



# A Mapping Study of Psychological Preparedness in Dealing with Extreme Temperature Changes and Natural Disasters

Imam Setyawan  
Salsabila Arwa Sajidah  
Ayu Sabila  
Aldani Putri Wijayanti  
Kartika Sari Dewi\*

*Faculty of Psychology, Diponegoro University, Indonesia*

\*Corresponding author: Dr. Kartika Sari Dewi, S.Psi., M.Psi. Psikolog.  
Faculty of Psychology, Diponegoro University, Indonesia. Email: [ksdewi.pklinis@gmail.com](mailto:ksdewi.pklinis@gmail.com)

## Highlights

- According to several studies, the public's awareness in developing nations such as Indonesia about the causes, consequences, and remedies to problems caused by climate change and extreme temperatures is still insufficient.
- Being psychologically prepared for an emergency is a preventive approach that will help people feel more confident and prepared in the case of an emergency.
- Psychological preparedness is important because it can help a person overcome maladaptive emotions that can affect performance during a disaster and help them think clearly and rationally, reducing the risk of serious injury or even death during a disaster.
- The purpose of this study is to reveal research mapping related to psychological preparedness for natural disasters and extreme temperatures in Indonesian and non-Indonesia population groups.

## Abstract

**Background:** Natural disasters and extreme temperature changes are increasing every year in various parts of the world. Disasters and extreme temperatures have physical, material, and psychological impacts on society. Because of the local community's low psychological readiness, this impact frequently causes mental health problems. **Study Aims:** This study aims to reveal research mapping related to psychological preparedness for natural disasters and extreme temperatures in population groups in Indonesia and in non-Indonesia countries. **Method:** The method used in this study is a systematic literature review (SLR) of psychological preparedness, disaster, and climate change-related extreme temperature research. Data collection was carried out with the Pop8 software and the PRISMA chart. The research data were analyzed by bibliometric visualization and narrative analysis with the VOS Viewers software. There are 60 eligible articles for analysis. **Result:** 1) Disaster research in the world has increased in the last ten years, but there is a decreasing trend in 2020-2022 due to a focus on the COVID-19 pandemic. 2) Disaster studies in non-Indonesia countries and in Indonesia differ. non-Indonesia countries research focuses on disaster anticipation and post-disaster management. Meanwhile, in Indonesia is focusing on the psychological impact of disasters, environmental damage, and non-psychological disaster preparedness. 3) Research on psychological preparedness and risk perception in foreign countries is developing quite rapidly. In Indonesia, studies regarding the identification of risk factors and efforts to overcome disasters based on local wisdom are quite prevalent. **Conclusion:** According to the findings of these studies, there hasn't been much research on psychological preparedness for disasters in Indonesia. This indicates that the opportunity to conduct psychological preparedness research in Indonesia is still open and needed.

Keywords: Psychological Preparedness; Disaster; Extreme Temperature; Bibliometrics-Visualization

## INTRODUCTION

Extreme climate change has occurred since the 2000s in line with rapid development and environmental damage due to exploitation that does not pay attention to the balance of nature. Extreme climate change is marked by an excessive increase in the earth's temperature, erratic seasons, weather, and increased natural disasters, especially hydrological disasters (U.S. Global Change Research Program, 2016). According to the World Meteorological Organisation (WMO), 2022 will be the hottest year on record. According to the BMKG, 2022 is the 13th warmest year in Indonesia, with 2020 and 2019 ranking second and third (BMKG, 2023). Experts noted a temperature increase of up to 1.15 degrees Celsius higher than during the 1850-1900 period. Furthermore, experts say that global warming will likely continue in the future (Kompas, 2023). One of the impacts of climate change is the heat wave that recently hit all countries in the world. A heat wave is a period of maximum temperatures of 35°C or more for five consecutive days and temperatures of 40°C or more for three consecutive days (Akompab et al., 2013). Heat waves are characterized by a longer duration of heat, more than four days, with intensity of 1.5-5 times higher than a regular heat wave

Climate change and extreme heat have had several negative impacts on the sustainability of life and countless psychosocial impacts. This condition is like what happened in India, where the hottest temperature was reported to reach 46°C, which caused 300 forest fires and claimed 24,000 lives in the last 30 years (CNBC, 2023). In Indonesia, extreme heat and climate change conditions occur in almost all regions. Five cities were most affected by extreme heat in 2022, namely Semarang, Kupang, especially Sabu Island, Surabaya, and South Tangerang (BMKG, 2022). Not only in the Asian region, climate change also threatens human health and welfare. In Europe, the death rate is estimated to increase by 7.6% to 33.6% during heat waves and is estimated to increase yearly (WHO, 2009). This condition is a contributing factor to the occurrence of various natural disasters, whose impact is felt directly or indirectly. Impacts related to natural problems directly felt by the community are temperature and water absorption changes, which impact increasing heat waves, droughts, storms, and floods. Climate change, such as increasing temperatures, rainfall, and rising sea levels, also contributes to the deteriorating quality of water and foodstuffs. This ultimately leads to the severity of public conditions, both physical and mental health, such as stress or other illnesses (Balbus & Luber, 2018; Barnett et al., 2014; Center for Disease Control and Prevention, 2020; U.S Global Change Research Program, 2016).

Studies on the impacts of climate change and health reveal that climate change is one of the threats to global health in this century (Liu, 2021). Physical health problems, such as cardiovascular, respiratory, kidney, and other infectious diseases, are more prevalent than mental health problems. However, they are reported to have increased worldwide annually (Trang, 2017). In addition, there is also an increase in the estimated number of deaths and illnesses in vulnerable groups caused by heat waves. These vulnerable groups include people with chronic diseases, people with socio-economic disadvantage, children under five years of age, pregnant women, the elderly, individuals with mental health problems and mobility disabilities, as well as populations of individuals with certain diseases (Akompab et al., 2013; Trang, 2017; U.S Global Change Research Program, 2016). Individuals in this age group are prone to severe illness and even death (Ministry of Health Canada, 2011). Climate change and extreme heat also give rise to various mental health problems, such as anxiety, frustration, depression, and psychological trauma (Balbus & Luber, 2018; Trang, 2017).

Various issues regarding the health and mental well-being of individuals require special attention. This is because many mental health cases eventually claim lives when the climate

change phenomenon occurs. Heat waves have also caused death in vulnerable age groups, namely the elderly, children, and individuals with chronic diseases (Mullins & White, 2019; WHO, 2009). Unfortunately, several studies reveal that public awareness in developing countries like Indonesia regarding the causes, impacts, and ways to deal with problems due to climate change and extreme heat is still lacking (Canada Ministry of Health, 2011; Center for Disease Control and Prevention, 2020; Mullins & White, 2019). If a person develops psychological preparedness, it will help them develop physical and material readiness as well as more effective stress management (Morrisey & Raser, 2003). Quoting from the Australian Red Cross and Australian Psychological Society (2012), it is stated that a disaster is an unexpected and destructive event that can impact in various ways, disrupting lives and communities.

Therefore, psychological preparedness is important because it can help a person to overcome maladaptive emotions arising from a disaster, which have the potential to affect performance during a disaster and can help a person to be able to think clearly and rationally, which can then reduce the risk of serious injury or even loss of life during a disaster event (Fa'uni & Diana, 2020). Being psychologically prepared for an emergency is a preventive measure to be more confident and better prepared when facing an emergency. In addition, risk perception is also important in health and risk communication because it determines which hazards a person is concerned about and how they deal with them. In the context of disaster preparedness, perceptions of disaster risk include awareness, beliefs, and attitudes regarding the likelihood, severity, threat severity, and additional attitudinal factors that may reflect how one perceives the risks posed by any threat or disaster (Bo et al.leg, 2015). Thus, risk perception is an important determinant of health and risk-related decisions, such as adopting healthy and limiting unhealthy behaviors and accepting or rejecting a certain level of risk.

Disaster crises can potentially have long-term psychological impacts, they cannot be resolved simply by providing financial and medical assistance, but the most important thing is to prepare individuals psychologically to deal with these emergencies. This study aims to reveal research mapping related to psychological preparedness for natural disasters and extreme temperatures in population groups in Indonesia and non-Indonesia countries. Research mapping on psychological preparedness is expected to be a reference regarding the importance of increasing psychological preparedness as well as showing that this research can still develop and is needed.

## **METHOD**

### *Study design*

This research is a Systematic Literature Review (SLR) on psychological preparedness, disaster, and climate change-related extreme temperature research. This study's analysis technique consisted of mapping analysis with bibliometric visualization in the first stage and narrative analysis in the second stage. Data collection in this study was carried out with the help of Perish of Publish (PoP8) software to capture research related to research variables, and then a PRISMA chart was used to screen corpus articles based on inclusion and exclusion criteria. The data collection process was carried out from October 15 to 20, 2022.

