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How does social capital facilitate community disaster resilience? A systematic review

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Introduction: Community disaster resilience has emerged as a significant research topic within the domain of disaster risk management. One promising approach to enhance community disaster resilience lies in fostering social capital participation within the framework of community disaster risk management. However, there is currently limited systematic evidence illustrating how social capital facilitates community disaster resilience.

Methods: A comprehensive search of the electronic databases yielded a total of 1,021 papers deemed to be relevant to the topic under investigation. Using rigorous inclusion criteria, this study identified 24 studies that met the final review requirements. Based on this foundation, this paper demonstrates how social capital facilitates community disaster resilience through a systematic review utilizing thematic content analysis.

Results: This study identifies five critical mechanisms through which social capital facilitates community disaster resilience, including (1) social learning, (2) collective action, (3) disaster preparedness, (4) information communication, and (5) moral or civic responsibility. Furthermore, social capital mechanisms for enhancing community disaster resilience are observed across social (man-made) and natural disaster scenarios.

Conclusion: These findings provide valuable guidelines for risk management practice by social capital to improve community disaster resilience: (1) enhance community residents' risk perception and social learning capacity; (2) reinforcing offline face-to-face and social media-based disaster risk communication; (3) placing greater emphasis on the capacity for community collective action and disaster preparedness.

KEYWORDS

social capital, community disaster resilience, risk management, thematic synthesis, systematic review

1 Introduction

In recent years, floods, droughts, earthquakes, public health emergencies and other emergencies have increased frequently, causing enormous loss and damage worldwide (Awad et al., 2020). In 2011, the 9.0 magnitude earthquake in Tohoku, Japan, killed over 18,500 people and displaced nearly 500,000 people (Aldrich and Meyer, 2015). In 2013,

Typhoon Yolanda ripped through the Philippines, killing more than 6,000 people and causing extensive damage estimated at hundreds of millions of dollars in damage (Aldrich and Meyer, 2015). In 2015, Hurricane Katrina caused at least 1836 deaths and resulted in a total economic loss of 125 billion dollars (Zakour et al., 2017). As of October 13, 2024, the COVID-19 public health outbreak had caused 776,618,091 infections and 7,071,324 deaths worldwide (WHO, 2024). The frequency of disasters such as those mentioned above has had a profound impact on the daily lives of community residents around the globe, resulting in a significant number of casualties and substantial economic losses. Therefore, it is paramount to implement effective community disaster risk management strategies and enhance community disaster resilience.

The practice and academia in disaster governance have led to an increased focus on social factors (Okada et al., 2018; Seng, 2013), and the concept of "community resilience" has gained popularity in the field of risk management (Warner, 2020). Community disaster resilience has emerged as a prominent research subject of urban resilience and community resilience. Originating from the field of ecology, community disaster resilience is defined as the enhancement of a community's capacity to prepare, absorb, recover, and more successfully adapt to actual or potential adverse events in a timely and efficient manner (Chen et al., 2020). Given that government and international aid may not always reach communities immediately after disasters, these communities must establish self-reliance mechanisms (Nakamura and Kanemasu, 2020). Social capital is recognized as a role and intervention in strengthening the capacity for better community risk reduction (Lo et al., 2015; Nakagawa and Shaw, 2004; Sanyal and Routray, 2016). Scholars are increasingly directing their attention toward the positive effects of social capital on enhancing community disaster resilience (Aldrich and Meyer, 2015; Carmen et al., 2022; Liu et al., 2022). Social capital can promote community cohesion, thus strengthening the capacity of communities to respond to emergencies, including information, search and rescue, sheltering, child care, financial resources, and emotional support (Aldrich and Meyer, 2015). Many scholars have conducted analyses of the significant role of social capital in community disaster resilience across different cycles of disaster management, including mitigation, preparedness, response and recovery (Adger, 2010; Goulden et al., 2013; Kumari and Frazier, 2021; Pelling, 1998; Sadri et al., 2018). It is clear that governance for community disaster requires social capital to increase community resilience and social capital has become an critical policy option for building community disaster resilience in risk management.

Although social capital is a central concept in risk management and disaster resilience research and practice, there is no consensus on its definition (Beilmann et al., 2018; Jeong et al., 2021; Rupasingha et al., 2006). Social capital is a multidimensional concept, and distinguishing types of social capital help analyze the mechanisms by which social capital works. Social capital can be conceptualized in functions and dimensions (Abunyewah et al., 2023). Concerning the function, the concept can be categorized into three typologies: (1) bonding, (2) bridging, and (3) linking social capital (Szreter and Woolcock, 2004). Bonding social capital is the connection between groups with similar characteristics, values, and goals while bridging social capital involves individuals and groups with different socioeconomic and other characteristics (Putnam, 2004; Granovetter, 2000). Linking social capital can be seen as having a relationship across power and authority gradients in society (Szreter and Woolcock, 2004). Other studies pointed out that trust, norm, network and participation are shown as elements for bonding social capital; bridging social capital might be with different stakeholders like other communities, non-governmental organizations (NGOs), and universities; linking social capital is usually with local administration (Nakagawa and Shaw, 2004). By dimensions, social capital is conceptualized as structural (social structure) social capital, cognitive (shared understanding) social capital, and relational (nature and quality of relationships) social capital (Almedom, 2005; Ansari et al., 2012). This paper uses the functional and dimensional classification of social capital described above for the subsequent analyses.

Despite this vital role of social capital in community disaster resilience, the extant literature has not systematically studied how social capital contributes to community disaster resilience in risk management. Links between social capital and community resilience are not well understood across different types of disaster contexts (Partelow, 2021). Resilience is recognized as an adaptive dynamic process and a set of capacities, and there are multiple mechanisms by which social capital influences community resilience, involving various social processes and varying over time and with different participants in different disaster situations. Based on original research with the explicit objective of community resilience improvement, this paper seeks to answer the question "How does social capital facilitate community disaster resilience?" by conducting research through a systematic review approach. This qualitative systematic review, grounded in risk management theory, goes beyond the question of "what works" to ask the question of "how and why" social capital works and provides speculative explanations of causal chains that may benefit policymakers working to improve community disaster resilience. Furthermore, this study endeavors to analyze the possible moderating variables in the process where social capital affects community disaster resilience, which will facilitate providing evidence for the selection of moderating variables in future empirical studies.

2 Method

This paper used a qualitative systematic literature review research methodology, focusing primarily on the qualitative evidence found in original studies. Various synthesis methods have been developed by scholars, such as meta-ethnography, meta-narrative, textual narrative synthesis, grounded theory, framework synthesis, critical interpretive synthesis, ecological triangulation, "fledgling" approaches and thematic synthesis (Barnett-Page and Thomas, 2009).

