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Mental Health Risks in Cultural Heritage First Responders After Disasters: A Review and Suggestions for Future Research

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Abstract

Background: Disasters are severely impactful events with the potential to provide injuries or death, destroy properties, and put in danger the mental health of people exposed to them. People who are particularly involved in disasters are first responders. In this work, we will focus on a specific type of first responder, i.e., cultural heritage clinicians who have the responsibility to preserve, protect, and recover cultural heritage from damage.

Aims: This review aims to discuss the mental health risks for first responders after disasters, with a specific focus on cultural heritage first responders.

Methods: Studies had to be: 1) in English; 2) on adults; 3) original studies or clinical trials; 4) related to the mental health of participants; 5) published in peer-reviewed journals. Exclusion criteria were: 1) being written in languages different from English; 2) being conducted on adolescents/children; 3) not being related to the mental health of participants; 4) being a book/report/summary; 5) not being a clinical trial; 6) not being peer-reviewed. The search was run throughout PsycInfo, PsycArticles, and Medline on the 1st of April 2022 on articles published between 2012 and 2022 by using these keywords: natural disasters or tsunamis or floods or drought or wildfire or earthquake or tornado or hurricane or snowstorm AND first responders or firefighters or paramedics or police or emergency services or emergency medical services AND mental health or mental illness or mental disorder or psychiatric illness.

Results: First responders are at risk of depression, anxiety, sleep disturbances, alcohol/substance abuse, and suicide ideation. Currently, there are no studies on mental health risks for cultural heritage first responders. There are some training programs designed for first responders in emergencies. Recent results seem to confirm their usefulness for first responders, leading us to suggest their application also for cultural heritage first responders.

Conclusion: Further studies should explore the psychological impact of cultural heritage first responders, as well as the effect that psychological training can have on them.

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1. Introduction

Disasters are severely impactful events such as earthquakes, bushfires, floods, tsunamis, hurricanes, and all other kinds of natural hazards that have the potential to provide severe injuries or death and destroy properties. Disasters put in danger the life and mental health of people who are exposed to them. People who are particularly involved in disasters are first responders (FRs). FRs must "preserve life, property and environment", and intervene immediately after the disaster (Greinacher et al., 2019, p. 2). FRs are, for example, firefighters, emergency medical technicians, paramedics, physicians, nurses, police officers, and volunteers (Jones, 2017). FRs are exposed to the most impacting aspects of disasters since they operate in the front line trying to save as many lives as possible. This level of exposure could lead to physical and psychological consequences (see Table 1).

While the physical consequences depend on the nature of the intervention, the psychological ones depend on two main elements: a) prior risk factors to psychological morbidities; b) level of exposure to the traumatic event (Pennington et al., 2018). The most frequent psychological consequences found on FRs are post-traumatic stress disorder (PTSD), depression, anxiety, sleep disturbances, substance abuse, and general psychological distress. It is, therefore, important to promptly assess these problems in FRs, by using psychometrically reliable measures (see e.g., Somma et al., 2019) to analyze the possible mental health consequences after the onset of the disaster. There are also different modalities to limit the impact of a traumatic event on the mental health of those affected by them (e.g., Burrai et al., 2021; Hildebrand et al., 2017), which could help FRs facing a disaster. Moreover, many authors have highlighted the importance of considering protective factors which could help in understanding the causal mechanisms not leading to mental health problems after a disaster (e.g., Platania et al., 2020). At the same time, other authors have pointed out the importance of considering factors such as pathological personality traits or attachment-related problems as potential risk factors for the development of mental health problems to traumas (Borroni et al., 2022; Midolo et al., 2020).

Along with FRs, who have the task to save as many lives as possible, there is also another group of workers that, even if not involved in human saving, intervene immediately after a disaster. We are referring to cultural heritage professionals who have the responsibility to preserve, protect, and recover cultural heritage (CH) from the damage caused by disasters. Throughout the paper, we will refer to this group of people as cultural heritage first responders (CHFRs).

In this review, we aim to present the recent (2012-2022) contributions (clinical trials and/or original studies) on mental health consequences for FRs involved in disasters. Furthermore, we

will discuss the lack of studies that are specifically focused on mental health consequences for CHFRs and underline the importance of psychological training for CHFRs in emergency contexts.