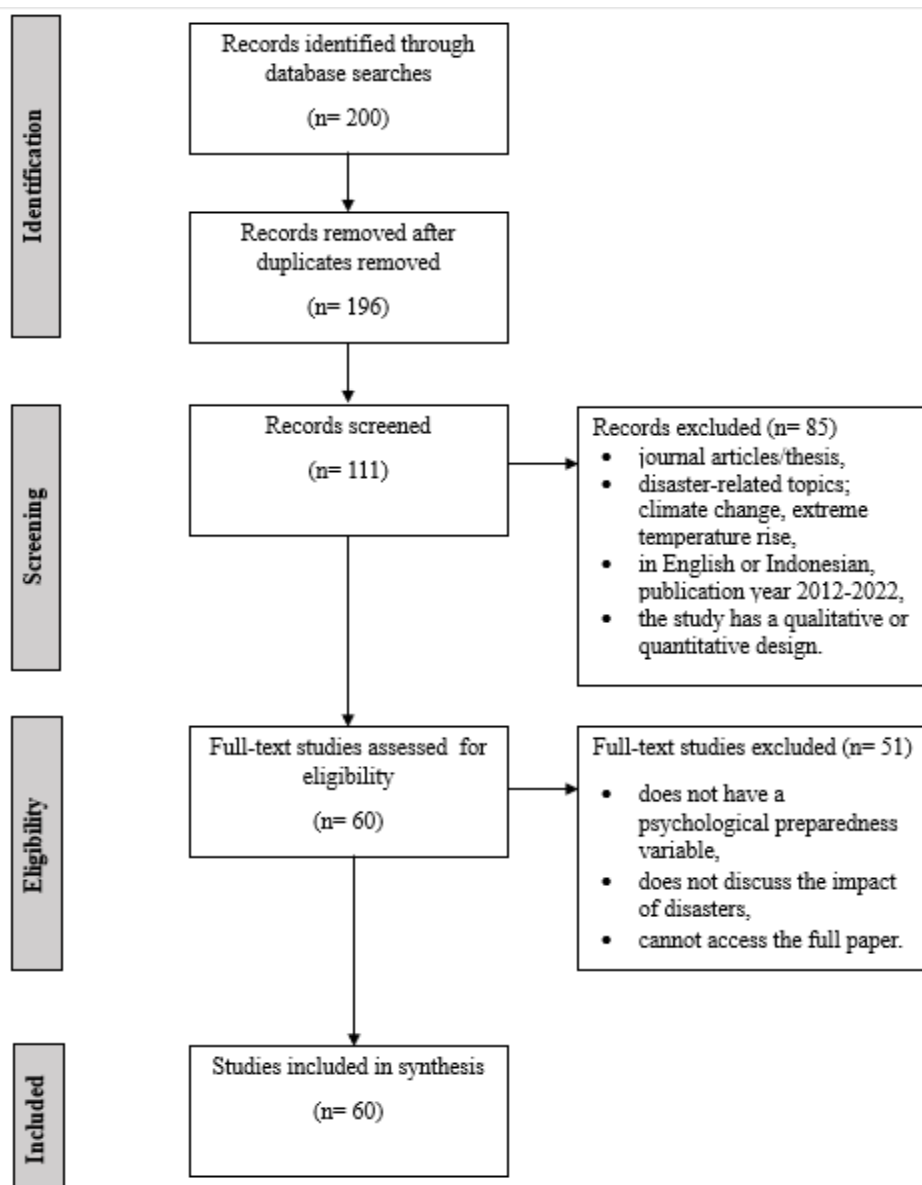
### *The criteria of corpus*

The articles included in this study are referred to as the corpus. The selection of the corpus was carried out by considering the predetermined inclusion and exclusion characteristics. Based on search results using PoP8, with bilingual keywords (English and Indonesian), 200 published

articles were found in the form of published articles in scientific journals, theses and research reports, and proceedings. The search keywords used were: "psychological preparedness", "disaster", "extreme weather", "psychological preparedness", "disaster", "extreme heat" and "risk perception". The inclusion criteria applied to the research corpus are as follows: Journal articles or theses on the topic of disaster, climate change, or extreme temperature rise, in English or Indonesian, year of publication 2012–2022, have a qualitative or quantitative design. Then the exclusion criteria imposed in this study included not having a psychological preparedness variable, not discussing the impact of disasters, and not being able to access the full paper. During the data collection stage in the field, it turned out that the Indonesian-language articles using the exclusion criteria did not have a psychological preparedness variable, causing all the shortlisted articles to fail. Therefore, the exclusion criteria were narrowed by "not having a preparedness variable".

### *Procedure*

The research procedure in this study was carried out through six stages of SLR, referring to Popay et al. (2006): 1). Identifying the review focus, searching for and mapping the available evidence, carrying out an initial mapping by identifying questions that are relevant to the theory, and mapping the literature related to the topic that is the focus of the study; 2). Specifying the review question, formulate questions involving the main components: people (participants) who are the focus, interventions, and results; 3). Identifying studies to include in the review, forming the basis of specific selection criteria, and elaborating on key review questions' key components of P8 and PRISMA chart; 4). Data extraction and study quality appraisal with VOS Viewer software carry out the processes of assessing the quality of studies and data extraction based on review questions. A review of study quality is used as a criterion to base decisions about including or excluding certain studies; 5). The synthesis synthesizes findings from a series of included studies to draw evidence-based conclusions using narrative collation; 6). Reporting the results of the review and dissemination, the completed review is then disseminated.



**Figure 1.** The flowchart in article selection

Figure 1 demonstrates the process of article selection systematically. Initially, the search found 200 but only 60 corpus articles that matched the selection criteria and could be analyzed using PRISMA guideline.

### *Data Analysis*

Data collection was carried out with the Publish or Perish version 8 (PoP8) software and the PRISMA chart. The research data were analyzed by bibliometric visualization and narrative analysis with the VOS Viewers software. The bibliometric visualization analysis technique has been widely used in research trend mapping and SLR studies on various topics, including psychology (Van Eck, N. J., & Waltman, L., 2014; Anggita et al., 2020). After going through this procedure, the analysis results are in the form of a bibliometric visualization or research mapping, as well as a narrative related to the results of previous research.

## RESULT

### *Corpus and participant's characteristics*

This study involved 22 research corpus in Indonesia, with 1,431 participants from the Indonesian population and 38 research corpus abroad, with 48,505 participants from non-Indonesia countries. Most participants in various studies regarding psychological preparedness for disasters had adult and elderly characteristics. They come from various ethnic backgrounds and have various statuses as volunteers, health and disaster relief workers, disaster survivors, post-disaster refugees, and families living in areas at risk of disasters. From a total of 60 corpora, it can be identified that 38 non-Indonesia studies consist of 3 qualitative studies, 13 non-survey quantitative studies (2 experimental, 9 cross-sectional, and 2 psychometrical), 6 mixed-method studies, and 16 survey studies. Meanwhile, 22 studies in Indonesia consisted of 12 qualitative studies, 9 quantitative studies (1 quasi-experimental, 2 cross-sectional, 6 quantitative descriptive), and 1 survey study.

**Table 1.**  
*Corpus List Research in Non-Indonesia Country and Indonesia*

No	Author name and year of study	Purpose	Study sample	Method and Instruments	Findings	Future research
<i>Research in Non-Indonesia Countries</i>						
1.	Zhang, Welch & Miao (2018)	The study looks at organized research on organizations' reactions to disastrous situations. It examines how public organizations respond to harsh weather using organizational adaptation and learning theory.	306 individuals	Survey  Vulnerability assessment and capital investment.	The findings propose a learning model of adaptation that is influenced by perception, emphasizing the significant function played by organizational risk perception in transforming environmental signals into adaptive responses within the organization.	This research prompts additional inquiries for future investigations: Do public organizations undergo transformative shifts in investment patterns over time as a result of learning from more frequent and severe events?
2.	Ashida, Robinson, Gay, and Ramirez (2016)	This study looked into the psychological factors that can motivate older people to exercise disaster preparedness using the concepts of the EPPM.	5 service providers, 5 senior citizens, 5 group trainings, and 3 focus groups later.	Qualitative	The participants cited social interactions as important resources, difficulties, and sources of inspiration. Seniors may be encouraged or given preparatory recommendations. The findings indicate two strategies to improve readiness beyond personal gains: highlighting the older age's capacity to safeguard the community and the next generation through readiness; and involving family, friends, and neighbors in readiness activities to build social networks. Senior citizens are encouraged to participate in many cultures, and creative preparing methods could help their social networks.	Further study should examine whether older adults' preparedness behaviors affect how they perceive the risks that their family and friends face as well as the benefits of being ready for how disasters will affect their loved ones and close relationships.
3.	Bradley, Babutsidze, Chai, and Rezer (2020)	Further study should examine whether older adults' preparedness behaviors affect how they perceive the risks that their family and friends face as well as the benefits of being ready for how disasters will affect their loved ones and close relationships.	The Australian sample had 3096 respondents, and the French sample had 3480.	Survey	Using information gathered from major national surveys carried out in Australia and France, the model was evaluated and improved. As expected, risk perception (indirectly), reaction efficacy (both indirectly and directly), and psychological adaptation (directly) all had an impact on behavior in both populations. Furthermore, there were noticeable direct consequences that were surprisingly large and more pronounced in the Australian group than the French sample. This study highlights the possibility for behavior impacts to differ between countries while also shedding light on the mechanisms that motivate environmentally conscious behavior. In order to encourage pro-environmental behavior, the study suggests a number of tactics, including building a green	Conducting longitudinal studies is important to look at the temporal and reciprocal interactions between the variables of interest. Additional variables like cognitive aspects (such as heuristics and biases), experiential factors (such as media exposure), socio-cultural influences (such as descriptive and prescriptive social norms), and sociodemographic predictors (such as political party affiliation) could be added to the model to improve it. The model's overall structure would be strengthened by the addition of these other variables.

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					identity, improving response effectiveness, and encouraging psychological adaptation.	
4.	Hong, Kim, and Xiong (2019)	The goal of the current study was to examine how media exposure affects how people prepare for both natural and man-made disasters.	688 adult respondents	Survey  Media exposure; Risk perception; Disaster Experience; Cooperation behaviors; Stockpiling behaviors	The findings showed that: (1) increased media exposure had a positive impact on both emergency preparedness behaviors and risk perception; (2) risk perception served as a mediator between media exposure and emergency preparedness cooperation behaviors; (3) prior disaster experiences had an impact on the relationship between media exposure and risk perception; and (4) disaster experiences mediated the association between media exposure and emergency preparedness behaviors.	
5.	Arnold, Brockdorf, Jakovljević, and Zdravković (2018)	This study looked into the connections between cultural characteristics and risk perception in both man-made and natural disasters.	108 participants	a mix approach that integrated quantitative and qualitative approaches of inquiry	In line with earlier study findings, our investigation found a tenuous link between the sense of catastrophic risk and intentions for preparedness. Focus groups and quantitative data analysis helped us identify cultural characteristics like strong family values and a sense of community. These results imply that boosting local values, common experiences, and local memories into risk communication tactics and behavioral suggestions can increase local inhabitants' readiness for disasters.	
6.	Kinateder, Gromer, Gast, Buld, Müller, Jost, Nehfischer, Mühlberger, and Pauli (2015)	The current study looks into how participants' subjective perceptions of risk and evacuation behavior change during a simulated tunnel emergency.	42 participants	Experimental method  State-Trait Anxiety Inventory; Tunnel Anxiety Questionnaire; Igroup Presence Questionnaire; Simulator Sickness Questionnaire	When dangerous goods were present, participants judged the scenario to be substantially riskier than in the control condition. Participants exhibited appropriate behavioral responses in both circumstances by either heading toward an emergency phone or an emergency exit.	
7.	Eriksen & Prior (2013)	How are a group of readiness-related messages interpreted? How even skilled wildfire management experts and volunteers mistake mostly uncontested risk warnings, and how these misunderstandings might lead to risky choices if the threat of wildfire materializes?	Sixty-seven community engagement volunteers, volunteer firefighters, and	Survey  Nine questions survey (open-ended responses)	The three main areas of the study are emotional regulation, awareness of psychological stress, and the capacity to successfully carry out a wildfire plan. Together, these components support mental preparation. According to the results, improving wildfire risk communication necessitates carefully considering how risk information is understood, communicated, and	To fully comprehend and actively engage in the conception and application of mental readiness, more qualitative study is needed.