To answer our research question, we employed a thematic synthesis approach. The systematic review was executed using the protocols established by the Cochrane Qualitative and Implementation Methods Group. The identification and selection process of studies strictly adhered to the guidelines provided by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement (Page et al., 2021). The Prisma flow diagram is shown in Figure 1.

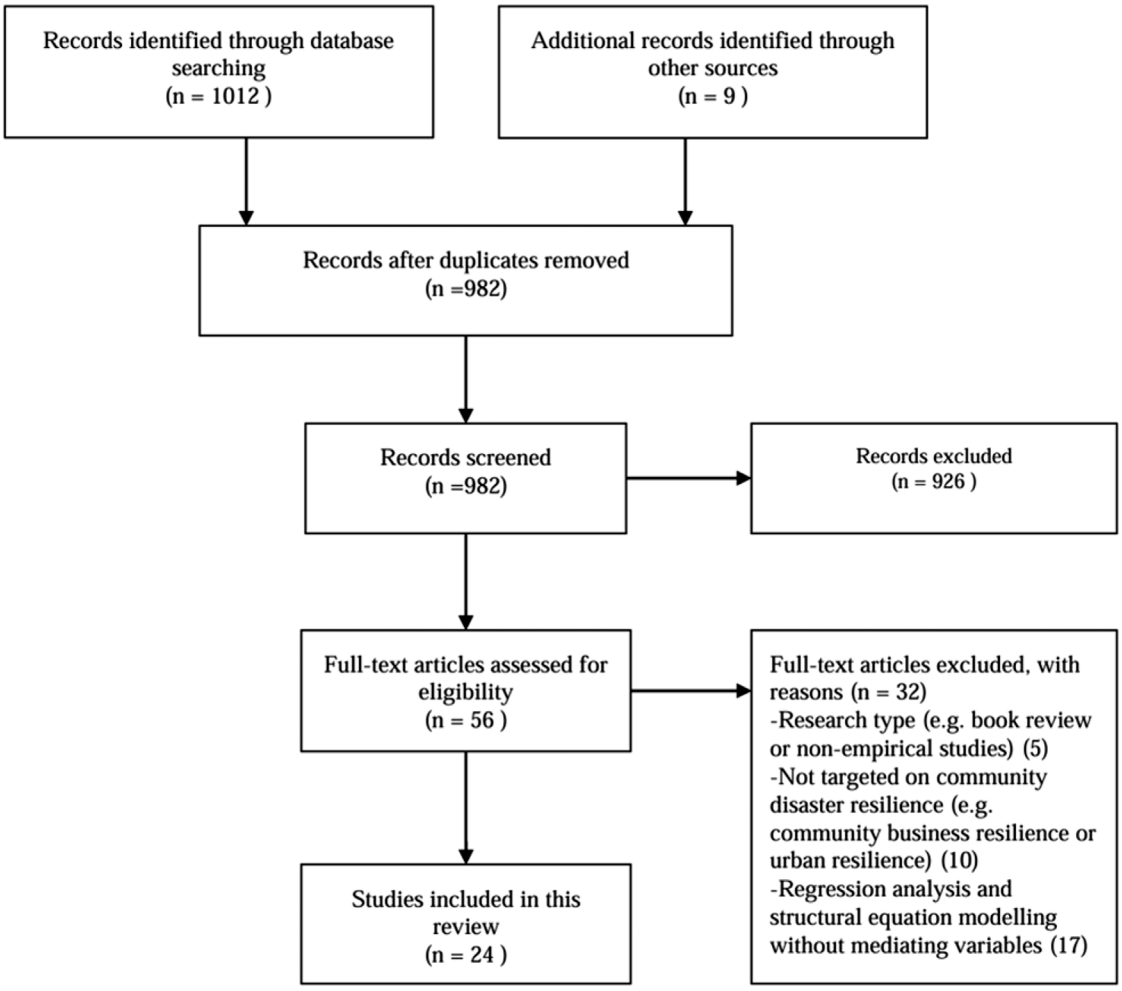

FIGURE 1
The Prisma flow diagram.

2.1 The hypothesized causal chain

A substantial body of research has consistently emphasized the pivotal role of social capital throughout all stages of disaster risk management (Shah et al., 2024; Straub et al., 2020). In this review, we integrate scholarship on social capital and risk management to explore the mechanisms of how social capital can facilitate community disaster resilience. Risk management contributes to the generation of performance and value, with resilience being considered one of the outcomes and performance of risk management (Thekdi and Aven, 2016). In disaster risk management research, social capital often directly affects community resilience (Guo et al., 2018). Still, it may also be an indirect effect, mediating the relationship between social capital and community disaster resilience (Rayamajhee and Bohara, 2021). Drawing from the risk management process theory by Fone and Young (2005) and Van Staveren (2009), this study will illustrate mechanisms focusing on three distinct aspects: risk perception related mechanisms, risk response related mechanisms and risk communication related mechanisms (Fone and Young, 2005). The hypothesized causal chain between social capital and community disaster resilience is shown in Figure 2.

For disaster risk management, the following three questions can be used to summarise the different types of mechanisms for increasing community disaster resilience: (1) risk perception related mechanisms: how do changes in risk awareness, stemming from knowledge acquisition and dissemination, influence attitudes and behaviors in risk management; (2) risk response related mechanisms: which behavioral mechanisms underlines processes of community disaster resilience improvement; and (3) risk communication related mechanisms: which mechanisms elucidate indirect changes at individual or macro levels, such as trust or cohesion, and so forth (Zhang et al., 2021). For example, risk communication can indirectly contribute to community disaster resilience through strengthening trust (Karami and Keshavarz, 2023; Rayamajhee and Bohara, 2021).

2.2 Search strategy

A comprehensive literature search was conducted through electronic databases using a broad search term strategy to identify and collect relevant studies. The keywords used in the

FIGURE 2
The hypothesized causal chain.

primary search were: (social capital) AND (resilien*) AND (communit*). The Science Citation Index Expanded (SCI) (2000.01 - present); Social Sciences Citation Index (SSCI) (2000.01 - present); Arts & Humanities Citation Index (A&HCI) (1990 - present); Conference Proceedings Citation Index - Social Science & Humanities (CPCI-SSH) (2000 - present); Wiley InterScience (1997 - present); and SAGE Journals Online (1965 - present) are included in the electronic literature data for searching. All databases were searched from 1990 to December 31, 2023.