2. Methods

The present narrative review regarded studies respecting the following inclusion criteria. Studies had to be: 1) written in English; 2) conducted on adult participants; 3) original studies, clinical trials, or randomized clinical trials; 4) related to the mental health of FRs in disasters; 5) published in peer-reviewed journal articles. Exclusion criteria were: 1) being written in languages different from English; 2) being conducted on adolescents or children; 3) not being related to the mental health of FRs in disaster; 4) being a book/report/summary; 5) not being a clinical trial; 6) not being peer-reviewed.

Inclusion and exclusion criteria are reported in Appendix A. Articles were searched throughout PsycInfo, PsycArticles, and Medline, and selected based on the inclusion/exclusion criteria, title, and abstract. The search was performed on the 1st of April 2022 on articles published between 2012 and 2022. The research was conducted by using the following keywords: natural disasters or tsunamis or floods or drought or wildfire or earthquake or tornado or hurricane or snowstorm AND first responders or firefighters or paramedics or police emergency services or emergency medical services AND mental health or mental illness or mental disorder or psychiatric illness. A total of 2,253 results were found and examined. Only the ones meeting our inclusion/exclusion criteria were used in the present narrative review. Details of the articles can be found in Table 1. In the following paragraphs, results will be synthesized. Table 1 shows the studies considered in this review.

3. Results

3.1 Disasters, first responders, and mental health consequences

One of the most common mental health consequences for FRs is PTSD (Lowe et al., 2019). PTSD is described by the Diagnostic and Statistical Manual for Mental Disorders – Fifth Edition – Text Revised (DSM-5 TR; APA, 2022) as characterized by the development of specific symptoms following exposure to traumatic events. Symptoms can be intrusive, such as distressing and recurrent memories or dreams, dissociative reactions (i.e., flashbacks) that involve the sensation that the traumatic event(s) are still going on, distress to exposure, or marked psychological reactions to internal or external cues that symbolize or resemble aspects of the traumatic event(s) (APA, 2022). Moreover, PTSD involves persistent avoidance of stimuli

associated with trauma, negative alterations in cognition and mood, and alteration in reactivity and arousal (APA, 2022). The prevalence of PTSD in the general population is around 7% (Naushad et al., 2019).

Author(s) and year	Study design	Analysis	Study population and sample size	Outcome
Van der Velden (2012)	Longitudinal	Quantitative	N=51 Dutch search and rescue workers exposed to an earthquake assessed before (t1) and 3-months post-deployment (t2)	PTSD and mental health problems' rates were low (non-clinical) and coping self-efficacy high at both times. Depression and interpersonal sensitivity decreased at t2. Protective factors such as good team functioning, recognition, and job satisfaction were relevant.
Wang et al. (2013)	Cross- sectional	Qualitative	N=25 local relief officials exposed to an earthquake	Thematic analysis enlightened the presence of two general themes: (1) specifically perceived sources of stress (i.e., traumatic bereavement and grief, housing and financial difficulties, and work–family conflict); (2) coping experiences (i.e., finding meaning and purpose in life through work, support and understanding of colleagues, suppression or avoidance of grief, appreciation for life, hardiness, optimism, letting nature take its course, and coping with loss)
Biggs, Brough, & Barbour (2014)	Cross-sectional	Quantitative	N=1623 police officers exposed to a disaster	Disaster exposure was significantly associated with work culture support, which, in turn, was associated with job satisfaction, work engagement, psychological strain, and turnovers.
Snell et al. (2014)	Cross- sectional	Qualitative	N=322 text responses from policemen exposed to an earthquake	The study identified factors associated with positive mental health outcomes in FRs, i.e., enhanced self-efficacy, posttraumatic growth and pride related to the job position. No data provided for the prevalence of mental health problems in the sample.
Kang et al. (2015)	Cross- sectional	Quantitative	N=338 rescuers exposed to an earthquake	The prevalence rate of PTSD symptoms was 21.8%.
Sakuma et al. (2015)	Cross- sectional	Quantitative	N=1294 local disaster relief and reconstruction workers	Data were collected 14 months after the disaster. 6. Prevalence for depression was 15.2% (n=188), 11.4% of the sample had high psychological distress (n=143) and 6.2% (n=74) had PTSD. Rates were higher in municipal and medical workers compared to firefighters.

