critical ethnography. 2019. Doctoral dissertation. University of Alberta-Faculty of Nursing.
83. MirMohamadaliIe M, Khani Jazani R, Sohrabizadeh S, Nikbakht Nasrabadi A. Barriers to breastfeeding in disasters in the context of Iran. Prehosp Disaster Med. 2019;34(1):20–4. https://doi.org/10.1017/S1049023X18001243.
84. Chan EY, Kim JJ. Remote mobile health service utilization post 2005 Kashmir-Pakistan earthquake. Eur J Emerg Med. 2010;17(3):158–63. https://doi.org/10.1097/MEJ.0b013e328331ddd3. PMID: 19809333.
85. Samuels F, Jones N, Abu Hamad B. Psychosocial support for adolescent girls in post-conflict settings: beyond a health systems approach. Health Policy Plan. 2017;32(suppl_5):v40-v51. https://doi.org/10.1093/heapol/czx127. PMID: 29244106; PMCID: PMC5886144.
86. Wong P. Six Multicultural service-learning lessons i learned in the wake of Hurricane Katrina. Multicult Educ. 2007;15(2):52–4.
87. Kranke D, Schmitz S, Der-Martirosian C, Dobalian A. Stigma as a barrier to engaging in mental health services among adolescents who survive natural disasters. Soc Work Ment Health. 2017;15(2):171–83. https://doi.org/10.1080/15332985.2016.1199392.
88. Felix ED, Janson M, Fly J. Factors affecting mental health service use among university students following an episode of mass violence. Psychol Trauma Theory Res Pract Policy. 2021;13(3):263–70. https://doi.org/10.1037/tra0000571.
89. Kimura M. Negative social interactions and coping behaviors: experiences of Japanese mothers caring for children with special needs in disaster areas. BMC Res Notes. 2020;13(1):247. https://doi.org/10.1186/s13104-020-05087-1.
90. Sharpe JD, Wolkin AF. The epidemiology and geographic patterns of natural disaster and extreme weather mortality by race and ethnicity, United States, 1999–2018. Public Health Rep. 2021:333549211047235. https://doi.org/10.1177/00333549211047235. Epub ahead of print. PMID: 34678107.
91. Davies IP, Haugo RD, Robertson JC, Levin PS. The unequal vulnerability of communities of color to wildfire. PLoS ONE. 2018;13(11): e0205825. https://doi.org/10.1371/journal.pone.0205825.
92. McKinley CE, Scarnato JM, Liddell J, Knipp H, Billiot S. Hurricanes and indigenous families: understanding connections with discrimination, social support, and violence on PTSD. J Fam Strengths. 2019;19(1):10.
93. Scott BL, Montoya M, Farzan A, Cruz M, Jaskela M, Smith B, LaGoy M, Marshall J. Barriers and opportunities for the MCH workforce to support hurricane preparedness, response, and recovery in Florida. Matern Child Health J. 2022;26(3):556–64. https://doi.org/10.1007/s10995-021-03351-9. Epub 2022 Jan 18 PMID: 35039975.
94. Cardoso JB, Brabeck K, Capps R, Chen T, Giraldo-Santiago N, Huertas A, Mayorga NA. Immigration enforcement fear and anxiety in Latinx high school students: the indirect effect of perceived discrimination. J Adolesc Health. 2021;68(5):961–8. https://doi.org/10.1016/j.jadohealth.2020.08.019.

95. Rehman SU, Siddiqui AR, Ahmed J, Fatmi Z, Shah SM, Rahman A, Yousafzai MT. Coverage and predictors of routine immunization among 12–23 months old children in disaster affected communities in Pakistan. Int J Health Sci. 2017;11(1):1–6.
96. Arsenijević J, Burtscher D, Ponthieu A, Severy N, Contenta A, Moissaing S, Argenziano S, Zamatto F, Zachariah R, Ali E, Venables E. "I feel like I am less than other people": Health-related vulnerabilities of male migrants travelling alone on their journey to Europe. Soc Sci Med. 2018;209:86–94. https://doi.org/10.1016/j.socscimed.2018.05.038. Epub 2018 May 23 PMID: 29807316.
