1st International Conference on Health and Medicine
Volume 2023
http://dx.doi.org/10.11594/nstp.2023.3507

NST Proceedings
OPEN ACCESS

Conference Paper

Social Capital for Disaster Management

Sri Novita Lubis [1,2]*, Sudarto Ronoatmodjo[1]

[1]Faculty of Public Health, Universitas Indonesia, Kota Depok 16424, Indonesia
[2]Faculty of Public Health, Universitas Sumatera Utara, Kota Medan 20222, Indonesia

Corresponding author:
E-mail:
sri.novita.lubis@gmail.com

ABSTRACT

This scoping review investigates how social capital contributes to disaster management, using the bonding, bridging, and linking of the social capital framework of Szreter and Woolcock (2004). Disasters have significant adverse effects that threaten the loss of life, injury, disease, and environmental damage. Social capital is a potential resource that can help communities overcome impacts and efforts to reduce the risk of disaster, but the functioning of social capital in all phases of disaster management has not been a concern yet. This study has paid attention to how the role of social capital, including bonding, bridging, and linking, is explored at every stage of disaster management for all types of disasters which may be rare in disaster studies. This review was conducted by Arksey and O'Malley's framework scoping review. Using relevant keywords, we searched Google Scholar, Scopus, PubMed, EBSCOhost, and PLOS ONE for the last 13 years (2010-2023). Inclusion criteria included Bahasa or English language and only scientific literature such as research, journal articles, and scientific publications. Articles not specifying and measuring social capital in a disaster context were excluded. The literature search generated 25 related articles, which were reviewed and analyzed. Fifteen studies used qualitative, eight used quantitative, and two used mixed methods. Research results showed that social capital covering bonding, bridging, and linking contributes to all phases of disaster management. This review highlights the importance of social capital as part of the public policy approach. For future research to get prospective evidence from analytic studies and explore the feasibility of interventions that build social capital for effective and efficient disaster management.

Keywords: Social capital, disaster, disaster management

Introduction

Consistent with EM-DAT, disasters are conditions or occasions that overburden local capability, so as need a request for outside help at the national or global level. In 2022, 387 natural hazards and disasters were recorded globally, involving the deaths of 30.704 human beings, and impact on 185 million people (CRED, 2023). Disasters consist of three sorts: natural, man-made, and hybrid disasters (Mohamed Shaluf, 2007). Many studies show that disasters have adverse effects, such as changing access to health care and treatment obstruction for chronic diseases, public health impact, mental health, economic impact, and social capital (Ahmad & Ahmad, 2018; Lynch & Merdjanoff, 2023; Saeed & Gargano, 2022).

In response to the disasters, to make exposure decrease to the aftermath of these disasters, many attempts have been made by individuals and societies, like increasing efforts to overcome the early result of disaster impact and post-disaster response and recovery phases. All efforts implemented are known as disaster management. Disaster management consists of four components: mitigation, preparedness, response, and recovery (Coppola & Coppola, 2015). Much research explores human, social, natural, physical, and financial capital as the main and essential resources for developing disaster risk management (Behera, 2021). However, when the disaster occurred, it affects all of the capital except social capital (Dynes, 2006). According to Windiani et

How to cite:
Lubis, S. N., & Ronoatmodjo, S. (2023). Social capital for disaster management. *The 1st International Conference on Health and Medicine*. NST Proceedings. pages 44-55. doi: 10.11594/ nstp.2023.3507

al. (2019) aftermath of the eruption in 2014, social capital was used to recover the economic and social existence of the community of Sempu village. In Mount Kelud, which is a disaster-prone area, the potential source for community development comes from social capital.

Social capital is reported as a potential resource that adequately allocates many benefits and it is considered fundamental in communities to be better prepared in pre-, during, and post-disaster. (Behera, 2021; Vallance & Rudkevitch, 2021). There are three forms of social capital: bonding, bridging, and linking (Szreter & Woolcock, 2004). Bonding social capital shows the connections of social life among homophilous network members (Putnam, 1994, 2000). Bonding social capital has an important role such as the assistance of families, relatives, and neighbors in the emergency period (Kawamoto & Kim, 2019), removing people who were crushed under the rubble, and building temporary housing during the initial recovery (Panday et al., 2021). Bridging social capital related to heterogeneous networks and organizations. (Putnam, 1994, 2000). In the mitigation phase, bridging social capital has a role such as spreading the early warning from the government to the local community (Sanyal & Routray, 2016) and facilitating volunteer workers to assist in dealing with the impacts of floods in the response time phase (Rustinsyah et al., 2021). Linking social capital describes the social connections among the people with higher status and power (Szreter & Woolcock, 2004). Humanitarian aid organizations, government-sourced funding, and external donations are the non-local resources that become society access concerning linking social capital. (Delilah Roque et al., 2020).

