Multisystem Resilience in Disaster Volunteers: A Review of the Literature

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Abstract. There is a growing interest in multisystem resilience within disaster studies; however, the resilience of disaster volunteers remains an underexplored area. This review aims to bridge this gap by analyzing existing studies that examine how internal and external systems influence the psychological resilience of disaster volunteers. Specifically, it addresses the question: How is multisystem resilience conceptualized and supported among disaster volunteers in the existing literature? We applied a narrative review approach and retrieved literature from the Scopus database, covering all available publication years. The analysis was supported by thematic coding using ATLAS.ti software to identify and extract key themes from the selected studies. Out of 602 articles and proceedings screened, only 11 met our inclusion criteria. Findings indicate that, compared to other forms of civic engagement, disaster volunteering is more likely to involve physical and mental health risks. At the same time, it provides opportunities to strengthen well-being and resilience. This review highlights the importance of a multisystem resilience perspective, emphasizing the dynamic interaction between internal and external systems in fostering the resilience of disaster volunteers.

Keywords: disaster; volunteer; multisystem resilience; literature review

Disasters are increasing in frequency all over the world (Mao et al., 2019). Global Natural Disaster Assessment Report 2021 revealed that the frequency of major natural disasters increased by 13% compared to the average of the last 30 years (1991-2020). Furthermore, compared to the previous decade (2011-2020), the increase in frequency reached 14% (Ministry of Emergency Management of China, 2022). As the incidence and number of disasters continue to grow with the threat of increasing climate change, disasters not only affect immediate victims but also those who witness and provide disaster relief (Costa et al., 2015; Dass-Brailsford et al., 2011; Khatri et al., 2019). When working at disaster sites, disaster helpers often face dangerous conditions, witness victims' suffering, and experience events that create serious psychological distress and problems (Khatri et al., 2019) as well as physical suffering (Guilaran et al., 2018). Understanding the experiences of disaster assistants is

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critical for improving the effectiveness of disaster management and enhancing disaster resilience.

In the literature on disaster management, various terminologies are used to describe the roles of individuals or groups involved in disaster response. Humanitarian Aid Worker (HAW) includes individuals or groups who work in organizations and provide short- or long-term assistance, such as medical or educational, and can be either professional or non-professional (Macpherson & Burkle, 2020). Disaster responders are professionals, including emergency-services personnel and relief workers, who are directly involved in the immediate response to a disaster (Brooks et al., 2016; Rodríguez et al., 2007). First responders in disasters generally include firefighters, police, and paramedics who focus on life-saving efforts at the disaster site (D. A. Alexander & Klein, 2009; Harris et al., 2018). Disaster response team trained for specific conditions, highlighting the range of capacities and responsibilities that are crucial in disaster management (Mao et al., 2020).

The definitions of the various terms above do not clearly distinguish between the roles of disaster workers and volunteers. Some authors distinguish disaster workers—who rely on formal professional careers—from volunteers, who are not tied to an employing organization when they engage in humanitarian action (Nahkur et al., 2022). Building on this distinction, the following comparison highlights the differing needs and vulnerabilities of disaster volunteers and professional responders. Disaster volunteers are individuals who contribute to disaster management based on willingness and community spirit, without formal employment ties (Badan Nasional Penanggulangan Bencana [BNPB], 2011). In contrast, professional responders such as firefighters and paramedics operate under official mandates with institutional training and support (Brooks et al., 2016; Rodríguez et al., 2007). These groups differ in role expectations, preparedness, and psychological vulnerability. Volunteers often lack systematic training and report higher stress levels than trained professionals (Foo et al., 2023; Guilaran et al., 2018), highlighting the need for resilience strategies tailored specifically for volunteer contexts.

A recent study in Indonesia on the Cianjur Earthquake response highlighted the importance of psychosocial support and stress management training for disaster volunteers (Arinta Dewi et al., 2023). The research, involving Indonesian Red Cross volunteers, found that untrained workers experienced higher stress and fatigue levels compared to trained workers. Effective stress management was associated with organizational support and good communication with family and coworkers. The study emphasizes the need for stress management training programs, psychosocial support, and collaborative leadership in improving disaster workers' mental health, particularly during crises like the COVID-19 pandemic. It also calls for further research on cultural aspects influencing Indonesian disaster volunteers' well-being.