2.3 Inclusion and exclusion criteria

Our research question was, "How does social capital facilitate community disaster resilience ?" The review includes original empirical studies investigating the relationship between social capital and community disaster resilience. The following 5 criteria were employed for the inclusion and exclusion of studies:

(1) Studies with the explicit goal of improving community disaster resilience were included, while those without improved outcomes were excluded. Social capital can produce negative externalities (Witvorapong et al., 2015), which could potentially exert an adverse influence on community resilience (Morsut et al., 2022a; Shah et al., 2024), such as the embezzlement of relief supplies. Therefore, papers that study the negative impact of social capital on community resilience alone were excluded.
(2) Studies with community disaster resilience as an outcome variable were included, while other community resilience was excluded, for example, community business resilience was excluded.
(3) Studies that examined community disaster resilience were included, while studies focusing on national disaster resilience or urban disaster resilience were excluded.
(4) Quantitative studies that analyzed the relationship between social capital and community disaster resilience with a mediating role were included, while quantitative studies that only analyzed the relationship between social capital and community disaster resilience without a mediating role were excluded. To illustrate, during the pandemic, social capital facilitated community resilience through collective action (Prayitno et al., 2022), which served as a mediator role, and such studies were included.
(5) Studies not written in English, non-empirical studies (philosophical studies, meta-analyses, systematic reviews, book reviews), or abstracts were excluded.

Studies were imported into EndNote 20 for screening. Two authors independently screened the titles and abstracts to identify studies for inclusion. Any inconsistencies were discussed with the lead authors to reach a consensus. In addition, the authors screened all full texts to guarantee that some critical papers and important information were not omitted.

2.4 Data extraction and analysis

This qualitative analysis included studies using content analysis along the causal chain to identify, categorize and consolidate evidence. The hypothesized causal chain of the social capital in risk management was used for analysis. Consequently, the results and discussions from the included studies were extracted and grouped according to the hypotheses shown in Figure 2. Two authors extracted all data sets independently using a predetermined data extraction form, and any conflicts were resolved in consultation with the third author.

The specific analysis process is as follows:

(1) We extracted and identified data from the original empirical study's research area, data collection, research methodology, types of community disasters and types of social capital as background information.
(2) We extracted the changes that followed social capital in each study listed as mechanisms in Table 3. Some of these original studies explicitly mention the mechanisms through which

TABLE 1 Characteristics of the included studies.

Study	Country/ Region	Study areas	Disaster type	Data collection	Methodology	Analysis
Abunyewah et al. (2023)	Ghana	Old Fadama, an informal settlement	Flood	Structured questionnaire survey	Quantitative methodology	Structural equation model
Panday et al. (2021)	Nepal	Three remote Nepali communities of Sindhupalchok and Gorkha Districts	Earthquake	Participatory video, semi-structured key informant interviews and focus group discussions	Case study	Thematic analysis
Cai (2017)	Philippines	Three disadvantaged communities	Climate hazards	visual narratives, observations, and semi-structured interviews	Mixed-method qualitative analysis	Narrative analysis
Robertson et al. (2021)	Scotland, United Kingdom	A range of community projects across Scotland	Extreme weather-related events, accidents, terror attacks, shortages of power/ heat/water, political events and loss of jobs	Workshops utilized the snowball sampling technique	Case study	Thematic analysis
Liu et al. (2022)	China	Three typical communities in Nankai district, Tianjin	Flood	Face-to-face interviews and structured questionnaires	Quantitative Methodology	Structural equation model
Karami and Keshavarz (2023)	Iran	Eight villages in Zanjan province	COVID-19	Face-to-face interviews	Quantitative Methodology	Structural equation model
Elliott et al. (2023)	United States	Breweries along the North and South Carolina coast	Hurricane	Observation, interviews and Autoethnography	Mixed methods	Content analysis with autoethnographic natural experiment
Prayitno et al. (2022)	Indonesia	Pujon Kidul Village three hamlets	COVID-19	Literature, agency studies, questionnaires, interviews, and observations	Quantitative Methodology	Confirmatory factor analysis and structural equation modeling analysis
Rayamajhee and Bohara (2021)	Nepal	Sindhupalchowk, Basbari	Earthquake	Face-to-face interviews	Quantitative Methodology	Structural equation modeling analysis
Feinberg et al. (2023)	Netherlands	KasKantine in Amsterdam	environmental, socio-economical, or sanitary crisis	semi-structured interviews; online questionnaire	Agent-based simulation model and case study	Computer simulation
Posio (2019)	Japan	Yamamoto	Earthquake and tsunami	Unstructured interviews, informal discussions, observations, and participation	Ethnographic fieldwork	Thematic analysis
Tippens (2020)	Congo	Various Congolese neighborhoods and three different neighborhoods in Nairobi	Political Violence	Participant observation method and semi-structured interviews	Ethnographic research methods	Thematic analysis
Alonge et al. (2019)	Liberia	Communities in Bomi, Margibi and Montserrado	Ebola virus disease epidemic	Key informant interviews and a national stakeholders meeting	Qualitative study	Thematic analysis
Nakamura and Kanemasu (2020)	Fiji	Four remote communities in Fiji: Delakado, Namacu, Rakiraki, and Bukama	Tropical Cyclone	Semi-structured interview	Case study	Narrative analysis
Wu and Chen (2023)	Taiwan, China	Cinsbu, an Atayal community	landslide-related hazards	Focus groups and in-depth Interviews	Case study	-
Cox and Perry (2011)	Canadia	Two rural communities affected in British Columbia	Wildfire	Researcher participant observations, local news	A critical, multi-sited ethnographic approach	Grounded theory and critical discourse analysis

(Continued on following page)

TABLE 1 (*Continued*) Characteristics of the included studies.

Study	Country/ Region	Study areas	Disaster type	Data collection	Methodology	Analysis
				media accounts and solicited (i.e., interviews)		
Cuthbertson et al. (2023)	Australia	A small agricultural community	Bushfires	Semi-structured interviews and closed questions	Mixed methods	Thematic analysis and quantitative analysis
Moreno et al. (2019)	Chile	El Morro, a small fishing community	Earthquake	Semi-structured interviews, observation, informal conversations, documentary reviews, and social media	Case study	Thematic analysis
Partelow (2021)	Indonesia	The island of Gili Trawangan	Earthquake	Qualitative interview, survey, and participant field observations	Mixed research methods	Content analysis and descriptive analysis
Straub et al. (2020)	United States	Oklahoma communities	Tornados, wildfires, hail, extreme winds, tropical storms, ice storms, blizzards, floods, and even earthquakes	Depth interviews	Qualitative research methods	Thematic analysis
Zeballos-Velarde et al. (2023)	Peru	Community around the Colca Valley	Volcano	Participatory workshops, focus groups and Structured questionnaire	Mixed method	Content analysis, multiple linear regression analysis and cluster analysis
Madsen and O'Mullan (2016)	Australia	A small community in rural Queensland	Flood	Photovoice, survey and community oral history	Qualitative study	Thematic analysis
Mutch (2023)	New Zealand; Samoa, Japan, Nepal and Vanuatu	Community schools in Asia-Pacific countries	Earthquakes, tsunami, Cyclone, COVID-19 pandemic	Open-ended interviews or activities, semi-structured audio or video interviews	Longitudinal qualitative study	Thematic analysis
Yang and Wu (2020)	Taiwan, China	Meizhou Community, a flood-prone, rural, and aging community	Flood	Long-term fieldwork, interviews, and participatory observation	Case study	--

social capital facilitates community disaster resilience, which we have extracted directly. Others did not explicitly mention "mechanism", so we read between the lines to find statements that alluded to the mechanism.