Many studies have examined social capital in the context of disasters, but most studies only reviewed one type of disaster. The gap found is that no comprehensive study analyzes the role of social capital, including bonding, bridging, and linking for all types of disasters in all regions for all stages of disaster management. Based on this gap, our research sought to investigate the extent to which social capital explores the contribution of social capital in each stage of disaster management for all types of disasters using three forms of social capital: bonding, bridging, and linking by conducting a systematic scoping review. Understanding how to reduce the impact of disasters can be improved by identifying the contribution of social capital in disaster management. Based on this background, this scoping review aims to answer the question of how social capital contributes to disaster management.

Material and Methods

This study used a scoping review methodology by Arksey and O'Malley framework scoping review (Hawkins & Maurer, 2010). The following is a documentation of the process.

Identifying the research question

The first step for this present study was the question of this scoping review of how social capital contributes to disaster management.

Identifying relevant studies

In the second step, relevant articles were identified by using the search strategy from the following five major databases: Google Scholar, Scopus, PubMed, EBSCOhost, and PLOS ONE.

Study selection

Articles were searched via title, subject, and keyword followed by a full-text review. We determined inclusion and exclusion criteria before doing a review. The inclusion criteria and exclusion criteria were as follows:

1. Inclusion criteria
    - Published during 2010-2023
    - Written in English and Bahasa
    - Only scientific literature, such as research, journal articles, and scientific publications
    - Social capital types: bonding, bridging, and linking

- Related to social capital, disaster, and disaster management.

2. Exclusion criteria
   - Abstract only, review articles, opinion papers, letters, and systematic reviews
   - Non-English and Bahasa articles
   - Unrelated to social capital and disaster.

Charting the data

A data extraction table is presented in the results and discussion section to chart the broad range of information covered by the selected studies.

Collating, summarizing, and reporting the results

This final report was written to summarize the results of the scoping review.

Results and Discussion

Through the search, 1.283 records were identified. Based on Figure 1 shown 1.130 articles were retrieved from Google Scholar, 26 were found from PubMed, 78 from PLOS ONE, 49 from Scopus, and 128 from EBSCOhost. Of those, 1.155 articles were excluded by title and abstract review. The remaining 42 were given a further abstract and title review, after which 25 reviews remained for full-text review. Most studies (15) reported qualitative studies. Two used mixed-method (quantitative and qualitative study) and eight used quantitative studies. The publication timeframe ranged from 2010 to 2023. The studies were carried out in several countries, such as the United States (three), Philippines (three), Australia (three), Nepal (one), Kingdom of Saudi (one), Bangladesh (three), India (one), Puerto Rico (one), Indonesia (three), Pakistan (one), Japan (two), China (one), Malaysia (one), and Taiwan (one). The majority of disasters were natural disasters (23), followed by non-natural disasters (1), and both (1). The remaining 25 articles were selected to be included and discussed in this scoping review, as seen in Table 1.