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			the head office of the NSW RFS.		accepted by both communicators and recipients.	
8.	Mercado (2016)	In the urban poor community of BASECO in Manila, the Philippines, the research examined inhabitants' perceptions of risk, awareness of climate change, and level of readiness for natural disasters.	397 adult	Multi-Method Field Based research design  Intruments: SDK; CCA; CCC; CCRP; PCCC; CCD; SECC; RACC; EA; DRA; DRC; DRP; PCDR; DRD; SEDR; RADR; BR; AC; IE; T; GI; CN; M; C; B.	The multivariate model used to predict awareness of climate change and disaster risks and associated behaviors revealed a significant level of awareness, which positively influenced self-efficacy, distress perception concern, responsibility, resilience, and adaptive capacity. Surprisingly, risk perception had a minimal effect, while concern had a moderately negative effect on adaptive capacity. This suggests that elevated levels of risk perception and worry alone may not be enough to enhance adaptive capacity.	Subsequent investigations could assess the conceptual framework's validity regarding the significance of increasing risk perception, extending its applicability beyond resilience and adaptive capacity enhancement. It is important to determine if the conceptual framework remains relevant in diverse contexts, such as different geographical or cultural settings. Furthermore, it is crucial to examine if the theoretical model effectively applies in real-world scenarios and if its structure remains intact when examined from different perspectives, such as varying socioeconomic classes, regional disparities, or divergent Asian and Western viewpoints.
9.	Keul, Brunner, Allen, Wilson, Tazsarek, Price, Soleiman, Sharma, Roy, Aini, Elistina, Kadir, and Gomes (2018)	1) to determine whether a single survey instrument was capable of evaluating differences that developed due to culture and of testing the usefulness of a multihazard survey instrument in colloquial English in different cultural samples; 2) to investigate whether certain demographic factors (such as gender, education, or age differences) played a role in risk perception and whether this varied across cultures, spurring the development of more extensive, truly representative sample studies; and 3) to investigate statistical relationships among the key better to understand the origins of an individual's risk perception and whether this is variable between cultures (e.g., personal loss due to weather vs. subjective risk).	100 Indian sample; 104 Brazilian survey data; 80 Geman survey; 95 Israel survey; 129 Malaysian; 99 from Poland; 100 US; 105 Australian	Survey Design	Sociodemographic factors were found to be correlated with psychological variables such as knowledge, interest, and fear. Fear was associated with subjective risk, with less educated and less informed individuals displaying higher levels of fear. A linear regression analysis identified several significant predictors of preparedness, including interest, gender, housing type, education, loss experiences related to weather, and access to local weather information. The level of preparedness was observed to be highest in the United States and Australia, while the Malaysian and Brazilian samples exhibited the lowest preparedness levels. Given the lack of meteorological training and limited experiences of loss, media communication becomes crucial and highlights the importance of repetitive dissemination of basic information. Some aspects of this survey can be utilized to monitor the psychological orientations towards weather-related events among vulnerable population groups. Additionally, this survey serves as a template for larger representative transcultural studies focusing on the perception of multiple hazards.	

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10.	Hou, Du, Jiang, Zhou, Lin (2020)	Using social media surveillance data, this study aimed to assess public attention, risk perception, emotion, and behavioral response to the COVID-19 outbreak in real-time.		Survey	The research pinpointed two crucial time periods during the COVID-19 outbreak, namely December 2019 and the period between December 31st and January 19th, where opportunities for early epidemic control were missed due to limited public attention despite the emerging outbreak. The delayed dissemination of information resulted in negative public emotions. However, once the government made official announcements and provided guidelines, the public promptly responded and adhered to the recommended behaviors. The study also revealed that rumors and misinformation regarding remedies and cures led to panic buying during the outbreak. Timely clarification of these rumors played a significant role in reducing irrational behavior.	
11.	Bodoque, Amérigo, Díez-Herrero, García, Cortés, Ballesteros-Cánovas, and Olcina (2016)	The purpose of this paper is to evaluate how the residents of the village of Navaluenga in central Spain perceive the risk of flash floods as well as their level of familiarity with civil protection and emergency management strategies designed to protect people and property exposed to specific threats resulting from a flash flood occurrence.	254 adults	Quantitative method	The results of our study show that participants' perceptions of risk were not very high. In more detail, 24.4% of respondents displayed high-risk perception but low awareness (cluster 2), while 60.8% of participants showed both low-risk perception and poor awareness (cluster 1). The remaining 14.8% demonstrated strong awareness and perception of long-term danger (cluster 3). These findings highlight the significance of including social risk perception and locally tailored information in emergency management strategies, especially in metropolitan areas vulnerable to flash floods and with constrained response times.	
12.	Bourque, Regan, Kelley, Wood, Kano, and Mileti (2012)	Based on a representative sample of American families, this research examines and details the effect of risk perception on household readiness for terrorism.	A calibration sample of 1,535 and a validation sample of 1,527.	Quantitative method	The study's conclusions showed that readiness behavior is not directly impacted by risk perception. Instead, the majority of its influence is mediated by variables including knowledge, perceived efficacy, and milling behavior. We examine the theoretical and practical ramifications of these findings and offer suggestions for additional fieldwork.	Future research may take into account including these elements in the current model, with a focus on determining whether knowledge acquisition and observation of others' preparedness behaviors have any impact on elements like knowledge, response efficacy, or milling behavior. This line of inquiry would offer insightful information on the possible effects of these extra factors on the entire model.
13.	DeYoung and Peters (2016)	Despite evidence that disaster preparedness can lower the number of fatalities in dangerous occurrences, the majority of populations have	344 samples	Quantitative method	The study discovered a number of significant variables that positively linked with readiness, including self-efficacy, community, and	Future research should include focused approaches to reach additional at-risk groups, including finding community gatekeepers,

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		low levels of readiness. The current study explores how a reduced sense of community belonging, sense of place, confidence in government, preparedness self-efficacy, and risk perception connect to family disaster preparedness in order to better explain this lack of preparedness.		Mullis-Lippa Earthquake Readiness Scale.	preparedness. It was discovered that risk perception partially mediates the link between self-efficacy and readiness. The use of community connectivity (i.e., the sense of community) and efficacy in preparedness programs aiming at improving readiness within neighborhoods and households is one potential conclusion as a result of this research. To fully comprehend the function of government trust in crisis scenarios and its effects on proactive preparedness behaviors, more research is necessary.	conducting neighborhood canvassing, and using other successful tools. In order to improve the measurement of preparedness in upcoming research projects, a more thorough and trustworthy preparedness scale must also be developed.
14.	Elrick-Barra, Smith, Preston, Thomsena, and Baumc (2016)	As a result, this paper fills a knowledge vacuum in household adaptive action by using data from two coastal Australian communities.	400 completed surveys	Mixed methods research	According to our findings, families mostly focus on lowering greenhouse gas emissions, leaving a dearth of impact-oriented adaptive activities. It is thought that the prominence of coping methods discourages the adoption of adaptive responses to climate concerns. Although many variables might affect behavior, there is typically a link between risk assessment, acceptance of climate change, and taking action. However, characteristics like homeownership and a tendency to plan ahead are linked to a higher propensity for engaging in adaptive behaviors. It is essential to address a wide range of issues, including both physical elements like homeownership and social aspects like planning skills and a culture that embraces change, in order to promote increased family participation in adaptation efforts.	
15.	Gershon, Magda, Riley and Sherman (2011)	Public health experts from Columbia University's Mailman School of Public Health in New York City undertook an interdisciplinary study to better understand the variety of circumstances that may have affected the evacuation time on September 11, 2001.	1444 evacuees	Survey	The study's components covered a wide range of topics at both the individual and organizational levels. These variables included individual-level aspects of sociodemographic and occupational traits, health status, sensory cues, risk perception, propensities for delaying behaviors, and group dynamics or emergent leaders. At the organizational level, elements like safety climate and emergency readiness were taken into account. Environmental hazards also include structural challenges including obstructions in the way of evacuation	

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					routes, bad signage, clogged roads, and communication system breakdowns. It's significant because many of these factors are modifiable or addressable. To improve preparedness and response measures in high-rise situations, policies and practices can be developed using the lessons from this study.	
16.	Tang and Feng (2018)	This study explores factors influencing residents' intentions and actual behaviors following the 2016 Kaohsiung Meinong earthquake in southern Taiwan.	286 valid responses	Quantitative  A self-developed questionnaire was designed based on the modified PMT	Along with impediments, self-efficacy, response efficacy, and behavioral intentions all showed strong correlations with actual participation in disaster preparedness activities. The results of the analysis using structural equation modeling (SEM) were as follows: Behavioral intention entirely mediated the association between risk perception and response efficacy, (b) the model fit the data well, (c) and behavioral intention mainly mediated the relationship between self-efficacy and obstacles. Although behavioral intent and actual disaster preparedness behavior are related, they are separate concepts. Key elements impacting real engagement in disaster preparedness behavior include self-efficacy and barriers. Techniques like exercises or workshops can be used to improve disaster preparedness knowledge and skills and lessen implementation difficulties. The promotion of disaster preparedness can benefit greatly from the work of healthcare professionals.	
17.	Burke, Bethel and Britt (2012)	In order to identify barriers to Latino MSFWs and their families' use of community and governmental services during or after a natural disaster, this study project evaluated their knowledge of, perception of risk from, and practices with regard to disaster planning and response resources.	Qualitative (N = 21) focus groups (3) and quantitative (N = 57)	Mix method	This study supports earlier studies' results that Latinos are typically not prepared for natural catastrophes. Language problems, a lack of information, financial limitations, logistical difficulties, and apathy (i.e., the conviction that a disaster would not personally touch them) are a few of the obstacles that contribute to this lack of readiness. The effects of catastrophic occurrences frequently have a disproportionately negative effect on vulnerable communities, such as Migrant and Seasonal Farmworkers (MSFW). These results underline how crucial it is to address the particular difficulties vulnerable groups	To fully comprehend their views, states of consciousness, and unique situations, more study is required. Disaster preparedness resources must be made available in Spanish, taking into account the needs of the target community, in order to promote successful preparedness. Additionally, steps should be done to guarantee that news stories about potential disaster risks and emergency alerts are available in Spanish.