Development of Resilience Research in Disaster

Previous studies have explored the psychological impact on disaster responders, including symptoms of stress, burnout, post-traumatic stress disorder (PTSD), and emotional exhaustion (Brooks et al., 2016; Guilaran et al., 2018; Thormar et al., 2013). These studies show that disaster exposure can cause serious

psychological impacts on responders, including stress and trauma-related symptoms. In recent years, increasing attention has been directed toward resilience as a dynamic process of maintaining and restoring psychological well-being after a disaster, which is crucial for preparedness and mitigation efforts (Bakić, 2019). The main concept of resilience in disasters has shifted from the perspective of risk to positive adaptation, then from the function of resources to resilience as a process (Bakić, 2019).

The word resilience has its roots in the Latin terms resilio or resilire, which describe the action of springing back or rebounding (Reghezza-Zitt et al., 2015). The word first appeared in the 17th century, specifically in English resilience, which was then followed by French resilire. While the word was originally used in the context of physics to refer to the elasticity of matter, over time, the concept has evolved and been extended to a variety of fields, including ecology, psychology, social, and disaster.

In 1625, the scientific use of the word resilience in the English language was pioneered by Sir Francis Bacon (D. E. Alexander, 2013). In the field of psychology, the concept of resilience was introduced in relation to child development in the 1940s by Norman Garmezy, Emmy Werner, and Ruth Smith, who focused on understanding psychopathology in children at risk (Boon et al., 2012; Herbers et al., 2021; Masten et al., 1990; Restemeyer et al., 2018; Rutter, 1987). Over the decades there has been a development of concepts related to resilience. Where initially focused on aspects of risk and vulnerability, which then shifted to positive aspects such as protective mechanisms protective factors (Rutter, 1987). Recent developments suggest that resilience is a protective process that contributes to the development of positive goals (Ungar, 2021).

Various references argue about resilience as a trait or as a dynamic process. As a personality trait, resilience is considered an innate trait that makes a person naturally able to cope with stress or obstacles. People with this resilience trait have a higher tendency to stay calm in a crisis, recover from adversity more quickly, and utilize their internal resources effectively. Furthermore, more modern approaches see resilience not only as a fixed trait but as a dynamic process that involves interactions between the individual and their environment (Ungar, 2021; Yates et al., 2015). In this view, resilience can develop and change over time based on a person's experiences and social context. This approach also emphasizes the individual's ability to learn and grow from negative experiences. In this concept, resilience is developed with the role of positive psychology in dealing with misfortune.

The concept of resilience in the context of disasters was first coined by Timmerman (1981) in an article entitled 'Vulnerability, Resilience and the Collapse of Society' (Sen, 2021). Resilience has become an important concept in risk management and disaster risk reduction (Graveline & Germain, 2022). There is a development of the concept of resilience in disasters from a passive perspective that focuses on post-disaster recovery to a more proactive approach that focuses on disaster mitigation and the future of disaster risk management. Progression in understanding resilience has resulted in a more holistic approach to disaster management, emphasizing proactive strategies and long-term planning to enhance community preparedness and adaptability.

One important concept emerged in the early 20th century in 1973 by C.S. Holling in his paper entitled "Resilience and Stability of Ecological Systems" (Holling, 1973), which shows an understanding of resilience as a process related to changes that occur involving one or more related

systems. This was the beginning of the understanding that ecological systems have adaptive capabilities to deal with change and disturbance.

Resilience theory became more widespread in social-ecological contexts in the 1990s, with a primary focus on the interactions between humans and the environment. It is used to understand how social systems and communities interact with natural ecosystems to survive natural disasters. Urie Bronfenbrenner introduced bioecological theory in the 2000s (Boon et al., 2012). It explains how interactions between various environmental systems (microsystem, mesosystem, exosystem, and macrosystem) affect a person's development. This model enhances the understanding of community resilience in disaster situations as it emphasizes that individuals need social and environmental support to cope with stress and trauma. Building on this ecological perspective, multisystem resilience refers to an individual's capacity to adapt and recover from adversity through the integrated support of internal strengths, coping strategies, and related external factors (Liu et al., 2020). This concept expands the ecological view by framing resilience as a dynamic interplay between personal and contextual resources across systems.