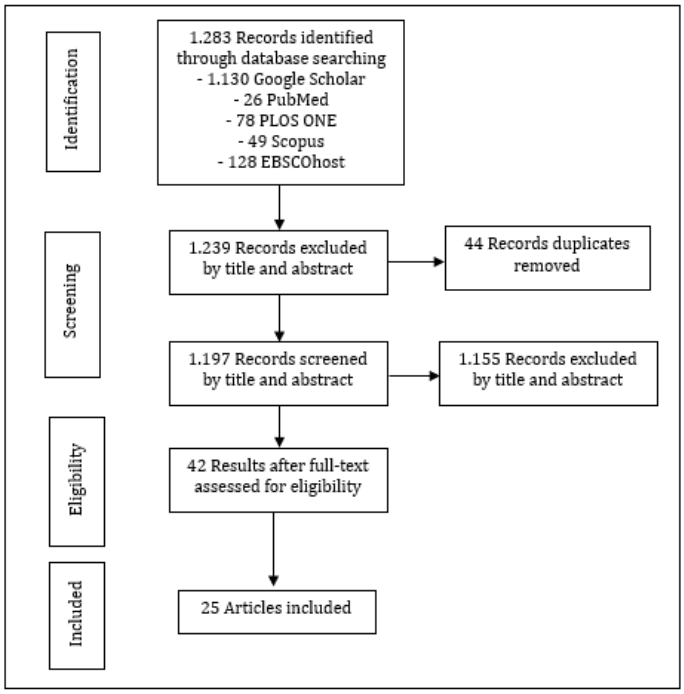

Figure 1. Flow diagram of scoping review

Social capital types

There is no standard in defining what social capital means. Each expert has his own view. But this study follows the definition of social capital by Putnam (2000) who described social capital as a feature of social organizations, such as networks, norms, and trust that facilitate action and cooperation for mutual benefit. Szreter & Woolcock (2004) developed a social capital framework: bonding, bridging, and linking. The combination of these three forms of social capital helped minimize the impact of disaster and improve the resilience of the community. A study was conducted by three types of social capital were used to recognize the findings that have an impact on disaster management. According to the article's findings, all types of social capital contribute to all disaster management phases.

Bonding social capital in disaster management

Bonding social capital shows strong ties of social relationships and interactions between parents, spouses, relatives, colleagues, and friends. According to Putnam (2000), bonding social capital implies a specific reciprocal relationship and mobilizes solidarity among similar individuals. The study found that bonding social capital contributes to all phases of disaster management. In the mitigation phase, bonding social capital strengthens the community to reduce and minimize the impact of disasters. Based on a study conducted in Sundarbans, India, which is particularly prone to tropical cyclones, showed that the devastation from cyclones and storm surges can be reduced by planting trees around the residence (Sanyal & Routray, 2016).

Disaster preparedness in prone areas should consider the disastrous events that are likely to happen and who is likely to be affected. The role of family members is critically crucial in the preparedness phase as a study shows that every household keeps busy with household affairs like managing kids, cattle, poultry, seed, and cooking fuel when floodwaters enter the house. Making an immediate decision without the help of family members is impossible. When disasters occur, households with productive close household members, for instance, adults or young people and teenagers, are available to mobilize their responses more quickly than households without productive immediate household members (Azad & Pritchard, 2023). A study of the storm warning response in the United States showed that bonding social capital was the relationship with an improvement of probability to take protective measures, for instance, evacuating and staying at home after a storm alert if driven to by immediate contacts like relatives, work colleague, and friends (Nowlin & Wehde, 2021). Household hardship due to regular income becoming limited during disasters, causing food and income insecurity. Assistance for households affected by flood in the form of in-kind donations or cash advance loans supported by families and friends (Azad & Pritchard, 2023).

After the disaster, bonding social capital is an important factor for continuity and development. It has become a significant source of help. After Cyclone Aila in Bangladesh, all the informants revealed that their relatives assisted. For instance, groceries, clothing, temporary shelter, volunteer labor, and cash. A respondent from the study said that the elder son (aged 16), who worked in a suburb of Khulna, sent remittances for his family's livelihood and to get the job through his neighbor's help (Masud-All-Kamal & Monirul Hassan, 2018). This bonded relationship can motivate individuals to help each other when in danger, such as before, during, and after a disaster, to save the lives of community members affected by the disaster.

Bridging social capital in disaster management

Bridging social capital indicates loose relationships that reach out to social groups, such as race or class. The relationship occurs from connections between or across groups. These relationships are more likely to feature demographic diversity and produce more valuable resources for the community, even though less intense (Aldrich & Meyer, 2015; Masud-All-Kamal & Monirul Hassan, 2018). Generally, social relationships in bridging social capital are weaker than bonding social capital (Rustinsyah et al., 2021). A study conducted in Taiwan showed that in the mitigation

phase, a community empowerment project was developed by local communities threatened by extreme weather conditions that seek to prevent disasters or mitigate potential losses (Yang & Wu, 2020). For instance, bridging social capital in the preparedness phase is a disaster committee that is entirely responsible for the risks the community faces from natural hazards. The early warning issued by the government was informed by the committee using its radio coverage (Sanyal & Routray, 2016).