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					experience in order to increase their readiness and resilience in the case of catastrophes.	
18.	Chan, Man, Lam, Chan, Hall, and Hung (2019)	The study's major goal is to investigate the relationship between risk perception, household readiness, and the self-reported short-term effects of typhoons on urban residents.	521 respondents,	Quantitative	For the typhoon Mangkhut, 93.9% and 74.3% of the 521 respondents said they have implemented one or more typhoon-specific preparedness measures (TSPMs). Respondents who estimated a higher danger at home during typhoons and those who had previously used routine emergency preparedness measures during non-emergency periods were more likely to employ TSPMs. 33.4% of the respondents reported being affected by Typhoon Mangkhut, with 11.1% reporting effects unique to their homes. The usage of TSPMs and a decrease in immediate household impacts, however, did not appear to be related. Super typhoon effects may not be sufficiently addressed by present preparedness strategies. Urban dwellers will need health-oriented emergency disaster risk management (health-EDRM) techniques to deal with the growing frequency of extreme events brought on by climate change.	The development of pertinent, appropriate, and efficient household preventive measures for upcoming extreme weather events depends on conducting research with lengthy follow-up periods to monitor trends, community perceptions, and behavioral changes.
19.	Lo and Chan (2017)	This study intends to investigate how people's perceptions of risk and sociocultural traits influence how prepared they are for flood dangers.	485 responses	Survey	The findings support the notion that social motivation affects conduct. This emphasizes how important social networks and neighborhood interaction are to raising community flood resilience. The impact of risk-related worries is complicated, though. Although risk factors and planned behavior are not directly correlated, perceived flood damage severity is. This shows that while educating the public about risks is important, getting people to act by just playing on their fears and skepticism may not be as effective as is typically believed. These conclusions have applications for formulating policy and conveying climate hazards.	The scope of survey measurements has to be expanded, and more research is needed to look at how long-lasting household actions are. Qualitative research techniques, such as semi-structured interviews, could be used to investigate how social interactions and expectations affect hazard planning.
20.	Mashi, Inkani, Obaro, and Asanarimam (2015)	These new policies call for a deeper comprehension of how social, cultural, and political factors affect urban inhabitants' perceptions of and responses to food risks. Sadly, while creating food risk management	290 households	Survey	The results showed that most people had a reasonable awareness of the origins, consequences, and characteristics of overeating. However, there was a dearth of infrastructure for moving food, and the limited	-

No	Author name and year of study	Purpose	Study sample	Method and Instruments	Findings	Future research
		plans, the public's perception of food risk and food risk facts are frequently ignored. People's awareness and perception of flood risk, their level of resilience, their capacity for adaptation, and the social, cultural, and political factors that influence their risk perception and capacity for adaptation are all poorly understood in many places.			facilities that were already in place frequently doubled as disposal sites. Lack of cooperation was shown by the institutional players in charge of local emergency response, trash management, and physical planning. Respondents took a few modest and ill-planned steps to lessen the effects of food-related problems at the household level, but there were no community-level structures for food-related early warning systems. These elements contributed to the area's increased food dangers and decreased food resilience. The key determinants of dietary adaptation were socio-cultural and economic factors, with bigger households headed by older and wealthier people demonstrating higher levels of dietary adaptation.	
21.	McLennan, Elliott, Omodei, and Whittaker (2013)	This study looked at choices made by homeowners when wildfire concerns were present.	223 interviewees	Qualitative	The vast majority of the 223 interviewees who persisted and defended themselves did so because they believed this was their strategy for preventing wildfires and that it would work in spite of the extreme fire hazard conditions that were anticipated. Defense was successful in 79% of cases; in the other 21%, however, the house was damaged and many lives were put in danger. The majority of people who fled did so because they felt the fire was an immediate threat, and 36% of them risked their lives to flee on their own. Among the 216 people who fled for their lives, just 39% claimed that doing so was a part of their wildfire prevention plan. According to the findings, community wildfire safety programs ought to emphasize (a) the dangers of remaining to protect a property and (b) the precautions that homeowners can take.	-
22.	McLennan, Paton, and Beatson (2015)	The purpose of the study was to investigate the psychological differences between people who meant to run away and those who intended to stay and fight.	584 residents	Survey  A survey instrument was constructed in two formats, online and reply-paid postal questionnaire, with	The majority of respondents (47%) stated that they would leave if a wildfire threat existed. However, a sizable minority (24%) intended to remain and protect their homes, and 29% said they would wait and weigh their options before deciding. Those who intended to flee stood out from those who intended to remain and defend in a number of ways. In general, people who	-

No	Author name and year of study	Purpose	Study sample	Method and Instruments	Findings	Future research
				identical content.	substantive	were planned to travel showed greater levels of anxiety about prospective bushfires, believed themselves to be more exposed to the danger, and were worried about their homes possibly being destroyed while they were gone. Those who planned to defend their homes, on the other hand, were largely driven by a desire to safeguard their prized goods and had faith in the efficiency of their activities.
23.	McLennan, Paton, and Wright (2015)	By reviewing the results of seven post-bushfire householder interview surveys done by the Bushfire Cooperative Research Centre (BCRC) and the Bushfire and Natural Hazards Cooperative Research Centre (BNHCRC) between 2009 and 2014, we aim to fill this apparent gap.	1760 households	Qualitative	Homeowners had a low awareness of danger and were often unprepared for bushfires, according to the initial survey. Between 2011 and 2014, six further studies were carried out in response to community education initiatives made by fire departments in the wake of the 2009 fires. The results of these studies showed that: (a) a large portion of residents polled in the post-2010 studies did not perceive themselves as being at risk prior to the fire and had no plan in place if threatened; (b) among those who had a plan, only a minority were well-prepared to execute it, particularly if the plan involved evacuation; and (c) very few householders decided to leave on their own before the fire occurred. Significant ramifications of these results will be examined later.	-
24.	Mou and Lin (2014)	This study investigated the use of Weibo (a microblogging site) by the Chinese people as well as their cognitive, affective, and behavioral reactions to a number of food safety issues.	1,360 adult	Survey	The study found that using Weibo had an impact on people's cognitive and behavioral reactions to food safety issues, whereas access to different online and offline news sources had no significance. Compared to awareness of the events and factual knowledge, emotional responses to food safety incidents were found to be a stronger predictor of risk perception and preventative actions. The theoretical and sociological ramifications of the study are thoroughly examined.	-
25.	Mishra and Suar (2011)	The main goal of this research is to comprehend how anxious people react to risks like natural catastrophes. It investigates whether anxiety affects disaster readiness and whether resources	300 people	Quantitative	The results showed that trait anxiety had a detrimental effect on readiness for both floods and heat waves. The association between anxiety and flood preparedness was found to be slightly mediated by disaster education and	-

<i>No</i>	<i>Author name and year of study</i>	<i>Purpose</i>	<i>Study sample</i>	<i>Method and Instruments</i>	<i>Findings</i>	<i>Future research</i>
		and education for dealing with disasters act as a bridge between anxiety and preparedness.		Mullis–Lippa Earthquake Preparedness Scale	resources, but the relationship between anxiety and heat wave preparedness was totally mediated. In particular, the socio-economic and cultural circumstances of India are explored in relation to the consequences of these findings.	
26.	Onuma, Shin and Managi (2016)	This study examines how catastrophe experience affects how households prepare for natural disasters by using data that was originally obtained in 2013 in Japan.	20,726 household samples	Survey	According to the findings, exposure to disaster damage improves readiness, albeit the strength of this effect varies depending on the type of object. Additionally, prior evacuation experience affects how basic needs (BP) and emergency supplies (EP) are prepared. Although those who were impacted by the 2011 Great East Japan Earthquake (GEJE) often show improved preparation, the evacuation experience did not significantly affect readiness. It's interesting to note that some localities show lower degrees of readiness than others when it comes to major earthquake risk. These findings highlight how crucial it is for governments to address the public's lack of preparedness and raise disaster risk awareness in order to reduce the effects of upcoming disasters.	-
27.	Parsizadeh, Ibrion, Mokhtari, Lein, and Nadim (2015)	This study looks into how communities' perceptions of earthquake risk and resilience in Bam, Iran, changed before the devastating earthquake tragedy in 2003.	30 people	Qualitative	The study analyzes respondents' risk perceptions as well as the variables affecting awareness, perception, and adaptation to heat waves using a health belief model and logistic model. About 30% of peri-urban respondents knew little or nothing about how severe heat waves were. Respondents in urban areas (57%) and peri-urban areas (66%) thought heat waves posed little risk. Age, gender, education, wealth, and access to healthcare were all strongly related to how well-informed households were about heat waves. Age, marital status, and awareness of heat waves affected perception, whereas economic standing, family size, urban/peri-urban background, perceived barriers, perceived benefits, and cues to action affected adaptation to heat waves. Numerous awareness programs are required to change perceptions and promote	-