In the context of this review, we focus on volunteers referring to non-professional responders who voluntarily engage in activities in humanitarian assistance when a disaster occurs (Berger et al., 2011). Volunteers play significant roles that directly deal with disaster survivors. Unfortunately, the world's attention to this group is still very limited. This is evidenced by limited research on the mental health and resilience aspects of disaster volunteers, compared to other existing humanitarian actors (Foo et al., 2023). Therefore, this paper aims to explore research on disaster volunteer research specifically related to multisystem resilience literature.

Despite the crucial role of volunteers in disaster settings, their resilience remains understudied compared to other emergency responders. This gap is particularly evident in psychological research that addresses resilience from a multisystem perspective. Therefore, the objective of this review is to synthesize existing literature on disaster volunteer resilience using a multisystem framework, highlighting how individual, relational, organizational, and sociocultural systems contribute to volunteers' adaptive capacities. To guide this inquiry, the review addresses the question: How is multisystem resilience conceptualized and supported in disaster volunteers across existing literature?

Methods

Search Strategy

The method used in this study is narrative review as a method of review that can include a wide range of study and provide an overall summary (Gregory & Denniss, 2018). A literature search was conducted using Scopus. Scopus was chosen due to its comprehensive indexing of both global and regional scholarly publications, making it a reliable source for relevant and high-quality research (Baas et al., 2020). We took several approaches to compiling literature for this review. First, we searched using the following terms: disaster AND multisystem AND resilience. After the search began, only seven articles were identified. Then, we explored more with three groups of keywords. These

included: "disaster" OR "emergency" OR "catastrophe" OR "tsunami" OR "flood" OR "earthquake" OR "hazard" OR "calamity" AND "volunteer" OR "rescuer" AND "resilience" OR "psychological resilience" OR "psychosocial" OR "protective factor" OR "mental health".

The Selection and Review Process

All article citations were exported from the database into RIS and imported to Mendeley. On the second search finding, a total of 602 articles in English were identified from Scopus, all-time series. The inclusion criteria for this review were: (1) peer-reviewed journal articles published in English, (2) studies that explicitly addressed psychological aspects of resilience among disaster volunteers, and (3) articles focusing on individual or group experiences in natural, non-natural, or conflict-related disasters. Excluded were articles that (1) focused solely on professional responders or humanitarian aid workers without volunteer involvement, (2) lacked access to full text, and (3) did not include psychological or psychosocial variables.

Eleven articles met the review criteria and were included in the final review. The first author used ATLAS.ti Version 8 to review seven articles. Thematic coding was conducted through an iterative process, involving repeated engagement with the dataset to refine codes and ensure that themes were grounded in the data and reflected its full complexity (Braun & Clarke, 2022). As part of the review process, eleven selected articles were cataloged and summarized by extracting the following fields from eligible papers: author & year; title; nationality; type of disaster; method; sample size; outcome method; and findings (described in the table). The analysis was conducted by the first author, who systematically coded the data to identify recurring patterns and key themes related to volunteer resilience. Themes were developed based on the content of the studies, without applying a predetermined coding framework, allowing findings to emerge naturally from the data in line with the multisystem perspective. Figure 1 shows the article selection and review process used in this study.

Figure 1



Results

Resilience in Disaster

A total of seven studies specifically explored resilience in disaster context using multisystem perspectives. Thematic analysis using ATLAS.ti revealed that these studies conceptualize disaster resilience as the product of interactions across multiple systems-individual, relational, institutional, and cultural. As illustrated in Figure 1, multisystem resilience research integrates multifactorial and multisectoral insights to understand how systems adapt to and recover from disasters.