Chan et al. (2016)	Cross- sectional	Quantitative	N=192 disaster survivors FRs N=45 FRs unaffected by the disaster	The disaster survivors FRs group had statistically significant higher levels of psychological distress and post-traumatic stress. No statistically significant differences were found between the two groups in relation to PTSD, however the prevalence pf PTSD was 7.9% in the unaffected sample and 15.3% in the disaster survivors FR sample.
Bromet et al. (2017)	Cross- sectional	Quantitative	N=870 World Trade Center Responders	Being exposed to a disaster increased the likelihood of PTSD and major depressive disorder in World Trade Center FRs (respectively 1.77 to 5.38 increased likelihood of PTSD and 1.58 to 4.13 likelihood of depression; odds ratios for ≥ 3 exposures were 6.47 for PTSD and 6.45 for depression)
O'Toole (2017)	Cross- sectional	Qualitative	N=20 teachers who acted as FRs in an earthquake	FRs reported anxiety, post-traumatic dissociation, and sadness. Positive emotions (relief and pride) were also recalled.
Pennington et al. (2018)	Longitudinal	Quantitative	N=35 firefighters exposed to a disaster assessed at 4, 8, 16, 20, 28, and 36 months N=35 non-exposed cadets	Disaster-exposed firefighter recruits and non-exposed recruits did not differ on depressive or PTSD symptoms at baseline. Exposed firefighters showed a significant increase over time in depression compared to non-exposed firefighters
Psarros et al. (2018)	Cross- sectional	Quantitative	N=102 firefighters	18.6% of firefighters showed PTSD. Specific personality factors (i.e., neuroticism) high anxiety during the rescue operation, depressive symptoms, and fear for life were related to a greater likelihood for PTSD.
Gonzales et al. (2019)	Cross- sectional	Quantitative	N=354 FRs N=1294 community members	8.6% of FRs had PTSD; 31.1% of the individuals in the community members' sample had PTSD following a disaster.
Goh et al. (2020)	Cross- sectional	Quantitative	N=287 firefighters	Prevalence of PTSD and depression was 13.9%, 10.4% of the participants had active suicidal ideation, 25.9% anxiety disorder, 29.4% were risky alcohol users. Firefighters who participated in fire and industrial disaster rescues were more likely to develop PTSD, depression, suicidal ideation, and anxiety.
Kerswell et al. (2020)	Cross-sectional	Quantitative	N=216 Australian police officers and support staff involved in a disaster	About 24% of the participants had high levels of general distress, 13% had PTSD symptoms.

Theleritis et al. (2020)	Cross- sectional	Quantitative	N=102 firefighters exposed to a disaster	18.6% of firefighters exposed to a disaster had PTSD. Firefighters using avoidance coping mechanisms were more likely to develop PTSD.
Tominaga et al. (2020)	Cross- sectional	Quantitative	N=230 mental health clinicians exposed to an earthquake	19% of the sample reported PTSD symptoms immediately after the disaster; 3% had PTSD two months after the disaster. Professional support was positively associated with the possibility to relate to others in order to overcome PTSD.
Cherry et al. (2021)	Cross- sectional	Quantitative	N=192 firefighters*	21.4% of the sample had PTSD, 15% anxiety disorders, and 14.3% had depressive disorders
Lebeaut et al. (2021)	Cross- sectional	Quantitative	N=657 firefighters	n=27 had probable PTSD and probable alcohol use disorder (AUD), n=35 had probable PTSD, n=125 had probable AUD. Firefighters with probable PTSD and AUD had high levels of anxiety sensitivity, emotion dysregulation, reduced distress tolerance, and mindfulness (compared to firefighters without PTSD and AUD and to firefighters with PTSD)
Lebeaut et al. (2022)	Cross- sectional	Quantitative	N=266 firefighters	Firefighters reported high levels of PTSD symptoms. The association between PTSD and physical disability was moderated by mindfulness.
Saito et al. (2022)	Longitudinal	Quantitative	N=55 632 Japan Ground Self-Defense Force FRs	During the 7-year period there were five trajectories of PTSD symptoms: resilient (54.8%), recovery (24.6%), incomplete recovery (10.7%), late-onset (5.7%), and chronic (4.3%).

About FRs, different studies have investigated the presence of PTSD symptoms (see Table 1). Kang et al. (2015), for example, found a prevalence rate of 21.8% of PTSD among rescuers exposed to an earthquake, while Sakuma et al. (2015) found that 6.2% of their sample of 1294 local disaster relief and reconstruction workers had PTSD. Psarros et al. (2018) found that 18.6% of their sample (N=102 firefighters) reported PTSD, while the prevalence rate in Goh et al. (2020) study on 287 firefighters was 13.9%. Chan et al. (2016) reported the prevalence rates of PTSD in a sample of disaster survivors FRs (n=192) and in a sample of FRs unaffected by disasters (n=45), which were respectively 15.3% and 7.9%.