No	Author name and year of study	Purpose	Study sample	Method and Instruments	Findings	Future research
					heat wave adaptability in order to lessen the negative health effects.	
28.	Rauf, Bakhs, Abbas, Hassan, Ali, and Kächele (2017)	The current study investigates perception level and the factors that influence how Pakistanis adapt to heat waves.	251 respondents	Quantitative	The study analyzes respondents' risk perceptions as well as the variables affecting awareness, perception, and adaptation to heat waves using a health belief model and logistic model. About 30% of peri-urban respondents knew little or nothing about how severe heat waves were. Respondents in urban areas (57%) and peri-urban areas (66%) thought heat waves posed little risk. Age, gender, education, wealth, and access to healthcare were all strongly related to how well-informed households were about heat waves. Age, marital status, and awareness of heat waves affected perception, whereas economic standing, family size, urban/peri-urban background, perceived barriers, perceived benefits, and cues to action affected adaptation to heat waves. Numerous awareness programs are required to change perceptions and promote heat wave adaptability in order to lessen the negative health effects.	-
29.	Lane, Wheeler, Charles-Guzman, Ahmed, Blum, Gregory, Graber, Clark, and Matte (2013)	public awareness of heat-related actions or warnings.	719 adults	quantitative and qualitative methods.	79% of adults in the summer of 2011 were issued heat advisories. 34% of people who were elderly or in fair or poor health (24% of the population) did not have air conditioning, used it sparingly, or did not use it at all on hot days. In this group, 30% were not aware of heat advisories, while 49% preferred to stay indoors during hot weather. Due to individual preferences (29%), the fact that they didn't feel hot (18%), or other factors, some people choose to use fans instead of air conditioning. Seniors felt low risk, according to focus groups, and did not see air conditioning as a crucial health precaution. Many New Yorkers remain vulnerable during heat waves despite widespread awareness of heat warnings due to variables including the high expense of air conditioning,	-

<i>No</i>	<i>Author name and year of study</i>	<i>Purpose</i>	<i>Study sample</i>	<i>Method and Instruments</i>	<i>Findings</i>	<i>Future research</i>
30.	Hudson, Paul., Hagedoorn, L. & Bubeck, P. (2020)	Investigate the relationship between social capital and elements that are known to boost the likelihood of effective adaptation.	1010 respondents	Quantitative Survey	Look for positive relationships between social capital, general self-efficacy, and risk perception. This results is partially at odds with those of earlier studies relating similar concepts in Europe, which may be due to the different risk situation. Positive repercussions for proactive flood risk adaptation result from the absence of an overall unfavorable interchange between these components.	Focusing adaptation initiatives on boosting or maintaining a community's already-existing social capital for bonding can boost flood resilience and encourage further adaptation to flooding.
31.	Safi, A.S., Smith, W.J.S., & Liu, Z. (2012)	We investigate whether people's perceptions of the effects of climate change are influenced by their vulnerability to it.	479	Quantitative	We discover that risk perception is not much influenced by vulnerability. Additionally, danger perception is unaffected by physical vulnerability alone. The ability to adapt and be sensitive both heighten risk perception. Age is not a significant factor in determining risk perception, but gender is a key factor. However, the most important drivers of risk perception are broad beliefs like political views and beliefs particular to climate change, such believing in anthropogenic causes of climate change and relating the locally observable repercussions (in this case drought) to climate change.	-
32.	Shao, W., et.al (2017)	Examines the interactions between actual and perceived flood hazards as well as policy support for flood adaptation while taking into account social-demographic factors.	3.856	Quantitative Survey	Individuals' support for 57 adaptation measures is highly influenced by their age, gender, race, and political affiliation. It is demonstrated that one's perceptions of risk, which in turn affect one's support for both policy measures, are influenced by contextual flooding risks, which are indicated by distance from the coast, maximum wind speed, peak height of storm surge associated with the most recent hurricane landfall, 59 and percentage of high-risk flood zone per county. The main finding, that risk perception mediates the effect of contextual risk conditions on public support for flood control strategies, emphasizes the necessity to make sure that the public is well-informed about the most recent scientific and engineering developments.	-

No	Author name and year of study	Purpose	Study sample	Method and Instruments	Findings	Future research
33.	Shaw, Duncan., Scully, J., Hart, T (2014)	Examine how much a senior population exposed to the risk of coastal flooding demonstrates social resilience using both cognitive techniques, such as risk perception and self-perception, and coping mechanisms, such as accepting change and self-organization.	192 people	mixed method case study	This study demonstrates that older people's resilience and susceptibility to natural disasters vary. While negative resilience increases vulnerability, positive resilience reduces it. Vulnerability and poor resilience are lessened by cognitive techniques and coping mechanisms. When a person acts on a false notion that they are resilient, negative resilience can result. The architecture of internal resilience (risk perception, self-perception, and accepting change) is undermined when improperly calibrated; Self-organization, a hallmark of external resilience, attenuates weak internal and external resilience; Despite the fact that internal resilience complements external resilience, low external resilience cannot be compensated for; The development of external resilience is greatly aided by super-attenders.	Other research focuses include how disaster survivors perceive their surroundings and how structural resilience (such as physical reconstruction) affects their mental health. This may examine how views change, how catastrophes are remembered over time, and how these factors impact resilience and vulnerability. Finally, it could be necessary to operationalize positive and negative resilience in a research method so that academics can assess societal resilience and help governments incorporate such concepts into policy.
34.	Singh, A.S., et.al (2017)	This study investigates the relationship between support for adaption measures and an individual's perception of the effects of climate change.	653	Quantitative survey	According to our findings, policymakers should emphasize that: (i) climate change impacts are happening; (ii) their constituents are already being affected by climate change or will be in the future; and (iii) that adaptation measures can be useful in reducing the risks associated with these impacts.	-
35.	Chan, E.Y.Y., Yue, J., Lee, P., & Wang, S.S (2016)	examines the prevalence and correlates of individual and household disaster preparedness and perception of risk in urban communities.	1002 respondents	Quantitative survey	Despite the high level of danger in Hong Kong, little preparation has been made at the individual or family levels, and catastrophe perception in Hong Kong is low.	Other components of disaster health risk literacy, such as the capacity and abilities to obtain, assess, and grasp disaster-related information, will require further study. the capacity to put emergency response plans into action in order to lessen the effects of disasters.
36.	Philipp Babczyk & Sebastian Seebauer (2017)	This study intends to experimentally investigate the effects of social capital at the household level on risk perception, self-efficacy, and coping ability.	226 flood-prone households	Quantitative Self-completion questionnaires, Cognitive and affective risk perception, Self-efficacy, Previous flood experience,	Even after adjusting for sociodemographic traits, prior flood experience, and objective risk, the findings demonstrate that cognitive social capital strongly influences risk perception. Social capital is reciprocal: Positively, social capital boosts confidence in one's own abilities and offers vital assistance during, especially after, flood occurrences. Negatively, social capital alters how private households perceive their danger of flooding. While social connections are helpful in	Recognizing and promoting social capital's protective qualities in addition to more traditional structural and non-structural methods is essential for flood risk management.

No	Author name and year of study	Purpose	Study sample	Method and Instruments	Findings	Future research
					responding to and recovering from floods, the expectation of social support minimizes risk and lessens the likelihood that households will take preventative measures. The findings also demonstrate that households affected by floods receive more social support than they do in return. This can eventually result in a serious reciprocity imbalance, which puts the stability of the long-term interpersonal exchanges that underlie social capital in jeopardy. The informal social networks (neighbors, friends, and family) offer the most crucial manpower throughout the response and recovery phase of a flood occurrence among the different forms of social assistance.	
37.	Vazquez, Esperanza L & Marvin, Maria Luisa (2012)	The objectives of this study were to: a) Determine the degree of stress, the kind of locus of control (internal-external), and the kind of coping strategies (active-passive) employed by residents of a volcanic risk area, according to their level of education; and b) Determine the impact of locus of control and stress on coping strategies in relation to volcanic risk.	156 adults between the ages of 18 and 60.	Quantitative survey  Coping strategies scale (CSS), Stress scale (SS) & Locus of control scale (LCS).	The findings of this study demonstrate that certain of the variables' subscales have a distinct impact on the participants' coping mechanisms. The sociocultural components of the Mexican inclination to support passive behaviors and to encourage disengagement from social problems could potentially be used to explain these findings.	With populations exposed to natural hazards, it is crucial to continue investigating these factors as well as others, such as cognitive bias, awareness of preventive measures, attitudes, etc., in order to better understand the cognitive processes involved in risk perception and how people react to such hazards.
38.	Xu, Dingde., dkk (2016)	divides perception into individual, home, mass monitoring, and mass prevention aspects to examine influences on risk perception.	348 samples	Psychometric paradigms  Questionnaire of disaster risk perception & selected 4 indicators to measure mass monitoring and mass prevention systems	Disaster risk perception in rural families was divided into five categories: probability, dread, unknown, controllability, and danger. Dread was the most terrifying of things, and possibility was the least. The perception of catastrophe risk among peasant households received a rather low overall score. (2) The availability of mass monitoring and mass preventative systems did not change peasant families' overall perception of disaster risk when individual and household variables were fixed, but it did affect its sub-dimensions.	To determine whether it is essential to further validate the impact of mass monitoring and mass prevention systems on peasant households' perception of disaster risk in areas at danger from various types of geological catastrophes, further cross-cultural comparative studies can be conducted.
<b>Research in Indonesia</b>						

No	Author name and year of study	Purpose	Study sample	Method and Instruments	Findings	Future research
39.	Muhardina Jelita & Zikri Alhadi (2018)	In order to achieve community readiness in the North Padang District, this study explores the variables that affect the role of the disaster preparedness group during the pre-disaster phase.	8 informants	Descriptive qualitative research.	The results of this study show that a variety of factors, including motivating factors (the geographical features of the northern Padang sub-district, which are prone to disasters, the presence of local government programs for disaster risk reduction, and the existence of a social humanity owned by members of the Disaster Preparedness Group) and inhibiting factors (the lack of operational funds), affect how well the disaster preparedness group performs its role during the emergency disaster, the lack of infrastructure and facilities to support activities, the state of certain members who don't care, and the state of the local populace).	-
40.	Suswanti, Helmi Murwanto, Jaka Purwanta (2021)	Describe the preparedness of Joho Village, Prambanan District in facing wind disasters.	Snowball sampling (6 participants, consisting of 4 key persons)	Qualitative research	Internal wind catastrophe preparedness based on five preparedness criteria: knowledge and attitudes, rules and regulations, emergency response plans, early warning systems, and resource mobility.	1) Need for increased knowledge of disaster especially wind disasters by conducting socialization disaster. 2) Need to increase disaster simulation and cooperation with BMKG, BPBD, SAR, polindes/puskesmas, various elements of volunteers Prambanan district, and universities in disaster risk reduction efforts like concept pentahelix.
41.	Hodiri Adi Putra (2018)	Measuring Team Preparedness PKU Muhammadiyah Bantul Hospital Disaster Committee in disaster management.	18 person.	Descriptive qualitative research  Measurement instruments used the 2015 Hospital Safety Index criteria	The results of the study found that a hospital disaster management committee team had officially been formed by PKU Muhammadiyah Bantul Hospital to respond to disaster situations. As a disaster preparedness hospital, this is reflected in the mutually agreed upon Structure of the Disaster Management Command System. The hospital disaster team has participated in disaster training to broaden their knowledge and abilities. The hospital emergency operations center (POD) is situated in a secure, easily accessible, and protected area and is stocked with an evacuation route map, a current directory of external stakeholders, and other contacts. All employees' action plans are still being completed, presented to the director, and waiting for the decree to be issued.	-