Figure 2

Multisystem Resilience Factor and Sector in Disaster Resilience Research (Source: ATLAS.ti)



The reviewed studies involved diverse populations, including children, adolescents, and caregivers. Five studies have investigated resilience in children and adolescents (Lomeli-Rodriguez et al., 2024; Masten, 2020, 2021; Masten & Motti-Stefanidi, 2020; Mesman et al., 2021). Two other studies explored adults in family contexts (Masten, 2021) and as adolescent caregivers (Lomeli-Rodriguez et al., 2024). This distribution of research not only reflects the breadth of contexts in which multisystem resilience is

studied but also underscores the need for a continued focus on diverse age groups to fully understand the mechanisms of resilience across different stages of life.

Resilience is defined as a multisystemic dynamic process of successful adaptation or recovery in the context of risk or a threat (Sanson et al., 2019). Disaster, such as natural disaster (Lomeli-Rodriguez et al., 2024; Masten, 2020; van Kessel et al., 2014) or non-natural disaster as COVID-19 (Masten, 2021; Masten & Motti-Stefanidi, 2020; Sanson et al., 2019), illustrate the interconnected challenges across multiple systems with multiple factors including internal factors (Masten, 2020; Masten & Motti-Stefanidi, 2020; Sanson & Masten, 2023).

The first recorded article appeared in 2015 and discussed the process of rebuilding human resilience after a natural disaster (van Kessel et al., 2014). The next publication only appeared five years later in 2020 (Masten, 2020). This suggests that there was a significant gap in research before the topic again gained attention.

It was a turning point when the concept of multisystem resilience received more intensive attention in 2021, with three journal publications scheduled for release that year discussing multisystem resilience in children and adolescents during the COVID-19 pandemic. Two of these articles still focused on child resilience in disaster situations (Masten, 2021; Mesman et al., 2021), and another explored family resilience in the context of the COVID-19 disaster (Masten, 2021). By 2024, two articles presented new perspectives. The first explores the link between climate change and resilience from a developmental science perspective (Sanson & Masten, 2023). The second was an in-depth study of adolescents and their caregivers in the context of disasters, specifically regarding psychological resilience (Lomeli-Rodriguez et al., 2024). This research demonstrates a significant development in disaster-related resilience studies, indicating thematic expansion and application of the concept of resilience in various contexts and populations.

The latest study highlights a new approach to understanding psychological resilience in the aftermath of disasters, focusing on the 2018 earthquake, tsunami, and liquefaction events in Central Sulawesi (Lomeli-Rodriguez et al., 2024). In this study, 40 caregiver-adolescent pairs (N=80) who survived the disaster were interviewed to uncover their subjective experiences of coping and adapting to the situation. Through an innovative free association technique and social representation approach, the study unearthed stories from survivors that underscored the importance of mutual support, religious beliefs, and intrapersonal psychological resources, such as the search for strength and calmness, as key pathways in facilitating psychological recovery. Thematic analysis of the collected narratives showed that there were significant differences in the aspects of resilience between caregivers and adolescents, confirming how social roles and life stages shape beliefs and practices related to resilience. Furthermore, the forms of resilience that they experience are underpinned by the sociocultural values of reciprocity and social cohesion. The results of this study show not only similarities in resilience processes across contexts but also differences shaped by social roles, stages of development, and cultural values. These findings are important to inform intervention strategies that are sensitive to the social and cultural context of disaster victims so that recovery efforts can be more focused and effective.

Across these studies, there is strong evidence that internal and external factors do not operate in isolation but reinforce each other in meaningful ways. For instance, individual coping capacities are often activated or sustained through supportive environments, such as nurturing caregivers or responsive institutions. Adolescents with stronger psychological resources show greater resilience when embedded in families and communities that emphasize shared values, communication, and cultural continuity. In other words, resilience is enabled when internal traits align with external support systems.

This dynamic interaction is most vividly illustrated in the recent study by Lomeli-Rodriguez et al. (2024), which examined 40 caregiver-adolescent pairs (*N*=80) who survived the 2018 Central Sulawesi earthquake, tsunami, and liquefaction. Through a free association and social representation methodology, the study revealed that personal psychological strengths - such as the search for inner calm, emotional endurance, and hope-were closely intertwined with external factors such as mutual support, religious practices, and culturally embedded notions of reciprocity. Thematic analysis showed variations in how caregivers and adolescents interpreted and expressed resilience, shaped by their roles and stages of life. Nevertheless, across these variations, resilience was consistently co-constructed through personal beliefs and community-based interactions.