In line with these results, Bromet et al. (2017) found that having been previously exposed to a disaster increased the likelihood of PTSD among World Trade Center FRs (N=870). These data call for future studies on the impact that being previously or personally affected by a disaster has on FRs. Moreover, studies have enlightened differences among the rates of PTSD in FRs, compared to civilians, after being exposed to a disaster: Gonzales et al. (2019) reported that

8.6% of FRs had PTSD, while more than 31% of the individuals in the community members' sample (N=1294) had PTSD following a disaster. Moreover, it must be considered that the prevalence rate of PTSD symptoms may change over time: Tominaga et al. (2020) found that in a sample of 230 mental health clinicians, one-fifth of the sample reported PTSD and clinical symptoms immediately after the disaster, but only a small percentage (i.e., 3%) reported PTSD symptoms two months after the disaster. The aforementioned data on the prevalence of PTSD in the FR population are in line with previously published reviews on this topic. In a review on PTSD following environmental disasters published in 2018, the prevalence ranged between 0% and 70.5% (Lowe et al., 2019). However, the category of FRs is highly heterogeneous, and PTSD prevalence differs based on the occupation (Jones et al., 2018).

Kim et al. (2018) have focused more specifically on PTSD outcomes in firefighters. In a study on South Korean public firefighters, the authors found a 5.4% of probability of having PTSD, which is lower than the prevalence reported by previous studies on firefighters (Kim et al., 2018). Besides, authors found that only 9.7% of firefighters reporting PTSD looked for psychological treatment, and this could be ascribed to stigma. The problem of stigma is widespread among FRs, and it can also involve healthcare workers (e.g., nurses, and paramedics), that are at risk of PTSD, too (see Tominaga et al., 2020). Moreover, Saito et al (2022), who conducted a study on 55632 first responders exposed to an earthquake, found that part of the sample (5.7%) had late-onset PTSD, and 4.3% developed chronic PTSD.

Another possible mental health outcome commonly described is depression (Cherry et al., 2021; Goh et al., 2020; Jones et al., 2018; Sakuma et al., 2015). Prevalence rates for depression in the above-mentioned studies ranged from 13.9 to 15.2%. This data is in line with the results of previous reviews on depression in healthcare professionals exposed to a disaster, in which the prevalence rate was around 14% (Naushad et al., 2019). A study on depression among firefighters enlightened that those exposed to a disaster (n=35) showed a significant increase over time in depression compared to those who were not exposed to a disaster (n=35) (Pennington et al., 2018). In line with this data, and similarly to PTSD, previous studies have shown that being exposed to a disaster increased the likelihood of major depressive disorder in World Trade Center FRs (Bromet et al., 2017). Moreover, Goh et al. (2020) found that 10.4% of the participants in their study, which involved 287 firefighters, had active suicidal ideation.

Anxiety is another possible symptom in FRs after a disaster; however, it is one of the least studied (Wagner et al., 2021). In a qualitative study on 20 teachers and FRs in an earthquake, participants reported anxiety, post-traumatic dissociation, and sadness (O'Toole, 2017). Jones

et al. (2018) found that 28% of their sample had moderate to severe anxiety symptoms. In Goh et al. (2020) study on a sample of firefighters (N=287), the authors found that 25.9% had an anxiety disorder. However, in Cherry et al. (2021) study the prevalence rate was lower (15%).

Sleep disturbance is frequently reported as a symptom connected to exposure to a disaster, both in FRs and the general population, but there is a lack of studies on this topic. Moreover, the association between sleep disturbances and PTSD can be related to serious negative outcomes in FRs, such as suicidal ideation, since the hyperarousal cluster of symptoms of PTSD (that includes difficulties in falling or staying asleep) is a primary predictor of suicidal ideation in police officers (Stanley et al., 2016).

Substance use disorders have been extensively reported as a negative outcome for FRs after disasters, but few systematic clinical studies are available, particularly regarding the impact of disasters on FRs. Lebeau et al. (2021) found that 23% of their sample of 657 firefighters had probable alcohol use disorder, alone or in comorbidity with PTSD.