No	Author name and year of study	Purpose	Study sample	Method and Instruments	Findings	Future research
42.	Diah Ayu S.L, Ayu P. P, Valentina B. M.L. (2017)	The purpose of this study is to evaluate the Bandung Regency Hospital's emergency nurses' preparedness for emergencies.	33 nurses registered as nurses in the IGD of Soreang Hospital and Majalaya Hospital.	Quantitative descriptive  Questionnaire using the Emergency Preparedness Information instrument	According to the study's findings, 85% of nurses are moderately prepared for disasters; the event command system dimension had the highest mean score (3.16) and special populations had the lowest (2.80). The nurse's readiness to be considered moderate suggests that she is already prepared, particularly in the event command system. Nevertheless, there are several aspects that are still lacking, specifically special populations. This might be the case since the maintenance of the special population requires the most attention, and poor maintenance will have an adverse effect on their subsequent lives. Therefore, a handling training program might be carried out with a special population to satisfy these needs.	In an attempt to intervene correct, further understanding is needed related to special populations, for example for nurses handling training program can be carried out special population during a disaster.
43.	Kalpana Kartik & Yaslina, Metti fry agustin (2018)	This study intends to ascertain the relationship between knowledge, skill, and the Ibn Sina Yarsi Islamic Hospital Bukittinggi's emergency room policies installation room.	24 nurses.	descriptive method correlation with quantitative methods.  Questionnaire with the instruments used in the questionnaire research.	The execution of the disaster response phase was judged to be 85%, nursing ability 45%, and hospital policies 66.7% based on the analysis' findings. It was determined from this study that there was a significant association with having a p value of 0.001. The implementation of hospital policies for the crisis response phase and knowledge have no relationship to one another.	-
44.	Yoody Taloko & Ahwan Ismadi, Haryono (2018)	Describe the Sam Ratulangi Air Force Base's contribution to the North Sulawesi region's implementation of disaster management in order to support OMSP task.	8 sampel	Qualitative approach	increase the professionalism of the Sam Ratulangi Air Force Base soldiers in supporting natural disaster relief, enhance organizational capacity and operational management in support of natural disaster management, increase cooperation in education and training on natural disaster management, and complete facilities and infrastructure, including budget support, through requests to the top command and local government	-
45.	Intan Rahmawati & Lusy Asa Akhrani (2020)	This research discusses more about ecological intelligence.	30 Ranupani Elementary School students,	Qualitative	Students at Ranupani Elementary School continue to refer to environmental issues as the littering issue without describing the different ecological challenges that can result in catastrophe. These findings demonstrate the importance of intellect from an early age in Ranupani Village.	-

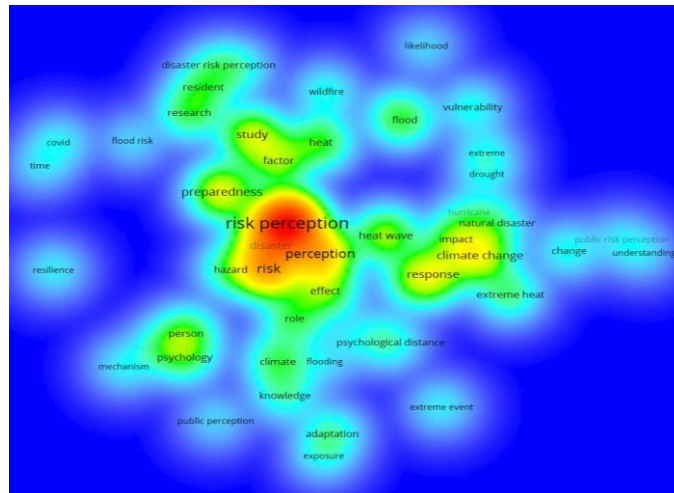
No	Author name and year of study	Purpose	Study sample	Method and Instruments	Findings	Future research
46.	Indar Irawan, Moch.Afifuddin & Siswo Pudjiatmoko (2018)	This study aims to examine four topics: the role of Kodim 0810/Nganjuk, Kodim 0810/Nganjuk preparedness, Kodim 0810/Nganjuk disaster mitigation, and pre-natural disaster management variables.	8 sampel	Qualitative.	Preparedness of Kodim 0810/Nganjuk is carried out by means of outreach, introducing and explaining how to anticipate disasters, contingencies, namely actions after there are early warning signs of an impending disaster threat, and Posko Training. Disaster mitigation is carried out in coordination with BPBD, installing signs, etc. includes all steps taken to reduce the scale of future disasters.	-
47.	Novie Amaliah Selvyana & Dwi Rahmah Fitriani (2021)	This study sought to ascertain the association between prior experience and young flood preparedness in Samarinda.	606 people.	Correlational descriptive. Questionnaire Filling.	This research can provide information to students and related institutions to understand the importance of training to increase flood preparedness.	This research can be used as a reference for carrying out broader research on the experiences of adolescents in dealing with flood disasters.
48.	Ananto Aji (2015)	Evaluating the preparedness of the people of Welahan District in dealing with flood disasters, both during the pre-disaster, when the disaster occurred, and after the disaster occurred.	30 respondents	Correlational Descriptive	The results showed that the preparedness of the people of Welahan Village and Ketileng Singolelo Village at the pre-disaster stage was classified as low, even according to sources (village officials) it was classified as very low. At the disaster stage (response emergency) and post-disaster (reconstruction and rehabilitation) are classified as moderate. Preparedness for flood disasters, which is still in the low-medium range, needs to be improved so that in the future the community will be more alert and even resilient in dealing with disasters. Welahan Village and Ketileng Singolelo Village have the potential to become alert villages and even disaster resilient villages flood.	Training and disaster socialization with coverage expanded, so that all people have be highly prepared for disaster.
49.	Sudrajat Satriyo Wibowo (2016)	In this study, it will be determined whether junior high school students in Bantul Regency 1) comprehend disaster management, and 2) have a general grasp of earthquake disasters.	99 respondents from all students of class IX.	Quantitative	The study's findings indicate that: 1) The respondents have a solid awareness of disaster management, with 72% of them being aware of the different types of natural disasters and the likelihood that one may affect their region; 2) Among other things, disaster management is described as follows: respondents are prepared to deal with disasters in accordance with protocols by avoiding victims as much as possible (77%). This preparedness is demonstrated by the respondents' understanding of how to use the school's treatment room (88%), follow the evacuation	-

No	Author name and year of study	Purpose	Study sample	Method and Instruments	Findings	Future research
					route (88%), and assist other victims when it is safe to do so (88%).	
50.	Hiryanto, Sri Iswanti & Kartika Nur Fathiyah (2015)	This study aims to 1) Describe various knowledge sourced from local wisdom that is owned by the elderly in seeing signs of the presence of natural disasters in DIY. 2). Scientifically examines the knowledge of the elderly in DIY about signs of natural disasters based on local wisdom.	14 informants	Qualitative approach	The findings indicated that, based on the accounts of the informants who had been affected by the various types of natural disasters that had occurred in the Special Region of Yogyakarta, including volcanic eruptions, earthquakes, landslides, floods, tornadoes, and tsunamis, local knowledge about the warning signs of natural disasters held by elderly residents is inconsistent with some scientific findings. The knowledge that older inhabitants hold has been verbally passed down through the centuries from their parents regarding the warning signs of natural disasters to their children and grandchildren.	The application of local wisdom by the community in reducing risks, dealing with and surviving natural disasters
51.	Ahmad Bahrudin, Nely Indra Meifiani, Urip Tisngati (2021)	This study aims to determine: (1) book development procedures planting pocket of local culture-based disaster mitigation education; (2) level the effectiveness of the development of a pocket book in planting disaster mitigation education.	5 high grade students at SDN 2 Sironoboyo	research and development (R&D) with a 4D development model	(1) Using the 4D model application process, local culture-based disaster mitigation education was established. (2) Pocket book media planting can improve students' knowledge about disaster mitigation.	Develop a product that is better at another subject matter or at a level different educational units.
52.	Dewi Kurniawati (2020)	This study was done to better prepare for disasters and raise public awareness.	200 respondent	quantitative descriptive.	The study's findings indicate that the community still does not have a high level of awareness about floods and landslides. The need of being aware of floods and landslides has not been adequately socialized in their area's official and non-formal institutions for disaster mitigation.	Create unique programs related to disaster mitigation such as programs disaster-ready weekly gymnastics routine. Then, formal good government and non-formal to create community aware of the disaster that conduct socialization regularly to the people in Sei District Bingai and Secanggang District.
53.	Dewi Amaliyah Wahidah (2016)	Examining the variables that affect nurses' ability to respond to floods in the Gumukmas sub-district of the Jember district	16 nurses	descriptive analytic, cross sectional approach  individual differences, self-regulation, health care setting and preparedness (EPIQ) questionnaire	Length of work variable is the most dominant factor influencing nurse preparedness. These results indicate that the more length of work a nurse has, the higher the nurse's preparedness.	-
54.	Farlina P. Longkutoy & Monalisa Sitompul (2020)	The purpose of this study is to ascertain the level of knowledge among Parongpong Adventist primary school children on	34 students and grade 5 and 6	quantitative with pre-experimental research design	Knowledge of action before the earthquake disaster in Parongpong Adventist Elementary School students in West Bandung Regency increased significantly. Principals need to	Include disaster material in learning and teaching process in schools.