Collectively, these findings emphasize that resilience in disaster contexts cannot be understood without considering the interactions between personal capacities and the social-ecological environment. The multisystem perspective challenges linear models of resilience by recognizing that individual adaptations are always embedded in relationships, institutions, and cultural frameworks. Understanding this interaction is crucial for developing interventions that strengthen both internal coping mechanisms and external systems of support in disaster-affected populations.

Multisystem Resilience on Disaster Volunteer

The selected articles provide an overview of research on mental health and multisystem perspective in disaster volunteer research. Mental health issues identified include Post Traumatic Stress Disorder symptoms (Gil et al., 2023; Lee et al., 2017; Thormar et al., 2016; Thormar et al., 2013), anxiety and depression (Thormar et al., 2016; Thormar et al., 2013), and other mental health issues (Karakashian, 1994).

The multisystem perspective in disaster volunteerism emphasizes the critical interaction between internal and external factors that influence volunteer resilience and effectiveness. Internal factors such as psychological resilience include Psychological First Aid interventions (Bekircan et al., 2023), which highlighted the necessity of mental health support tailored to volunteers' psychological needs to mitigate stress and prevent trauma. Furthermore, other research illustrated the significance of volunteers' motives, where altruistic reasons for volunteering can lead to better health outcomes, suggesting that personal motivations play a vital role in the longevity and well-being of volunteers (Konrath et al., 2012).

Externally, the organization and communication within volunteer operations significantly affect effectiveness and resilience. Thormar et al. in their studies, underscore the importance of

organizational factors such as role clarity, preparation, training, and supportive leadership in reducing psychopathology symptoms like PTSD, anxiety, and depression among volunteers (Thormar et al., 2016; Thormar et al., 2013). Additionally, clear and effective communication significantly enhances community resilience, indicating that both the content and delivery of messages by volunteers need strategic planning and execution (Bakti et al., 2023). The characteristics and findings of the eleven selected articles are summarized in Table 1.

Summa	try of Studies on Di	isaster Volunteer	Resilience					
ΟN	(Author,	Nationality	Type of	Method	Population	Sample size	Outcome method and reported	Findings & recommendation
	year)		disaster			(N)		
1	(Gil et al.,	Israel	Emergency,	Quantitative,	Community	N = 3,972	Health behavior: Volunteering in	Engagement in community emergency services has
	2023)		conflict	Questionnaire	volunteer		community emergency services and	been associated with substance use, necessitating
				Health			substance use	the formulation of intervention programs by school
				Behavior in				personnel prior to active volunteering (e.g., support for
				School-Aged				mental stress and substance misuse).
				Children				
7	(Tang et al.,	China	Non-natural	A	Adult	25	Psychological aspect of volunteerism:	The findings suggest that volunteers' behavioral
	2022)		disaster,	sequential	volunteer	participant	Eudemonic well-being, TPB and	attitudes, perceived control, and job engagement
			COVID-19	exploratory		interview	well-being, Job Involvement &	substantially enhance their eudemonic well-being.
				strategy		Snowball	well-being; empathy	Additionally, volunteers' ability to understand others'
				of mixed		sampling		perspectives (cognitive empathy) enhances the positive
				methodology		method		impact of job involvement on well-being, whereas
						(SSM) on		intense personal distress (affective empathy) moderates
						quantitative		this effect.
						study		
Э	(Karakashian,	Soviet	Natural	n.a	Mental	A group of	PTSD, Depression and other mental	The study addresses issues such as intergenerational
	1994)	Armenia	Disaster,		health	Armenian	health issue	trauma, self-victimization, compulsive repetition, and
			Earthquake		professionals	counselors-in-	training	roles within therapeutic relationships. It also highlights
					who	who were		the advantages of group processes and training in
					volunteered	themselves		trauma-focused volunteer work.
					to provide	victims		
					crisis	of the		
					intervention	catastrophic		
						1988		
						earthquake		
						in Soviet		
						Armenia.		