(3) Themes were classified and generated based on the hypothesized detailed mechanisms and causal chain using theme synthesis. It should be noted that the boundaries between different mechanisms are not always clear all the time, and our research team discussed this before the lead author made the final decision.

(4) Combining the included literature, several moderator variables were identified and categorized based on intervention and respondent characteristics.

3 Results

3.1 Study descriptions

A preliminary literature search yielded 1,021 articles deemed potentially pertinent to our research topic. The process of screening the literature was as follows:

(1) After deduplication using Endnote software, 982 unique documents were retained.

(2) After reviewing the titles and abstracts, a total of 926 documents were identified as irrelevant to the research topic under investigation and subsequently excluded, resulting in a final selection of 56 relevant documents.

(3) Upon full-text reading of the remaining 56 documents, 32 were excluded due to the type of study or the fact that they did not address community disaster resilience.

The remaining 24 studies were ultimately included in this study (Figure 1). The fundamental characteristics of the included studies are presented in Table 1. Among the 24 included studies, the majority were conducted in Asia, with ten studies originating from this region. Additionally, there were three studies each in North America, Oceania, and Africa, and two studies in Europe and South America, separately. More specifically, two studies each were conducted in Indonesia, Nepal, Taiwan (China), Australia and the United States, and one each in China, Scotland, the Netherlands, Iran, the Philippines, Japan, Chile, Peru, Ghana, the Congo, Liberia, Fiji and Canada. Additionally, there was also one cross-national study.

TABLE 2 Statistics on the type of social capital of the studies included in the literature.

Types of social capital	Content	Frequency	Percent (%)
Bonding	Close ties between people going through similar situations – e.g., family, close friends	15	62.50
Bridging	Looser ties to similar people – e.g., online	13	54.17
Linking	The ability of groups to access resources from beyond their immediate community	13	54.17
Structural	Social structure, density of social networks and membership, and participation in groups and associations	8	33.33
Cognitive	Shared understandings, perception of trustworthiness, reciprocity, and support	9	37.50
Relational	Nature and quality of relationships	9	37.50

3.2 Types of community disaster

Multiple different types of disasters were researched across the included studies. Twenty-four studies were included in this study, 19 of which focused on natural disasters, including climatic disasters, landslide-related disasters, cyclones, bushfires, earthquakes, tsunamis, hurricanes, tornados, ice storms, and so on. Earthquakes were the most frequently studied disaster, followed by floods. Additionally, four articles in the included literature examined biological disasters, such as COVID-19 and the Ebola virus, while two articles examined man-made disasters, such as political violence and terrorist attacks.

3.3 Types of social capital

As numerous scholars have noted, social capital can manifest in various forms and dimensions, each with distinct effects on community resilience (Matsukawa and Tatsuki, 2018; Nakagawa and Shaw, 2004). For this discussion, the study employs the widely accepted typology of bonding, bridging and linking social capital as outlined by Woolcock (2001) and the classification of structural, cognitive and relational social capital as outlined by Nahapiet and Ghoshal (1998) to statistically analyze the social capital involved in the included literature studies.

Table 2 demonstrates that over half of the articles analyzed in the included literature focused on the process of bonding, bridging, and linking social capital with community disaster resilience. The data presented in Table 2 and the reviewed literature indicate that bonding, bridging and linking social capital positively influence community disaster resilience. Governments, businesses and NGOs are all involved in the process of promoting disaster resilience in communities. It is worth noting that bonding social capital is the most common form of social capital at work during disasters, occurring 15 times and accounting for 62.5% of the total. This indicates that individuals depend on their close social networks, such as family and friends, to cope with and alleviate disaster-related impacts. Furthermore, over one-third of the articles in the included literature analyzed the processes by which structural, cognitive and relational social capital positively influence community disaster resilience. Overall, the included literature provides empirical research evidence that different dimensions of social capital positively impact community resilience processes.

3.4 How is social capital operationalized for community disaster resilience?

This section synthesizes the causal pathways through which social capital may positively influence community disaster resilience outcomes. Based on the included literature, we extracted the information in Table 3. Through the changes induced by social capital in community action, this study identifies the salient mechanisms and outcomes by which social capital facilitates community disaster resilience. Based on the indicators of community disaster resilience presented in Table 3, social capital facilitates community disaster resilience, encompassing the preparedness phase, response phase, and recovery phase, yet excluding the mitigation phase.

Moreover, Table 3 presents the desired outcomes for the role of social capital in each of the included studies, which can be categorized into five types. Further detailed information on the links between social capital and community disaster resilience can be found in Figure 3.

In general, the specific mechanisms through which social capital positively affects community resilience can be categorized as follows: (1) Social learning, (2) Collective action, (3) Disaster preparedness, (4) Information communication, and (5) Ethical or civic responsibility.

In the context of disaster risk management, providers of social capital include community residents, community organizations, governments, businesses, and NGOs, among others, as shown in Figure 4. The rationale for the impact of social capital on the development of community disaster resilience depends on how they mutually assist each other and enhance understanding of the risk by resource sharing and communication, and how they bolster the ability to respond effectively to disaster. Owing to its many benefits, social capital has been recognized as an enabler of community disaster resilience by enhancing disaster preparedness and collective action capacity, leading to information communication and social learning, and promoting moral and civic responsibility. Based on the above analyses, combined with the three aspects of the hypothesized causal chain in Figure 2, this

TABLE 3 Identification of salient mechanisms and outcomes of the included studies.