Finally, general psychological distress has been studied in FRs after disasters. Sakuma et al. (2015) conducted a cross-sectional study on 1294 local disaster relief and reconstruction workers, finding that 11.4% had high psychological distress, with higher rates in municipal and medical workers compared to firefighters. Kerswell et al. (2020) assessed mental health in 216 police officers and support staff involved in a disaster and found that 24% had high psychological distress. The prevalence of psychological distress can also be influenced by the impact that the disaster has on the FR: Chan et al. (2016) found that psychological distress was significantly higher in FRs who survived a disaster compared with FRs who were not personally affected by the disaster.

Previous studies have also tried to explore protective factors which can help in coping with mental health problems. In a qualitative cross-sectional study on 25 local relief officers exposed to an earthquake, Wang et al. (2013) found specific coping experiences, i.e., finding meaning and purpose in life through work, colleagues' support and understanding, suppression or avoidance of grief, appreciation for life, hardiness, optimism, letting nature take its course, and coping with loss. Similarly, Snell et al. (2014) found specific factors associated with positive mental health outcomes in a sample of policemen exposed to an earthquake, i.e., enhanced self-efficacy, posttraumatic growth, and pride related to the job position.

Van der Velden (2012) conducted a study on 51 search and rescue workers exposed to an earthquake, assessed before and 3 months post-deployment. Protective factors, such as good team functioning, recognition, and job satisfaction, were relevant in the pathway of depression

and interpersonal sensitivity, which decreased between the first and second time-point. Lebeau et al. (2022) found that mindfulness mediated the association between PTSD and physical disability in a sample of 266 firefighters. It is important to further investigate which factors can help develop resilience and adaptive coping strategies in FRs exposed to an disaster.

4. Discussion

Up to date, we can say that our knowledge of the possible consequences of being exposed to a disaster is growing; however, there is much to know about the causal mechanisms leading from the exposure to a disaster to mental health problems. In doing so, it is therefore important to focus on the causal mechanisms of psychopathology (Merlo et al., 2022, Myles, 2021a, 2021b) to prevent its offspring. Regarding this, it must be noted that psychiatric diagnoses have shown problems with their validity and reliability, and we can't exclude the possibility of biases related to this issue in our work. Several authors have addressed this problem and expressed concerns about the present diagnostic frameworks (e.g., Scull, 2021). On the other side, there is growing support for a transdiagnostic approach that cuts across traditional diagnostic boundaries or, more radically, sets them aside, to provide insights into our understanding of mental health difficulties (Dalgleish et al., 2020). Future studies could address this issue by adopting a transdiagnostic approach, not focused on the psychiatric diagnosis but on variables that have previously been associated with several psychopathological domains, for example, mentalization, which is associated both with personality and eating disorders (Gagliardini et al., 2020, 2023).

In summary, different authors have found that FRs in disasters are at risk of developing different psychopathological problems, such as PTSD (e.g., Bromet et al., 2017; Chan et al., 2016; Psarros et al., 2018), depression (Cherry et al., 2021; Goh et al., 2020; Jones et al., 2018; Sakuma et al., 2015), anxiety (e.g., Jones et al., 2018; O'Toole, 2017), sleep disturbance (Stanley et al., 2016), substance use disorder (Lebeaut et al., 2021), and general distress (e.g., Kerswell et al., 2020; Sakuma et al., 2015). However, the causal mechanism leading to the development of specific mental health problems as a consequence of a disaster remains still unclear. Since disasters are situations in which control is stripped from individuals, it is possible that individuals perceive low control during these situations, and low perceived control can lead to increased mental health problems, such as depression (Meyes & Merlo, 2022a, 2022b; Meyes et al., 2020, 2021). Moreover, specific protective factors, which could help at preventing these outcomes, have been investigated (e.g., Lebeaut et al., 2022; Van der Velden, 2012).

4.1 Disasters involving cultural heritage: the role of cultural heritage first responders

In emergencies, the priority is to save as many lives as possible. However, it is necessary to remember that other professional figures intervene, even if they are not often "officially" considered FRs. Immediately after disasters, or at the same time if the situation allows it, cultural heritage professionals try to reduce or repair the damage occurring to movable and immovable CH. The work of CHFRs is varying and starts before disasters happen. We could reassume it in two phases: a) risk management (before the events take place); b) first aid (when the events have just occurred) (Tandon, 2018).