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Table 1

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Tab	le 1 (Continued	0						
Sum	mary of Studies .	on Disaster Voluı	nteer Resilience					
No	(Author, Year)	Nationality	Type of Disaster	Method	Population	Sample size (N)	Outcome Method and Reported	Findings & Recommendation
4	(Bekircan et al., 2023)	Turkey	Natural disaster: Earthquake	Quantitative RCT	Adult	N=37	PFA intervention, Stress, Psychological resilience	The study found that the stress levels of the group receiving psychological first aid were significantly lower than those of the control group. It suggests that online psychological first aid should be available to meet the psychological needs of disaster volunteers. Enhancing volunteers' psychological resilience can yield social benefits by preventing psychological traumas.
Ŋ	(V. Komlósi et al., 2015)	Hungaria	Manmade disaster, red sludge	Case report	First responders	N= 13,014 adolescents and young adults	Psychosocial intervention protocol	Psychosocial interventions play a crucial role in crisis management. However, many members of the Hungarian CMS lacked awareness of their significance. It is recommended that municipal leaders and decision-makers receive lectures or training on psychosocial processes during crises to enhance prevention strategies.
٥	(Thormar et al., 2013)	Indonesia	Natural disaster, earthquake	Quantitative	Community volunteer	N=506 Volunteer in earthquake response	Mental health issue: PTSD, anxiety, depression, SHCs Organizational factor, Role of exposure, preparation, training, tasks assigned, and support	Volunteers exhibited high levels of PTSD and somatic health complaints (SHCs) up to 18 months after a disaster, though anxiety and depression remained normal. Greater exposure and specific tasks like providing psychosocial support or distributing food increased vulnerability. A need for support was evident at six months, and insufficient support from leaders and organizations correlated with more severe psychopathology at 18 months. These findings underscore the importance of examining organizational
								factors in volunteer management.

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Tab	ole 1 (Continued	(F							
No	Author, of stuates (Author, Year)	on Disaster Volu Nationality	Type of Disaster	Method	Population	Sample size (N)	Outcome Method and Repor	ted	Findings & Recommendation
	(Konrath et al., 2012)	Michigan	п.а	Quantitative, Volunteer Functions Inventory (VFI; Longitudinal Study LFA	Older adult volunteer	N=124	Motives for volunteer association with the mortalit	y risk	Replicating earlier research, this study found that volunteers had a lower mortality risk four years later, particularly those who volunteered regularly and frequently. However, the benefits varied by motivation: volunteers with self-oriented reasons had a mortality risk similar to non-volunteers, while those with other-oriented motives experienced reduced mortality risk. This study highlights the significant impact of the motives behind volunteering on health outcomes, indicating that altruistic motives are linked to longer life among volunteers.
∞	(Bakti et al., 2023)	Indonesia	Natural disaster	Quantitative, survey	Community volunteer	N= 124 stratified random sampling.	Effect of communication consisting of communic message, on the level of resilience in facing disasters.	n factors, ator and community	The study demonstrated that both the communicator's effectiveness and the content of messages significantly influenced community resilience to disasters in Pangandaran, highlighting the importance of organizational and individual factors in communication strategies.
σ	(Thormar et al., 2016)	Indonesia	Natural disaster, earthquake	Quantitative Longitudinal survey Impact of Event Scale-Revised, the General Self-Effcacy Scale, The Social Acknowledger Questionnaire	Disaster volunteer	N= 449	PTSD Symptom, Self Effic Acknowledgement and Ta Out on disaster volunteer (M issue)	acy, Social sk Carried ental health	Millions of volunteers face a 24% to 46% risk of developing PTSD after disaster responses. The study explored the progression and variation of PTSD symptoms among volunteers who were active before (core) and those who joined after (noncore) a disaster. PTSD symptoms were evaluated at 6, 12, and 18 months post-disaster among 449 volunteers in Indonesia, aiming to identify factors influencing symptom trajectories.