Study	Changes induced by social capital in community action	Indicators of community disaster resilience	Potential moderating variables
Abunyewah et al. (2023)	Flood preparedness	Adapt and return to functional communal life; use resources to facilitate resilience	Socio-demographic characteristics such as gender, age, *etc.*
Panday et al. (2021)	Saving lives, sharing food, building temporary shelters, providing emotional support, mutual aid, building houses	Individuals and communities to access the resources needed for relief and recovery after a major disaster	Socio-cultural status of the study populations, geographic accessibility, livelihood, migration and gender
Cai (2017)	Dialogues within the community, emergency rescuing, house rebuilding, providing material aid and support services, learning across participatory communities, group discussions, and information delivery	Preparation, response, adaptation, and recovery	Economic income
Robertson et al. (2021)	Social ties and connections, shared memory, shared responsibility, collective thinking, adapt and cultural change, communications, social support, training and exercises	The continuous process of adaptation and development/maintenance of the key features would mean greater resilience in the face of an extreme event	-
Liu et al. (2022)	General trust	Disaster response ability (individual ability, neighbor ability, community ability)	Age, gender, family status, education status and years of living in the community
Karami and Keshavarz (2023)	Physical isolation, intimate relationships, information diversity, and social support	Capability to overcome the COVID-19 pandemic	Demographic information
Elliott et al. (2023)	Provide informal space, share information, and provide emotional support	Disaster recovery	-
Prayitno et al. (2022)	Community collective action	Community resilience, knowledge of COVID-19, community security, availability of health protocol facilities in the village, and community perceptions of assistance and contributions	-
Rayamajhee and Bohara (2021)	Trust, post-earthquake collective action	collective action, reconstruction and recovery	Socioeconomic, ethnic, and cultural backgrounds
Feinberg et al. (2023)	Volunteer involvement, perceived trust, and social cohesion, adaptability	Mitigate the effects of future environmental, socio-economical, and sanitary crises	-
Posio (2019)	Enforce a sense of community, place	Reconstruction and community-building	-
Tippens (2020)	Sense of belonging, preparing traditional food, hosting community meetings, emotional support, informational support, substantive support	Community capacity to address political violence and their ability to access socioculturally meaningful resources	-
Alonge et al. (2019)	Bonds and sense of kinship, trusted communication channels, and trust among various health system stakeholders	Address health shocks like EVD outbreaks	-
Nakamura and Kanemasu (2020)	Community support, collective action, providing food and building materials, rebuilding damaged houses, nursing the wounded back to health, traditional knowledge	Adaptive capacity, disaster response and recovery	Socio-cultural resources
Wu and Chen (2023)	Establishing a disaster management organization, food preparation, delivery of community risk maps, mutual assistance, social learning, traditional knowledge	Hazard preparedness, disaster Response, and short-term recovery	-
Cox and Perry (2011)	Facilitate the sharing of information, maintain additional support, restoring a sense of belonging and community	Recovery and reconstruction	-
Cuthbertson et al. (2023)	Provide local knowledge, enhance disaster risk awareness, preparedness, local risk communication, and community participation	Anticipate, absorb, adapt, or recover timely from a shock with minimal perturbation to basic functions and with the possibility of improving	Social demographic
Moreno et al. (2019)	Sharing knowledge and experience, collective memory of past disasters, a sense of community, keeping the sense of union, the culture of disaster preparedness	Cope with and recover from disasters	Types of social capital

(Continued on following page)

TABLE 3 (*Continued*) Identification of salient mechanisms and outcomes of the included studies.

Study	Changes induced by social capital in community action	Indicators of community disaster resilience	Potential moderating variables
Partelow (2021)	Collective experiences, actions and activities, social preparedness, sense of shared values, sense of group participation, sense of collective responsibility	Disaster recovery capability	Types of social capital, types of disaster
Straub et al. (2020)	Create informal networks, forming a spirit of mutual assistance and expectations of reciprocity	Disaster prevention, capacity to withstand disasters	Urban or rural affiliation
Zeballos-Velarde et al. (2023)	Ancestral techniques and traditions, perception of risk, coexistence with risk	Recovery activities	Perception of risk, age and the time lived in the place
Madsen and O'Mullan (2016)	Social connectedness, optimistic acceptance, learning tolerance and patience, learning from the past for the future, volunteer spirit	Communities learning to adapt and transform	-
Mutch (2023)	Bring different people together, build relationships and networks, provide a safe space, provide physical facilities, provide specialist health and psycho-social services, lobby for funding and resources	Preparedness, response, recovery, reconstruction and revitalization	-
Yang and Wu (2020)	Enhancing community cohesion, setting up warning systems, emergency drills, donating emergency equipment, regular drills, international cooperation and communication, disaster preparedness drills, site visits and social learning	Disaster preparedness	-

Note: (-): unclear or unable to ascertain.

study constructed a speculative logic model of this process (Figure 4).

3.5 Other possible moderators of the social capital process

As shown in Figure 4 and Table 3, some possible moderators can facilitate or hinder the role of social capital in the risk management process, which may moderate the impact of social capital on community disaster resilience. These moderators can be categorized into four aspects. (1) Socio-demographic characteristics of the study populations. Gender, race, age, livelihood, social identity and geographic accessibility. Some studies show that the socio-demographic characteristics of the research population may affect social capital outcomes (Abunyewah et al., 2023; Panday et al., 2021; Tippens, 2020). Women rely primarily on informal bonding capital, whereas men make greater use of formal networks of bridges and linking, which creates differences in disaster resilience (Tippens, 2020). (2) Socio-cultural characteristics. Differences in socio-cultural can lead to different identities among community members, and these differences shape different disaster risk perceptions and behavioral responses, thus moderating the role of social capital in influencing community disaster resilience. For instance, the indigenous Fijian community, primarily a descent group, exhibits a strong sense of identity and social cohesion. In contrast, the Indo-Fijian community, which does not share the same descent-based structure, has been found to possess weaker bonding and bridging social capital. This disparity results in the Indo-Fijian communities being less resilient in the face of disasters when compared to indigenous Fijian villages (Nakamura and Kanemasu, 2020). (3) Types of disaster. Disasters are frequent occurrences, yet they are always context-specific events, and the role of social capital in community resilience differs in disaster situations (Partelow, 2021). For example, studies indicated that social capital harms social distancing, thereby increasing the likelihood of disease transmission and reducing community disaster resilience during COVID-19 (Borgonovi et al., 2021). Conversely, social capital enhances community interactions and thus increases community resilience during floods (Cai, 2017). (4) Types of social capital. Different forms of social capital serve different functions in terms of intra-community solidarity, inter-community cooperation and interactions with government and institutions, thereby influencing the impact of social capital on community disaster resilience (Partelow, 2021). For example, in rescue operations, bonding social capital takes precedence over bridging and linking social capital, characterized by strong family ties and friendships that foster a sense of community and resilience (Hawkins and Maurer, 2010; Moreno et al., 2019).