97. Zaidi S, Kamal A, Baig-Ansari N. Targeting vulnerability after the 2005 earthquake: Pakistan's livelihood support cash grants programme. Disasters. 2010;34(2):380–401. https://doi.org/10.1111/j.1467-7717.2009.01134.x. Epub 2009 Oct 26 PMID: 19863566.
98. Orengo-Aguayo R, Stewart RW, de Arellano MA, Suárez-Kindy JL, Young J. Disaster exposure and mental health among Puerto Rican youths after hurricane Maria. JAMA Netw Open. 2019;2(4): e192619. https://doi.org/10.1001/jamanetworkopen.2019.2619.
99. Rezwana N, Pain R. Gender-based violence before, during, and after cyclones: slow violence and layered disasters. Disasters. 2021;45(4):741–61. https://doi.org/10.1111/disa.12441. PMID: 32410257.
100. Beltrán Guzmán I, Gil Cuesta J, Trelles M, Jaweed O, Cherestal S, van Loenhout JAF, Guha-Sapir D. Delays in arrival and treatment in emergency departments: Women, children and non-trauma consultations the most at risk in humanitarian settings. PLoS ONE. 2019;14(3):1–15. https://doi.org/10.1371/journal.pone.0213362.
101. Mu R, Zhang X. Why does the Great Chinese Famine affect the male and female survivors differently? Mortality selection versus son preference. Econ Hum Biol. 2011;9(1):92–105. ISSN 1570–677X. https://doi.org/10.1016/j.ehb.2010.07.003.
102. Newnham EA, Gao X, Tearne J, Guragain B, Jiao F, Ghimire L, Chan EY, Leaning J. Adolescents' perspectives on the psychological effects of natural disasters in China and Nepal. Transcult Psychiatry. 2020;57(1):197–211. https://doi.org/10.1177/1363461519893135. Epub 2019 Dec 18 PMID: 31852386.
103. Al-Natour A, Morris EJ, Mohammad A-O. through her eyes: the impact of war on Syrian refugee families. J Transcult Nurs. 2022;33(1):26–32. https://doi.org/10.1177/10436596211026367. Epub 2021 Jul 29 PMID: 34323146.
104. Rizkalla N, Mallat NK, Arafa R, Adi S, Soudi L, Segal SP. "Children are not children anymore; they are a lost generation": adverse physical and mental health consequences on Syrian refugee children. Int J Environ Res Public Health. 2020;17(22):8378. https://doi.org/10.3390/ijerph17228378. PMID:33198333;PMCID:PMC7696198.
105. Knox SE. How they see it: young women's views on early marriage in a post-conflict setting. Reprod Health Matters. 2017;25(sup1):96–106. https://doi.org/10.1080/09688080.2017.1383738. PMID: 29120291.
106. Habib RR, Ziadee M, Abi Younes E, Harastani H. Syrian refugee child workers: gender differences in ergonomic exposures and musculoskeletal health. Appl Ergon. 2020;83: 102983. https://doi.org/10.1016/j.apergo.2019.102983. Epub 2019 Nov 12 PMID: 31731094.
107. Goldsmith L, Raditz V, Méndez M. Queer and present danger: understanding the disparate impacts of disasters on LGBTQ+ communities. Disasters. 2021. https://doi.org/10.1111/disa.12509. Epub ahead of print. PMID: 34498778.
108. U.N. News. Climate and weather related disasters surge five-fold over 50 years, but early warnings save lives. United Nations. 2021. https://news.un.org/en/story/2021/09/1098662. Last accessed on 24 May 2022.
109. United Nations High Commission on Refugees. Climate change and disaster displacement. https://www.unhcr.org/en-us/climate-change-and-disasters.html. Last accessed on 24 May 2022.
110. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th ed. Washington, DC: American Psychiatric Association; 2013. p. 749–59.
111. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th ed. Text revision. Washington, DC: American Psychiatric Association; 2022.
112. Pumariega AJ, Rothe E, Mian A, Carlisle L, Toppelberg C, Harris T, Gogineni RR, Webb S, Smith J, the Committee on Quality Issues. Practice parameter for cultural competence in child and adolescent psychiatric practice. J Am Acad Child Adolesc Psych. 2013;52(10):1101–1115. https://doi.org/10.1016/j.jaac.2013.06.019.