No	Author name and year of study	Purpose	Study sample	Method and Instruments	Findings	Future research
		precautions that should be taken in the event of an earthquake.	elementary school students.		include disaster material in the learning and teaching process in schools to increase students' knowledge in dealing with disaster risks that might occur.	
55.	Arsi Susilawati (2018)	Investigate the sociodemographic, educational, and behavioral, and practical aspects of disaster management.	The sample size is 211 samples (doctors, nurses, midwives) in 9 puskesmas	cross sectional design. KAP DM Questionnaire	The majority of health professionals are knowledgeable, have sufficient experience, and have a poor attitude toward crisis management. Education level and site of employment were strongly correlated with knowledge, attitudes, and practices in disaster management among the sociodemographic variables examined.	Develop it in the form of research methods or research designs others with a larger number of samples so that the results can be used as reference material for further research regarding the factors that affect disaster preparedness.
56.	Afrizal Novan Nurromansyah1 & Jawoto Sih Setyono (2014)	Describe changes in preparedness efforts that occur after the implementation of the Flood Early Warning System (FEWS) program.	6 sampel	qualitative	The study's findings demonstrate that efforts to comprehend disasters, mobilize resources, set up early warning systems for flash floods, and get ready for preparedness planning all lead to changes in readiness. There is a shift in the paradigm of disaster mitigation efforts as well as in the sources of information and knowledge that go into comprehending disasters. Aspects of the availability of disaster teams, command procedures, institutional roles, institutional structure, aspects of communication and coordination schemes, agreements on the use of tools, and management of communications outside of and within the region all changed as a result of preparation efforts related to resource mobilization.	-
57.	Dahnial Anggriawan (2018)	This research discusses regarding disaster mitigation activities and handling flood victims in Aceh Singkil District.	4 informants	descriptive method with qualitative analysis	According to the research findings, information on disaster victims, disasters that have happened in Aceh Singkil Regency, mitigation initiatives that serve as a kind of community protection before a catastrophe, and the care given to victims as a form of community protection after natural disasters are all known. The Regional Disaster Management Agency has done a great job of protecting the community in Aceh Singkil District both before and after the disaster, but BPBDs need to reach out to the community more frequently and adopt disaster mitigation initiatives that haven't been done yet.	-

<i>No</i>	<i>Author name and year of study</i>	<i>Purpose</i>	<i>Study sample</i>	<i>Method and Instruments</i>	<i>Findings</i>	<i>Future research</i>	
58.	Rahma Deti Husna (2016)	This study aims to determine the readiness of the response team disaster at the Pariaman Regional General Hospital in dealing with the year's disaster 2016.	17 informants	descriptive phenomenological strategy	qualitative	The findings indicated that the general hospital in the Pariaman region already has an organizational structure for a disaster management team, but that the team structure needs to be updated; that there is already a TRC team for human resource readiness, but that the RHA team and the Health Assistance team have not yet been established; and that the hospital's facilities and infrastructure have not yet been put in place. enough to handle mass casualties. The hospital already has a mechanism in place for exchanging information, so that's not a problem.	-
59.	Rugun Togianur Lingga (2021)	Learn about the community's attitudes and expertise regarding how to handle a tornado disaster in the Sumbul District, Regency, and Dairi 2021.	50 person.	analytical (explanatory research) questionnaire knowledge disaster	survey about public	There is a significant relationship between community knowledge and the handling of the tornado natural disaster in Sumbul District, Dairi Regency in 2021	Deepen research on the tornado natural disaster by adding other research variables.
60.	Nurlambang., dkk (2013)	1. Supporting planning and policy making in the implementation of disaster management, especially extreme weather; 2. Increasing the knowledge and skills of all stakeholders in implementing disaster management; And 3. Support efforts to reduce vulnerability and increase community capacity towards disaster resilience.	-	Qualitative		The results of this study were used as material for consideration in drafting the 2015-2019 National Disaster Management Plan for Extreme Weather, including its strategic plans and program priorities.	-

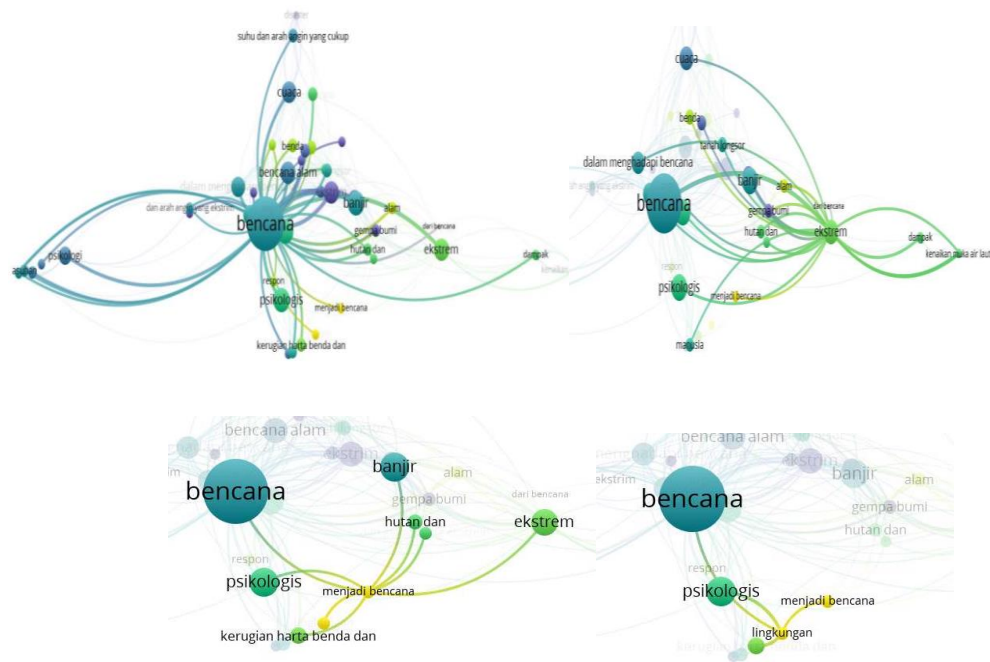




**Figure 3.** Distribution Map of Disaster Research in Non-Indonesia Countries

The distribution map in Figures 2 and 3 explains above that research in Indonesia has covered the topic of disasters in general since 2013 until now, which is colored by several studies on psychology before the disaster and extreme temperatures. Meanwhile, research outside Indonesia has a focus on risk perception, climate change, preparedness, and psychology.

In more detail we can observe Figure 4 below, it was revealed in research in Indonesia from 2013–2022, to further study the psychological impact of disasters such as floods and extreme environmental damage. The psychological impact is discussed as an indirect impact of physical and property losses due to natural disasters. There are not many studies related to psychological preparation except regarding disaster mitigation and staff readiness, as well as how to empower local communities to be resilient to extreme situations and disasters.



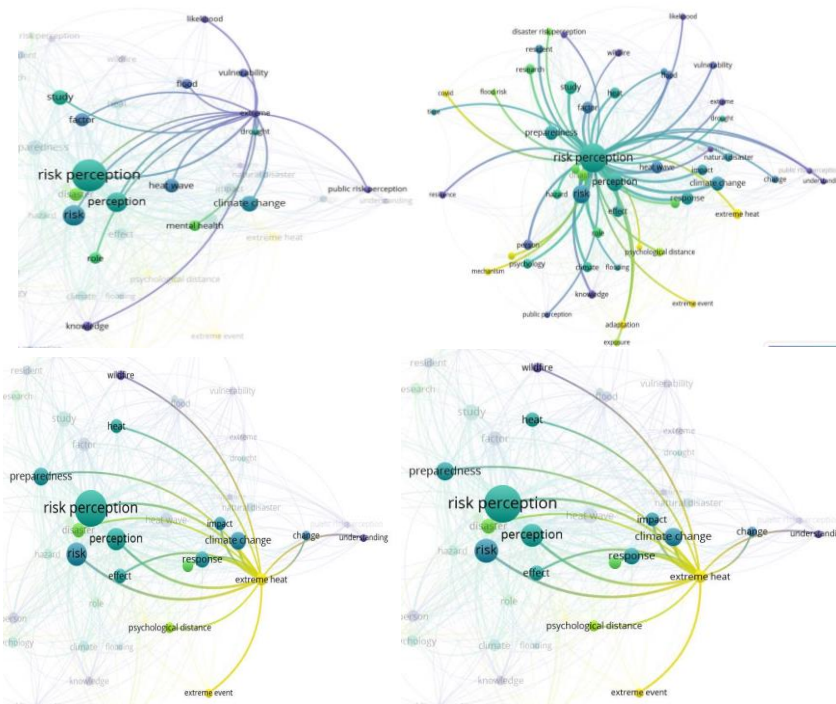
**Figure 4.** Distribution of Research in Indonesia Related to Disasters in 2013-2022

**Table 2.**  
*Distribution of Research in Indonesia Regarding Disaster*

<b>Years</b>	<b>Variables</b>
2013-2015	<i>Bencana, Bencana Alam, Ekstrim, Dampak Psikologis</i>
2016-2017	<i>Bencana, Bencana Alam, Banjir, Cuaca, Ekstrem, Psikologis, Gempa Bumi Tanah Longsor, Banjir.</i>
2018-2022	<i>Bencana, Banjir, Ekstrem, Psikologis.</i>

By studying the table of trends in disaster preparedness research in Indonesia in Table 2 above, it can be said that studies on the psychological impact caused by natural disasters have been studied since 2013, but this psychological condition is seen as an indirect impact of the loss of property experienced by disaster survivors. The disasters observed in this study are more likely to explain natural disasters, especially those caused by extreme natural damage, climate disasters, and earthquakes. There are very few disaster studies that reveal disasters caused by human activity, psychological preparedness, and risk perception related to disaster risk areas.