4 Discussion

This study employed a systematic literature review and thematic synthesis to explore how social capital facilitates community disaster resilience. A logical framework is constructed and the significant impact of social capital on increasing community disaster resilience is demonstrated, both directly and indirectly. Regarding disaster resilience, the included literature suggests that social capital contributes significantly to community disaster resilience in the preparedness, response, and recovery phases, but evidence is lacking in the mitigation phase. Incorporating social capital in the mitigation phase can facilitate more effective preparation for

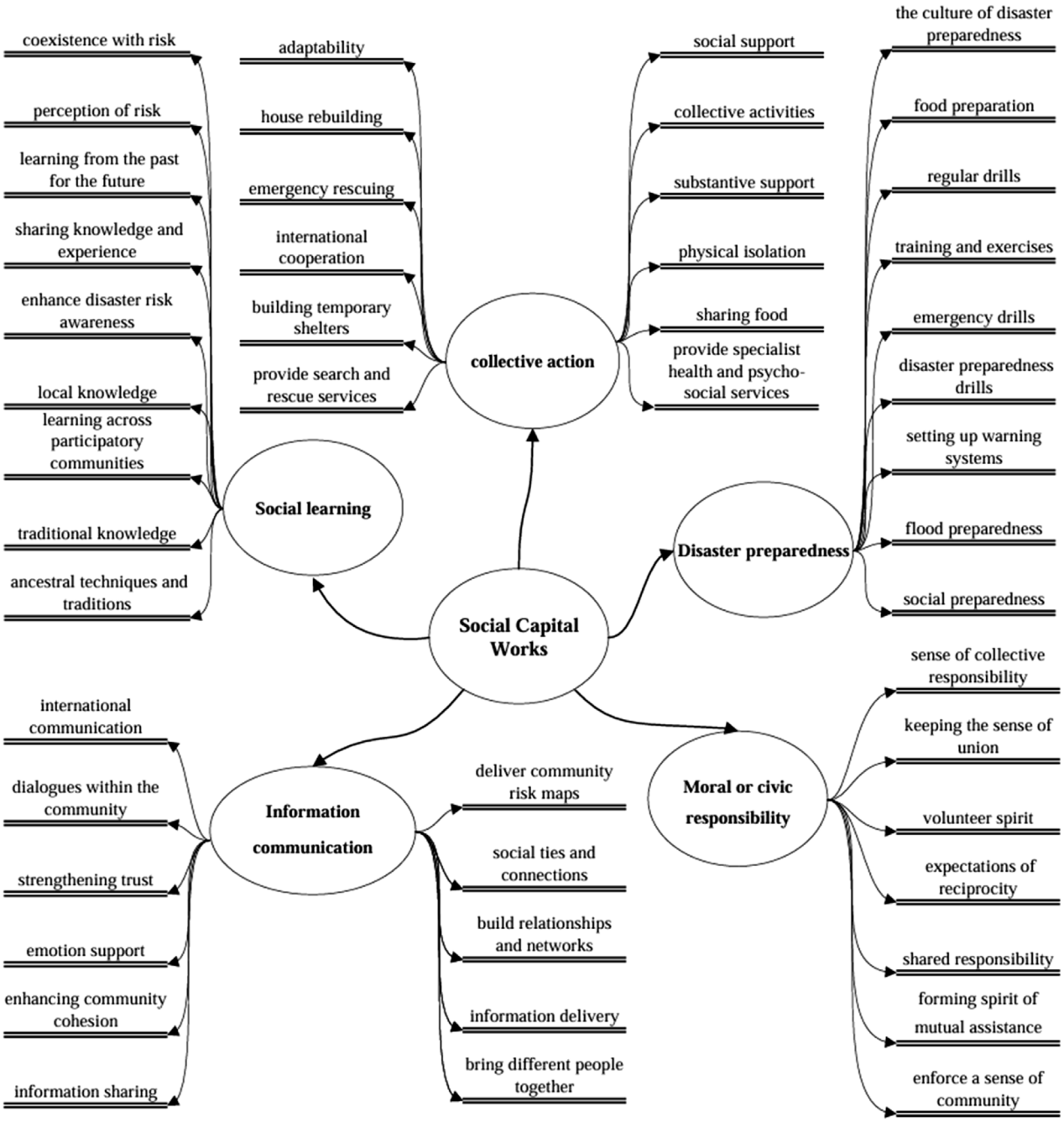

FIGURE 3
The mechanisms between social capital and community disaster resilience.

hazard events and enhance community resilience, which should be accorded greater attention in the future (Kumari and Frazier, 2021).

4.1 Key findings: how does social capital facilitate community disaster resilience?

As Van der Knaap et al. and Molina et al. discussed, the systematic review approach focuses on identifying the underlying mechanisms in the change process, with findings of higher internal validity (Molina et al., 2017; van der Knaap et al., 2008). This paper is concerned solely with original empirical studies with an explicit goal of community disaster resilience improvement, while studies that do little to improve community disaster resilience outcomes are not our focus. Based on this, this study identified five crucial mechanisms that are capable of functioning within the framework of causal relationships between social capital and community disaster resilience improvement. Our findings on mechanisms are also consistent with the findings of previous studies that have demonstrated social capital has a positive significant impact on

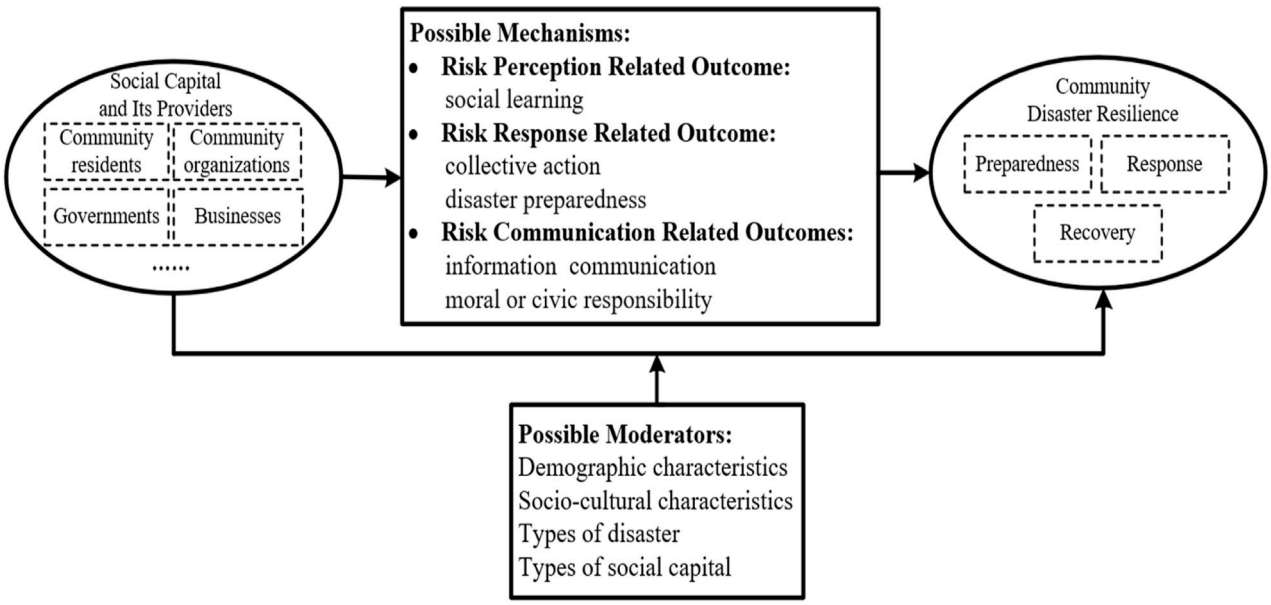

FIGURE 4
The logic model for the effects of social capital on community disaster resilience.

disaster risk management, which is mainly realized through the processes of risk perception (understanding of risk), risk communication and risk response (Behera, 2023; Bin Waseem et al., 2024; Hanson-Easey et al., 2018; Hudson et al., 2020; Morsut et al., 2022b). Although our five categories may not exhaustively encompass all possibilities, they provide a framework for understanding the role and functionality of social capital in the improvement process of community disaster resilience. In the following section, we will discuss these five mechanisms in greater detail based on the literature that has been included.