Risk management is a systematic approach to identifying, assessing, and reducing the risks of disaster (Drewes, 2016). A disaster risk management plan provides clear and flexible guidance for the people who are going to implement it in case of necessity (Jigyasu, King, & Wijesuriya, 2010). It describes processes that should be put in place by those who decide to implement appropriate actions, and it tries to identify the main disaster risks that could hurt CH and human lives (Jigyasu et al., 2010). A wide net of people should prepare the plan: site manager, local government and local municipality, local community leaders, different types of FRs such as police, emergency response teams, and experts help identify and assess risks (Jigyasu et al., 2010). Good risk management can be useful when a disaster occurs since a group performs well during the disaster if it has performed well before, and this is crucial to absorb stress and help recovery (Drewes, 2016).

When the disaster has occurred, another phase, called first aid, takes place, involving cultural disasters more closely (Almagro Vidal, Tandon, & Eppich, 2015; Tandon, 2018). CHFRs or "cultural first aiders" (Tandon, 2018) have the necessary knowledge and skills to document and protect CH during a complex situation or emergency. They develop and implement first aid operations for protecting CH in coordination with other relief agencies, and can also constitute and manage teams, as well as assess and mitigate future risks to ensure early recovery (Almagro Vidal et al., 2015). Particularly, CHFRs have received training to operate during (or immediately after) emergencies (Tandon, 2018). The work of CHFRs follows three steps. The first step, "situation analysis", is focused on understanding the wider emergency context and elaborating a context-specific plan (Tandon, 2018). The second step, "on-site damage and risk assessment", is related to the identification and record of the damage caused by the disaster, and to the evaluation of the risks posed to CH (Tandon, 2018). This step helps to set the priorities of the on-site action. The last step, "security and stabilization", includes actions to contain damages (Tandon, 2018).

The work of CHFRs is challenging because the nature of the intervention is variable depending on the type of disaster, its magnitude, and the type of CH that needs to be secured. In addition, CHFRs are exposed to destruction and suffering, just like the FRs committed to saving human lives, thus being exposed to similar risks of mental health consequences. For example, CHFRs intervene in the right aftermath of the disaster and are therefore exposed to both the cultural damage and the damages, deaths, and injuries in the general population affected by the disaster which normally put FRs' mental health at risk. Therefore, we can hypothesize that being exposed to such stimuli could lead to consequences for CHFRs' mental health. Unfortunately, there are currently no clinical studies addressing the mental health consequences of CHFRs, and this confirms the scarce interest in the literature on this topic.

4.2 Recovering cultural heritage to recover community identity after a disaster

In the previous paragraph, we have tried to highlight the role of CHFRs in the context of disasters. But why is it so important to intervene in emergency contexts to recover CH? The issue is complex, and it includes measures that are much broader and unfold before the emergency, concerning the preservation and protection of CH. CH can be considered as important to protect our sense of who we are. It can give us a connection to the past, in terms of social values, beliefs, and traditions, that allows us to identify with others and deepen our sense of unity, belonging, and national pride.

As Prompayuk and Chairattananon (2016) underlined the preservation of CH has several objectives: a) cultural memory: CH maintains physical evidence of history, and transfers values, knowledge, and skills of the ancestors; b) convenient proximity: CH can support the interaction among environment, people, and community; c) environment diversity: as an identity of the local community, CH retains local artifacts and local artisans among the stream of urban development; d) economic gain: CH is a benefit to the community since it allows to save costs related to the construction of new buildings and attractions to visitors.

In other words, CH is relevant from a social point of view. According to Spennemann and Graham (2007), CH can be considered a sort of "social construct", being the result of people's interaction with the environment and the other members of the community. CH sites, for example, respond to the need of humankind to have tangible proof of their history and give people "certainties and a sense of familiar surrounds that prove assurance ad reassurance" (Spennemann & Graham, 2007, p. 995). Bumbaru (1999) reported testimony at a summit between Canadian citizens and local disaster management agencies. The procedure of emergency response usually is to save humans first, then the environment, and finally property.

In this case, instead, the citizens argued that preserving CH should be considered at the first stage – along with or immediately after – saving human lives. So, during an emergency, CH was extremely important for the local community.

In this sense, CH can contribute to building what is called "community resilience", the resilience related to how "communities make effective use of their resources to return to positive trajectories of recovery and functioning" (Ntontis, Drury, Amlôt, Rubin, & Williams, 2019, p. 3). In times of disruption, recovering CH can help to reinforce community resilience, saving elements that give people a sense of familiarity, home, and community. Strong (2000) reported that Australian citizens fought to save the ruins of the Town Hall, in north Australia because the ruins were a reminder of Cyclone Tracy's impact on the community.