This trend is different from what is happening outside Indonesia, especially in the United States, Europe, Australia, and Asia in general. Many studies on risk perception have been carried out since 2012, even though it is not yet a saturated topic in disaster studies. Even though it declined in 2020–2022, due to the shift in focus to the COVID-19 pandemic, studies on disaster risk perception are still quite advanced. In the 2012–2015 period, many risk perception studies were associated with the type of disaster, climate change, mental health conditions, as well as factors related to community behavior related to disasters, as shown in Figure 8 on the top left. Meanwhile, in the 2016–2018 period, many disaster studies linked risk perception to the condition of vulnerable groups, preparedness, and individual and group responses to disasters. The types of disasters studied are also increasingly diverse, such as floods, extreme climate change, and heat waves. Whereas in the 2020–2022 period, apart from the COVID-19 pandemic, disaster studies are entering a trend of researching psychological distance, adaptation, and preparedness, especially psychological preparedness.



**Figure 5.** Distribution of Research in Non-Indonesia Countries Related to Disasters in 2012-2022

Trends in studies outside Indonesia can be observed more clearly in Table 2 below. Based on the mapping, it is revealed that the trend of disaster research abroad is that they have been concerned with the topics of risk perception associated with mental health since 2012 until now. Studies related to preparedness have begun to develop since 2016, along with studies on vulnerable groups and community responses to disasters. The trend has shifted more to discussing the COVID-19 pandemic in 2020–2022, but studies related to disaster risk perception, preparedness, and adaptation of residents in disaster areas are still a topic that is being widely researched.

**Table 3.**

*Distribution of Research in Non-Indonesia Countries Regarding Disaster*

Years	Variables
2012-2015	Risk perception, heat wave, climate change, mental health, factor, flood.
2016-2018	Risk perception, preparedness, heat wave, climate change, vulnerability, flood, hazard, extreme heat, response.
2019-2022	Risk perception, preparedness, response, adaptation, climate change, extreme heat, psychological distance, COVID-19.

*Narrative analysis results*

The purpose of narrative analysis is to enable the investigation of similarities and differences between studies, exploration of relationships in data, and assessment of the strength of evidence, which results in summaries of knowledge related to specific review questions that can be used to inform practice or policy (Popay, 2006). In this study, narrative analysis is aimed at uncovering investigations of similarities and differences between studies and exploring relationships in data, which results in summaries of knowledge related to specific review questions that can be used to inform practice or policy.

Based on this description above about the characteristic of a corpus, it can be explained that research on psychological preparedness for disasters and understanding of risk perception in Indonesia is more dominated by qualitative research that seeks to describe the psychological conditions of participants related to disasters and explore solutions from local wisdom related to disasters. While research outside Indonesia refers more to survey and quantitative methods regarding the psychological condition of the community related to their behavior towards disasters, attitudes within groups and organizations, as well as modeling disaster management strategies and preparedness. Experimental and psychometric research in the development of measures of psychological preparedness for disasters is also carried out. In addition, the lack of qualitative methods does not mean that in-depth exploration of disaster-risk populations is no longer carried out, but more qualitative studies are carried out as a series of mixed-method research.

Non-Indonesia countries research (outside Indonesia) in 2012–2022 mostly examines types of disasters, which include natural disasters and man-made disasters. Natural disasters are widely studied, such as floods and tidal floods (rob), climate change and bad weather, extreme temperature rises and heat waves, droughts and food shortages, earthquakes, typhoons, volcanic disasters, as well as forest and bushfires. Meanwhile, man-made disasters that are widely discussed in research abroad are the COVID-19 outbreak and terrorism. In addition, the focus of the research carried out is more on exploring and testing the antecedents that influence people's behavior toward disasters. The antecedents of community behavior can be divided into two groups: personal antecedents and antecedents within the scope of the organization or society. In terms of personal antecedents, it seems that more researchers are trying to reveal psychological antecedents such as belief, locus of control, coping strategies, psychological preparedness, cognitive strategies consisting of risk perception and awareness of disasters and their impacts, sense of community, sense of place, trust in government, and disaster preparedness self-efficacy. The antecedents of community behavior associated with the organization or community are cultural differences, emergency management strategies, organizational adaptation, food security management, socio-economic status, and media exposure.

Disaster studies in Indonesia explore more about natural disasters, such as floods, tornadoes, and earthquakes. This research relates its study to disaster preparedness and revolves around exploring the factors that influence the role of disaster preparedness groups in the pre-disaster period, describing the extent of preparedness of officials and the community, as well as the mitigation carried out in areas at risk of disaster. The factors studied ranged from personal factors, such as knowledge about disasters, understanding of disaster mitigation, and signs of natural disasters based on local wisdom. Meanwhile, external factors on disaster preparedness examine more studies on the effectiveness of developing disaster education media, studies on the Flood Early Warning System (FEWS) program, studies on policymakers, and community capacity building towards disaster resilience. Although not much, some studies reveal the understanding, capabilities, and policies of related organizations, such as military agencies, health services, and non-profit organizations. An interesting and unique topic that is used as a strength of disaster studies in Indonesia is the diversity of participants, from elementary school children to the elderly, as well as efforts to elevate the constructs of local wisdom and the ecological intelligence of the local community.

## DISCUSSION

This study aims to reveal research mapping related to psychological preparedness for natural disasters and extreme temperatures in population groups in Indonesia and in non-Indonesia countries outside Indonesia.

Disaster studies in non-Indonesia countries and Indonesia differ. Non-Indonesia country's research focuses on disaster anticipation and post-disaster management. Meanwhile, Indonesia is focusing on the psychological impact of disasters, environmental damage, and non-psychological disaster preparedness. Research on psychological preparedness and risk perception in non-Indonesia countries is developing quite rapidly. In Indonesia, studies regarding the identification of risk factors and efforts to overcome disasters based on local wisdom are quite prevalent. Disaster studies outside Indonesia have studied in more depth the role of disaster risk perception on mental health since 2012. The topic of preparedness, especially psychological preparedness, has also begun to be discussed in studies starting in 2016 until now. It appears that researchers are beginning to realize the role of psychology in human efforts to manage disasters and reduce the risk of the disaster itself. In Indonesia itself, from 2013 until now, the psychological side has been widely researched, but it is limited to the impact experienced by survivors of natural disasters. Nevertheless, there are efforts to reveal the role of community awareness and how local wisdom plays a role in disaster preparedness.

The importance of psychological preparedness in disasters has been revealed in various previous studies. Psychological preparedness is not only needed for vulnerable and disaster-affected groups but also for volunteers. This was revealed in the SLR study conducted by Byrne et al. (2020) on COVID-19 pandemic volunteers for medical students, who explained that it turned out that most of the volunteers were not ready to face pandemic conditions due to a lack of knowledge about the disaster and also psychological preparedness in carrying out their volunteer duties. In his recommendations, there is a need to develop infrastructure to facilitate psychological preparedness for volunteers as well as provide education and training to ensure they are sufficiently prepared to perform this role safely.

On the community side, Hahn et al. (2022) revealed that psychological preparedness and perceptions of disaster risk are related to the mental health conditions of disaster survivors. It was revealed that the population that experienced natural disasters in the last 5 years compared to people who did not experience disasters had higher rates of poor mental health conditions, poor physical health, and high blood pressure in a greater number of people, and higher rates of people with asthma. The incidence of this general poor health outcome increases by 1–2% each year in a disaster-affected community. This is due to the absence of disaster prevention program and their impacts, disaster risk preparedness, and the slow pace of post-disaster recovery programs. SLR studies related to individual personal modalities in terms of psychological preparedness and perceptions of disaster risk in crisis management analysis appear to align with this study's findings.

Mao, Hu, and Loke (2022) explain that the attributes of disaster resilience are identified in terms of personality, perceived control, self-efficacy, coping strategies, and receiving social support. The antecedents of disaster resilience are disaster events and disaster preparedness. The consequences of disaster resilience are psychological well-being, post-traumatic growth, and increased work engagement. This conceptual analysis defines the concept of disaster resilience that can contribute to the development of standardized screening or assessment tools and customized training programs to strengthen disaster resilience among those willing to be mobilized to engage in disaster relief work and those already engaged in such work.

Ebi et al. (2021) describe that extensive research conducted before, during, and after disasters can improve assessments of population health and health system vulnerabilities and capacities, as well as aid in evaluating the effectiveness of integrated disaster risk management and adaptation strategies. Examples include city-level early warning systems, community intervention programs, individual-level occupational health interventions, and initiatives to build health facility resilience.

Although understanding psychological anguish can result from knowledge of the growing hazards posed by the environment and experiences with climate inaction, significant emotional reactions can also spur climate action. There are several ways to help people and communities address climate change. Evidence-based therapies must take into account the various and linked routes of climate change and their impact on mental health factors. Appropriate action that prioritizes climate justice can lessen the burden on mental health now and in the future while also enhancing the environments that support well-being and equality (Lawrance et al., 2021).

## **CONCLUSION**

Over the past decade, research on global disasters has shown a tendency to increase, focusing on various topics such as identifying types of disasters, exploring the mental health aspects associated with disasters and their impacts, understanding the dynamics of vulnerable groups, and examining adaptability and psychological mechanisms following extreme weather events. However, between 2020 and 2022, disaster research seems to decline, which can be attributed to a shift towards more specific research related to the COVID-19 pandemic. There are disparities between disaster studies conducted in Indonesia and non-Indonesia countries. Indonesia's emphasis is still primarily on studying the psychological effects of disasters, environmental damage, and disaster mitigation. Conversely, studies in non-Indonesia populations have increasingly focused on disaster anticipation, post-disaster management, community resilience, and mental health recovery. Since 2015, vulnerable populations have also been extensively discussed in global disaster research. Research on psychological preparedness and risk perception has progressed rapidly. Studies aimed at addressing non-material issues following disasters and enhancing community preparedness have also gained traction. The perspective of coexisting with unfriendly natural phenomena and the notion that disasters can be managed to minimize casualties and maintain community well-being seem to serve as the underlying basis for this research. Today in Indonesia, research primarily revolves around identifying various disaster risk factors related to geographical location, demographic conditions, and other non-psychological circumstances. Interestingly, aside from non-psychological preparedness and disaster mitigation, there has been a significant body of research exploring local wisdom in managing and responding to disasters.

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## **CONFLICT OF INTEREST**

The authors declare there are no conflict of interest.

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