4.1.1 Social learning

Social learning is a process in which individuals and groups exchange or jointly develop knowledge (including skills and experiences) through human interaction (De Jaegher et al., 2010). Social capital promotes social learning for community residents and provides insights into how stakeholders view risk management (Craig and Storr, 2023; Wu and Chen, 2023). Community disaster resilience can be enhanced by the actions of many community residents, which are not derived from scientific knowledge but often from personal experience and experiential risk perception (Zeballos-Velarde et al., 2023). Social networks and connectedness provide an environment for individuals and groups to learn (Madsen and O'Mullan, 2016). A robust literature examines how social capital facilitates social learning at individual- and group-level. For example, neighbors share resilience-related knowledge aiming for potential change-making (Cai, 2017). Elders will pass on their knowledge of disaster preparedness to community members to cope with disasters (Nakamura and Kanemasu, 2020). Then, people recognize that resilience is related to learning, which can help communities better prepare for future events (Feinberg et al., 2023; Madsen and O'Mullan, 2016; Sharpe, 2021). Social learning is a core element of the capacity to adapt, and community stakeholders can utilize social capital to learn lessons that enhance risk awareness and help them cope with disasters ((Madsen and O'Mullan, 2016). More specifically, the memories of past crises can be kept by bonding social capital, while risk awareness can be spread by bridging social capital (Moreno et al., 2019; Morsut et al., 2022b). Several studies have shown that community disaster resilience depends on traditional and local knowledge availability (Cuthbertson et al., 2023; Moreno et al., 2019; Nakamura and Kanemasu, 2020; Wu and Chen, 2023). An Australian case study indicated that community social capital was perceived to provide knowledge that enhances individual risk awareness and improves disaster resilience (Cuthbertson et al., 2023).

Moreover, Boillat and Berkes identify some factors for improving resilience, one of which is the combination of different types of knowledge for learning (Boillat and Berkes, 2013). Some studies also suggest communities, universities, and other stakeholders can act to enhance resilience through social learning (Cai, 2017). Experts and scholars provide community organizations with disaster prevention technology and updated professional knowledge, which will be disseminated to the community's residents (Yang and Wu, 2020). Nevertheless, there is a considerable discrepancy between knowledge and action. Some researchers have proposed that the impact of knowledge on resilience enhancement may be constrained and that further research is required to enhance our comprehension of disaster knowledge and learning to improve effective disaster reduction action (Partelow, 2021; Weichselgartner and Pigeon, 2015; White et al., 2001).

4.1.2 Collective action

In the context of the community risk management process, social capital means the collective efforts to reduce disaster risk,

respond to emergencies, and aid in disaster recovery, especially for those who live in disaster areas (Nakagawa and Shaw, 2004; Xiong and Li, 2024). One of the mechanisms by which social capital enhances community disaster resilience is its ability to enable collective action. Social capital is regarded as a social resource accessible to individual members of a community, thereby facilitating collective action (Köhler et al., 2010). Previous studies in Chile, Fiji, Indonesia, Nepal, and Australia reported collective action related to social capital ((Madsen and O'Mullan, 2016; Moreno et al., 2019; Nakamura and Kanemasu, 2020; Panday et al., 2021; Partelow, 2021; Prayitno et al., 2022). Among these studies, some have found that high levels of social capital among community residents can reduce barriers to collective action and facilitate efforts to rescue those affected by an earthquake (Panday et al., 2021). Some studies also indicated that good social capital can make it easier to participate in collective action during a pandemic (Prayitno et al., 2022). Even without government resources and support, communities with a strong sense of trust, cohesion and identity can rely on self-organization collective action to carry out post-disaster reconstruction.

Furthermore, social capital can bridge people together even when they do not trust each other or have different interests while bridging social capital can lead to community disaster resilience (Clarke, 2017; Rusch, 2010). In addition, social capital can enhance the vertical relationship between community residents and organizations and those in positions of authority or higher status, thereby facilitating effective disaster governance (Lee, 2020; Partelow, 2021; Yang and Wu, 2020). A good example can be found in the Meizhou Community, which actively participates in the collective action of disaster preparedness exercises to realize its vision of becoming a disaster-resilient community (Yang and Wu, 2020).

4.1.3 Disaster preparedness

There are many shreds of evidence showing a positive correlation between disaster preparedness and community disaster resilience, which means that communities with robust disaster preparedness measures are better equipped to cope with, adapt to, and recover from disasters promptly (Ma et al., 2021; Peng et al., 2019). Some studies indicate the most distinctive resilience capacity perceived in the first hours after the disaster was the culture of disaster preparedness (Moreno et al., 2019). To enhance community disaster resilience, researchers investigated the main factors affecting disaster preparedness. Studies from Australia, China, and Japan have shown that social capital can increase preparedness actions or behavior for bushfires (Cuthbertson et al., 2023), flooding (Lo et al., 2015) and earthquakes (Hasegawa et al., 2018). Furthermore, several studies indicate that social capital can improve resilience by enhancing individual disaster preparedness willingness (Gaisie et al., 2021; Wu and Chen, 2023). Specifically, various elements of social capital, such as trust, social networks, cohesion, and social norms, can facilitate preparedness and thus enhance community disaster resilience. In addition, some empirical studies have shown that flood preparedness mediates the relationship between social capital and community resilience (Abunyewah et al., 2023).

4.1.4 Information communication

Information communication is a fundamental aspect of effective disaster risk management (Phillips, 2013). Risk communication was crucial for operationalizing disaster management plans (Cuthbertson et al., 2023). Timely information and effective communication enable community residents to take necessary preventative and mitigation measures (Hermans et al., 2022; Ogie and Perez, 2020). However, the mere transmission of disaster information is insufficient for disaster risk reduction and management. A high level of trust between message producers and listeners is required to ensure the reliability and validity of messages disseminated during a crisis.

Social capital plays an essential role in influencing the effectiveness of information communication. Only social networks of mutual trust can disseminate timely and accurate disaster relief information. In addition, families and acquaintances serve as the primary source of information, rather than official sources, in addressing challenges related to disaster risk in the context of extreme conditions (Cai, 2017). Social capital is often recognized as a positive influence on disaster resilience, as it enables communities to form strong networks for information sharing that contribute to their resilience (Islam et al., 2018). In other words, social capital can enhance community disaster resilience through better information communication.