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Tab	le 1 (Continued	(1							
Sum	mary of Studies	on Disaster Volur.	rteer Resilien	ээн.					
No	(Author,	Nationality	Type	of	Method	Population	Sample size	Outcome Method and Reported	Findings & Recommendation
	Year)		Disaster				(N)		
10	(Lee et al.,	Korea	Natural		Quantitative	Community	N=2,298	Factor associated with PTSD symptoms	In a study of community volunteers, 19.7% exhibited
	2017)		disaster			Volunteer,		among community volunteers (Mental	clinically significant PTSD symptoms. Factors such
						Adult		health issue)	as age, education, socioeconomic status, religion, and
									prior experiences with natural disasters were linked
									to these symptoms. Notably, volunteering itself
									was a significant risk factor for PTSD, with personal
									experiences of property damage, depression, and anxiety
									also contributing substantially. These findings underline
									the importance of implementing assessment and mental
									health support programs for volunteers to mitigate PTSD
									symptoms after disasters.
11	(Klein et al.,	French-Germa	າເກ.a		Qualitative	Citizen &	n.a	Analysis on a multi-agent system for	Effective disaster policies that integrate volunteers into
	2018)					volunteer		Studying cross-border disaster resilience	crisis management by clearly defining their roles and

responsibilities can enhance their resilience.

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Discussion

The aim of this review was to study the concept of resilience in disaster volunteerism by emphasizing multisystem perspectives in psychology literature. Since 2015, there has been a significant increase in research focusing on multisystem resilience, demonstrating the thematic expansion of the field. Yet, few studies have investigated multisystem resilience in the context of disaster volunteerism, leaving a critical gap in understanding how these systems support non-professional responders. Notably, the attention given to the interplay between psychological resilience and sociocultural factors during disasters, such as those presented by the studies during the COVID-19 pandemic, underscores the importance of context in resilience research. Integrating findings from recent studies, like those focusing on climate change and the detailed exploration of caregiver and adolescent resilience, helps in broadening the application of resilience concepts to various disaster scenarios and environmental changes. Additionally, global commitments such as the Paris Agreement, the Sendai Framework for Disaster Risk Reduction 2015-2030, and the Sustainable Development Goals by the United Nations have spurred a marked increase in disaster-related research (Mannan et al., 2021; Mysiak et al., 2018; Saunders et al., 2020).

Overall, the study underscores that volunteering in disaster contexts represents a high-risk activity, encompassing both physical and psychological challenges. The findings reveal that volunteers possess personal motives that significantly influence their efficacy and well-being (Konrath et al., 2012). However, the research also highlights the considerable mental and physical health risks associated with disaster volunteerism. This finding aligns with studies on first responders, who are also vulnerable to mental health issues, including PTSD—similar to what disaster volunteers experience (Bourke et al., 2023; Ravan et al., 2024).

The findings from the multisystem perspective on disaster volunteerism reveal a complex interplay between internal and external factors that contribute significantly to volunteer resilience and effectiveness. The integration of psychological resilience strategies, such as Psychological First Aid (Bekircan et al., 2023), and the importance of volunteers' personal motives (Konrath et al., 2012) illustrated how internal characteristics can bolster a volunteer's ability to cope with disaster-related stresses. These findings suggest that both individual psychological factors and intrinsic motivations are crucial for maintaining volunteer well-being and effectiveness during crises.

When compared with the research conducted by Ghodsi et al. (2020), which reviewed 548 articles to identify key resilience factors among disaster volunteers, there is a notable alignment and extension in the findings. Ghodsi et al. (2020) identified three critical resilience factors: individual characteristics, socio-spiritual support networks, and organizational aspects. These factors encompass a range of elements from personal attributes like altruistic motivation and adaptability, which are similar to the individual factors highlighted in our results, to broader support systems provided by social and organizational structures.

This study revealed most of the articles have been published by researchers from a variety of countries, highlighting a diverse international interest in the field of disaster volunteerism. These countries reflect a wide geographical spread and a variety of cultural contexts, indicating a global concern with and academic interest in disaster management and volunteer resilience. This international spread underscores the universal importance of effective disaster response strategies and the critical role that cultural and organizational factors play in shaping volunteer experiences and effectiveness. The presence of multiple studies from Indonesia, in particular, points to a significant focus on disaster volunteerism in a region prone to natural disasters, emphasizing the relevance of

local cultural and organizational contexts in shaping the research outputs (Bakti et al., 2023; Thormar et al., 2016; Thormar et al., 2013).