In sum, preserving, protecting, and recovering CH means saving the intangible elements that give the deep sense of our community (i.e., practices, representations, expressions, knowledge, and skills) by repairing the tangible ones (i.e., buildings, sites, paintings, statues) (Holtorf, 2018; UNESCO, 2003). It is important to remind that the sense of community, together with the social support strictly related to it, has proved to be a protective factor against different mental health consequences (Naushad et al., 2019; Stanley et al., 2016). So, recovering CH after a disaster is also a key component to responding effectively to further possible disasters. To quote Spennemann and Graham (2007): "A community's ability to respond is affected by many variables and their ability to unite as a group to forge a new future. This relationship is influenced by their relationship with the environment before and following the disaster event" (p. 997).

For all these reasons, the relevance of protecting the CH is also highlighted by the UN, which has indicated it as one of the sustainable development goals of the 2030 Agenda: "to strengthen efforts to protect and safeguard the world's cultural and natural heritage" (goal 11.4). Following a similar perspective, Florentin et al. (2022) also suggest the relevance of implementing pre-disaster recovery planning of cultural heritage, still poorly explored, to provide inclusive and better recovery outcomes for historic districts.

4.3 The importance of psychological training for cultural heritage professionals working in emergency contexts

As underlined in the previous paragraph, CHFRs are relevant emergency figures (Chandani et al., 2019), as well as other FRs. In this sense, there is reason to believe that the former can face threats that are similar to the latter, and they can both benefit from similar aid tools. There are different modalities adopted to limit the impact of a disaster on the mental health of those affected by them (e.g., Hildebrand et al., 2017). For example, there is training that can be taught

to FRs, independently of their background, which proves to help reduce self-perceived stress and recognize survivors' needs, with a positive impact on their well-being. This instrument is psychological first aid (PFA) (Birkhead & Vermeulen, 2018; Fox et al., 2012; McCabe et al., 2011; Schulenberg et al., 2008; Vernberg et al., 2008). PFA is not a therapy (Schulenberg et al., 2008), but a collection of tenets that derive from a set of empirical evidence, that is not specific to mental health professionals; PFA can be also used by physicians, firefighters, volunteers, and all people involved in emergency management (Birkhead & Vermeulen, 2018).

The PFA aims to accomplish 8 core actions (Allen et al., 2010): "Contact and engagement, safety and comfort, stabilization, information gathering, practical assistance, connection with social support, information on coping, and linkage with collaborative services" (p. 510). PFA fulfills double tasks: a) it helps responders to use strategies to respond to rescue needs, also by connecting them to different resources and social support; b) it helps FRs to deal with their stress (Birkhead & Vermeulen, 2018). About this second point, PFA helps FRs to understand their own and colleagues' reactions to stress.

Few studies have empirically investigated the impact of PFA in FRs, but those existing give encouraging results. For example, Allen and colleagues (2010) found that, for FRs who had to deal with hurricanes that struck in 2008, the use of PFA helped: a) to increase confidence while working with adults and children; b) to feel that they were doing an appropriate intervention. Besides, FRs found it useful and were pleased with PFA, which they considered helpful to assist survivors better. Unfortunately, this study did not investigate the first-person perception of people receiving psychological training.

Besides PFA, there are other psychological training programs for emergencies, and some of them have been empirically tested. An example is the HEROES project (Blumberg, Giromini, Papazoglou, & Thornton, 2020), which, in contrast to PFA, specifically addresses FRs' well-being. The HEROES project is a six-lesson online course that "combines the therapeutic tools of clinical and organizational psychology and provides first responders access to a self-driven well-being program" (Blumberg et al., 2020, p. 9). The name HEROES is derived from the initial topic of each lesson: Hope, Efficacy, Resilience, Optimism, Empathy, Socialization (Blumberg et al., 2020). The results of its empirical evaluation are quite impressive: Participants reported significantly reduced stress, depression, anxiety, and trauma symptoms, with effects that were statistically large and still present after two years (Blumberg et al., 2020). Moreover, the greater beneficial impact of this program was on FRs with a high level of psychological distress before training (Blumberg et al., 2020).