On the one hand, many studies have shown that social capital can provide informational support and enhance information communication in disaster risk scenarios (Alonge et al., 2019; Elliott et al., 2023; Rayamajhee and Bohara, 2021; Tippens, 2020). During the COVID-19 pandemic, even face-to-face social relationships are in decline, but social capital can improve online information communication (Karami and Keshavarz, 2023). Other studies further state social capital likely minimizes the social transaction costs and risk of misinformation and miscommunication, which can strengthen trustful exchanges of information (Partelow, 2021; Tasic and Amir, 2016). On the other hand, several studies have shown that information communication can enhance community disaster resilience (Cox and Perry, 2011; Partelow, 2021; Tasic and Amir, 2016).

4.1.5 Moral or civic responsibility

According to West, moral or civic responsibility refers to non-market values such as mercy, kindness, justice, solidarity, care, volunteer spirit and service (West, 2014). Community disaster resilience is influenced by the values and beliefs that shape the behavioral willingness of society's members (Karami, 2023; McGuire, 2019). On the one hand, several studies have shown that social capital can strengthen moral or civic responsibility, such as trust, volunteerism spirit, human values, a sense of community, a sense of belonging, a sense of place, reciprocity, and solidarity (Behera, 2023; Elliott et al., 2023; Madsen and O'Mullan, 2016; Moreno et al., 2019; Partelow, 2021; Straub et al., 2020; Tippens, 2020; Wu and Chen, 2023; Yang and Wu, 2020). On the other hand, further research demonstrated that moral or civic responsibility plays a crucial role in promoting community disaster resilience (Liu et al., 2022; Posio, 2019; Robertson et al., 2021; Straub et al., 2020). For example, study findings indicate that general trust serves as a vital support for

community disaster resilience (Hu et al., 2023; Liu et al., 2022). More specifically, moral or civic responsibility determines the behavioral willingness of individuals to respond to disasters. It can be observed that trust positively influences the willingness for community activities and emergency actions during times of disaster, thereby contributing to the building of community disaster resilience (Hu et al., 2023; Liu et al., 2022; Peng et al., 2020). Overall, social capital can facilitate community disaster resilience through the promotion and reinforcement of moral or civic responsibility.

4.2 Policy and management implications

This paper offers valuable knowledge about social capital's role in community disaster resilience through a systematic review. The Sendai Framework for Disaster Risk Reduction (SFDRR) 2015–2030 prioritizes enhancing resilience for action to reduce disaster risks. This paper presents a logic model for the effects of social capital on community disaster resilience, constructed from three aspects: risk perception, risk response and risk communication. The model provides a scientific and reliable basis and evidence for improving risk management performance and increasing community disaster resilience.

First, it is crucial to enhance community residents' risk perception and social learning capacity. Risk perception significantly affects community residents' understanding of adaptation strategies and their capability to make decisions and actions to prevent disasters (Bin Waseem et al., 2024). Social capital serves as a conduit for social learning and disseminating traditional and local knowledge, enhancing community residents' awareness and acceptance of risks. Moreover, leveraging social capital can help bridge the "knowledge gap" between government, experts, and the public, ensuring all stakeholders are acquainted with crisis management processes.

Second, it is vital to reinforce offline face-to-face and social media-based disaster risk communication. On the one hand, augmenting the volume of both formal and informal community spaces will facilitate more face-to-face communication among residents, thereby reinforcing community cohesion, which is beneficial for the construction of a solid foundation for community disaster resilience. On the other hand, leveraging social media to augment and diversify online communication strategies enhances the efficiency of risk communication between the government, businesses, and the public, which empowers communities to access online assistance more readily. Furthermore, stimulating the participation of community residents in risk management and post-disaster recovery endeavors can enhance the overall moral and civic responsibility of the community residents. This, in turn, broadens community resources and encourages the growth of volunteerism during times of disaster.

Third, it is imperative to emphasize the capacity for community collective action and disaster preparedness. On the one hand, this demands fostering a sense of unity and collaboration among community members, guaranteeing that they unite and act in concert during disasters. Furthermore, this also necessitates cooperation among the governments, businesses and NGOs (Nakagawa and Shaw, 2004; Xiong and Li, 2024). On the other hand, it is of paramount significance to motivate stakeholders to actively participate in disaster preparedness actions for improving community emergency response and expediting post-disaster recovery.

4.3 Strengths and limitations of the review

This review concerns the causal links between context, intervention mechanisms and observations. Based on this, this study sheds light on the mechanisms by which social capital promotes community resilience through a systematic synthesis of the evidence collected from empirical studies.

It should be noted that this systematic review is subject to some limitations. Firstly, the difficulties in measuring community disaster resilience arise from the complexity of resilience, with numerous definitions and inherent relationships between community resilience and individual resilience. This may limit the strength of the explanation of this review's analysis of community disaster resilience. Secondly, the meaning of social capital remains contested due to the multiplicity of definitions and the lack of consensus regarding the most appropriate methodology for measuring it Choi et al. (2014). This limits our ability to synthesize, compare and generalize findings to understand the role of social capital in community disasters in systematic reviews. Thirdly, the scope of this review is constrained by the absence of data from non-English language papers. This limitation necessitates a cautious interpretation of the study findings, as they may not fully represent the global context.

5 Conclusion

This systematic review has demonstrated the significant impact of social capital on community disaster resilience improvement—both directly and indirectly. It is essential to recognize that social capital can play a crucial role in community disaster resilience through the mechanisms of social learning, collective action, disaster preparedness, information communication, and moral or civic responsibility. The contribution of this paper is that the theory of risk management is expanded in the context of community resilience, and the mechanisms by which social capital contributes to the development of community resilience are explored.

Nevertheless, it is important to note that the conclusions drawn from this review cannot be generalized to all communities. Further research is needed to ascertain the extent to which social capital facilitates community disaster resilience. In addition, although social capital can help build community disaster resilience, the evidence on the role of social capital in community resilience is still limited. Social capital may have a positive influence on community resilience during the mitigation phase. Further research is necessary to strengthen the study of the mechanisms by which social capital in the mitigation phase affects community disaster resilience.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

GZ: Data curation, Methodology, Project administration, Visualization, Writing–original draft, Writing–review and editing. XH: Methodology, Supervision, Validation, Writing–review and editing. FZ: Conceptualization, Formal Analysis, Methodology, Writing–review and editing. LF: Conceptualization, Methodology, Supervision, Writing–review and editing. YL: Conceptualization, Methodology, Supervision, Writing–review and editing. YZ: Conceptualization, Data curation, Investigation, Resources, Writing–review and editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

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