The cultural context in which disasters occur significantly influences how resilience is understood, developed, and expressed. This is particularly relevant in eastern countries such as Indonesia, where cultural norms, beliefs, and practices play a central role in shaping responses to adversity. Hechanova and Waelde (2017) emphasize the necessity of considering cultural differences in disaster research to develop more effective and culturally appropriate interventions. This perspective is further supported by L. et al. (2017), who highlight a significant gap in the current conceptualization of resilience, noting that it often fails to adequately consider the central role of culture and cultural assumptions in shaping disaster-related policies, interventions, and applications.

While this review focuses on synthesizing existing studies rather than testing interventions directly, the insights gained may offer initial considerations for improving disaster volunteer support systems. Understanding resilience as a multisystem process suggests that volunteer well-being can be influenced by a combination of individual resources and contextual support. Therefore, program designers and disaster management practitioners might consider integrating strategies that promote both internal coping—such as basic psychological first aid and stress management training—and external support, including peer connection, supervisory structures, and culturally sensitive practices. Although more empirical research is needed, these directions may inform the development of volunteer support frameworks that are responsive to the interconnected nature of resilience in disaster settings.

Although the reviewed studies offer valuable insights into resilience across multiple systems, several limitations should be acknowledged. Most research focuses on children and adolescents, with relatively little attention to disaster volunteers—particularly in low- and middle-income countries. Methodologically, many studies relied on cross-sectional designs and self-report measures and a single database (Scopus), which may limit the depth of understanding regarding long-term resilience processes. Additionally, few studies explored the cultural dimensions of resilience in diverse disaster contexts. Future research could benefit from longitudinal designs, more diverse volunteer samples, and context-sensitive frameworks that consider both formal organizational structures and informal community-based support. Addressing these gaps will help to develop more robust, inclusive, and applicable models of volunteer resilience in disaster management.

Conclusion

This review highlights the critical role of resilience in disaster volunteerism, emphasizing the complex interplay between internal factors, social-ecological resources, and individual coping strategies. Volunteers, who are central to disaster response and recovery, face numerous physical and psychological challenges that influence their well-being and effectiveness in the field. The synthesis of diverse sources confirmed the multidimensional nature of resilience and the value of examining it through a multisystem perspective.

Recommendation

Furthermore, this review calls for a more nuanced understanding of volunteer experiences in disaster settings, advocating for policies and practices that are both empirically grounded and contextually sensitive. Integrating resilience theory with practical support mechanisms is essential for developing a sustainable volunteer workforce capable of responding to the increasing frequency and complexity

of disasters.

Based on the findings, several recommendations can be offered. For practitioners, incorporating basic psychological support, encouraging peer connection, and offering reflective spaces such as informal check-ins may be beneficial for supporting volunteer well-being. In particular, integrating Psychological First Aid (PFA) into volunteer training and post-deployment protocols may enhance mental health outcomes and operational sustainability. For policymakers, developing flexible volunteer support systems that acknowledge varying local and cultural contexts can enhance responsiveness to the needs of diverse volunteer populations. For researchers, further studies are needed to explore how internal and external resilience factors operate across different disaster settings, especially involving volunteers in underrepresented regions and roles. Future research should consider longitudinal designs and multi-method approaches to capture the dynamic nature of resilience and improve contextual depth beyond self-reported data.

While this review does not test interventions directly, the insights gained suggest the value of integrated approaches that consider both individual and systemic dimensions of resilience. Such perspectives may contribute to more adaptive and sustainable volunteer engagement, ultimately supporting broader disaster risk reduction efforts.

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Authors' Contributions

YAD conceived the main idea for the manuscript and the analysis with extensive input from KS, PPD and MBFB. YAD wrote the paper with contributions and revisions from KS, PPD and MBFB, who also provided critical feedback to improve the manuscript. MBFB provided additional research support and edited the final manuscript.

Conflict of Interest

The authors declare no conflict of interest regarding the publication of this paper.

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