In conclusion, psychological training (of any kind) has an impact on FRs' well-being and is a valid and practical tool to be used in pre-emergency and emergencies. Due to the positive effects of training, it could be used also for CHFRs to reduce the stress of their first-line job, and the difficulties of working in a post-disaster scenario. Further studies are needed to understand if this kind of psychological training could help to improve CHFR's well-being, too.

5. Limitations

The present study has several limitations. First, this work does not present novel findings but reports the results of research on the current literature, which is, as noted, limited to CHFRs. Moreover, the research presented here covers a set of different roles, disaster types, and cultural contexts, which make it challenging to draw specific conclusions, besides a broad awareness that FRs are at risk of various forms of psychopathology. Besides, although CHRFs are exposed to traumas and the dramatic features of the first stages in the aftermath of disasters, future studies should also investigate the different and unique experience(s) of CHFRs (who aim at saving cultural artifacts) compared to FRs (who aim at saving human lives).

6. Conclusion

This review shows that FRs after disasters are at greater risk of a variety of mental health difficulties, such as PTSD, depression, anxiety, sleep disturbances, alcohol abuse, and suicide. In recent literature, PTSD and depression have received more attention, but studies are needed on other psychopathological manifestations, and protective and risk factors. Also, more importance should be given to the differences between various FRs, because each presents a variety of both stress sources and factor risks, that must be investigated more closely. Another issue that is still unclear is related to the time of the onset of symptoms after exposure to a disaster. Few studies to date took into consideration how long after the disaster the symptoms arose, even though it is extremely important to intervene at the first stages of symptoms to reduce their impact.

Alongside these more general data, this review also highlights that there is another group of FRs crucial for post-emergency recovery, that does not receive due consideration by the scientific literature related to post-disaster mental health consequences: we mean CHFRs, who start working before the disaster in emergency management plans and act immediately after disasters, to preserve, protect, and recover CH. Recent literature pointed out that their work is relevant not only for the value of CH itself but also for the role that it has within the local communities affected by the disaster. CH can be considered as the result of the interaction of people with

their environment, thus giving them a sense of familiar surroundings and reassurance and helping to build "community resilience".

The protection and recovery of CH are essential, especially in poorly urbanized and rural places where monuments or works of art represent an identity reference and an economic resource for the development of tourism. This protection also promotes positive action with a view to sustainability promoted by the United Nations (2015) Sustainable Development Agenda 2030 to support the developing economy of peri-urban and rural areas (Goal 11. a). Saving tangible elements of CH, such as buildings and sites, means also saving its intangible elements, i.e., the deep sense of community. However, there are no data about roles and (mental) risks for CHFRs.

Future studies on the mental health consequences of FRs after disasters should take into consideration also the category of CHFRs to explore the psychological impact of disasters on this specific group of professionals and evaluate possible differences with the other FRs. More research is needed to understand if and how psychological training could be useful to alleviate the burden of psychological distress in all FRs, CHFRs included. Our review underlines that there are some training programs, like PFA or HEROES, that are specifically designed for FRs in emergencies. Recent results seem to confirm their usefulness for FRs, thus leading us to suggest their application also for CHFRs.

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Author Contributions

DP conceptualized the project and designed the paper. AD helped in conceptualizing the project and wrote the manuscript. GG and RP helped in searching for literature and revising the manuscript. AC supervised the whole work. All authors contributed to the article and approved the submitted version.

Conflict of Interest Statement

The authors declare that the research was conducted in the absence of any potential conflict of interest.

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Appendix A

Inclusion and Exclusion Criteria of the Present Review

Study in the English language	Study not in the English language
Study on original research	Study not on original research (e.g., commentary, theoretical paper, systematic review)
Study on natural disasters (e.g., floods, earthquakes)	Study not focusing on natural disasters (e.g., excluded studies on terroristic attacks)
Study on mental health (e.g., psychological distress, symptoms of mental health problems, psychiatric problems)	Study not focusing on mental health (e.g., physical consequences)
Study on first responders (e.g., paramedics, firefighters, police officers)	Study not focusing on first responders (e.g., aiders and workers who help not immediately after the emergency)
Study looking at the relationship between natural disasters and mental health in first responders	Study not focusing on the relationship between natural disasters and mental health in first responders (e.g., study looking at psychometric properties of mental health instruments in the context of a flood)
Study is peer-reviewed	
Study focuses on humans	
Articles published between 2012 and 2022	Study is not peer-reviewed (e.g., conference abstracts)
	Study not focusing on humans (e.g., animals and plants)
	Articles published before 2012