Another contribution in the response phase from bridging social capital is a doctor who shared meaningful information with the people who require knowledge related to resources, such as providing appropriate information on the prevention of COVID-19 and addressing coronavirus wrong information and myths about vaccines causing people not to receive the vaccine (Contreras et al., 2023). After the disasters, bridging social capital through youth clubs can help community members get help from the neighboring areas. The linkages outside the Sundarbans helped the community members get jobs. Communities from affected areas of disaster can recover faster through bridging social capital (Sanyal & Routray, 2016). Although these relationships are outward-looking, bridging social capital provides various assistance essential for post-disaster recovery.

Linking social capital in disaster management

Linking social capital describes the relationships among people across explicit, formal, or institutionalized power or authority gradients across society (Szreter & Woolcock, 2004). In this social relationship the government as well as leaders of local organizations who are trusted by the community play the role of facilitator, such a study in India showed the contribution of linking social capital in the mitigation phase. The utilization of community leaders link with the outside world using connections with the universities and media and political affinity to solve their area-specific issues, such as obtaining electricity, acquiring a concrete barrier, getting healthcare services, and tailor-made training by considering the local and field realities to disaster preparedness. (Sanyal & Routray, 2016). In disaster preparedness efforts, the Taiwan government has formed a Public-Private Partnership, one of which is the Soil and Water Conservation Bureau of the Council of Agriculture. In natural disaster preparedness, this initiative encourages the empowerment of the community's capacity to drive local resources (Yang & Wu, 2020).

During the disaster, linking social capital contributes to connecting the affected people of the disasters to those with the authority of financial internationally to assist (Partelow, 2021). After the disaster (recovery phase) linking social capital brings resources into the community back to normal life. In the aftermath of Hurricane Maria, the formal collaboration with the Municipality and FEMA, agencies in Corcovada provided diesel to help avoid water outages (Delilah Roque et al., 2020).

Table 1. Literature matric of included articles

References	Country	Study Design	Type of Disaster	Aim of Study	Results
Nowlin & Wehde (2021)	United States	Quantitative	Hurricane	Social capital's role in responding to hurricane warnings.	The study's findings revealed a relationship between bonding social capital and an increment in the possibility of evacuating, staying at home during disasters, and listening to close contacts that encourage evacuation. Furthermore, elite sources inspired the development of evacuation that related to linking social capital.
Jovita et al. (2019)	Philippines	Qualitative	Typhoon	To investigate how social capital frames the post-disaster situations in the 2011 Typhoon Washi-affected communities	The study found that the recovery of the typhoon survivors was due to the solidarity among typhoon-affected communities. These solidarities are composed of the society's standardizing structure which strengthens bonding and linking social capital. Despite the shortcomings during the 2011 Typhoon Washi, respective local officials are still trusted by the community for help in times of need.
Su (2022)	Philippines	Quantitative	Typhoon	The important role of social capital and the forms of social capital ties in households affect the transfer of funds received after disasters.	The results found that lower-income households have less connection to and ability to receive the transfer of funds than households with middle-income. The significant research in post-disaster contexts provides empirical support for more social capital categories: bonding ties that bridge space and bonding ties that link.
Zahnow et al. (2019)	Australia	Quantitative	Flood	To evaluate the extent to which access to neighborhood social capital and individual social embeddedness before a disaster mediates the relationship between severity and post-disaster functioning.	The results designate that post-disaster, the seriousness of the flood is the most important. No evidence showed that neighborhood social capital was better after the flood than before. However, the results indicate that individual social support moderated the effect of flood severity on functioning.
Panday et al. (2021)	Nepal	Qualitative	Earthquake	To show how different types of social capital 'matter' more in different recovery phases.	The findings revealed that bonding and bridging social capital with high levels among communities decreased obstacles to collective activity and helped attempt to

To be continued…

					save from danger and support people immediately affected by the earthquake.
Tammar et al. (2020)	Jeddah city; Kingdom of Saudi Arabia	Qualitative	Flash flood	To know and evaluate social capital's impact and networking procedure on flood resilience during periods of post-disaster recovery.	According to the research, evacuation, and assistance for quick recovery were provided by several religious institutions. In addition, government organizations provide necessary help in the affected areas as a form of the seriousness of the recovery process.
Hawkins & Maurer (2010)	United States	Qualitative	Hurricane	To examine families affected by Hurricane Katrina through a social capital point of view.	Results showed that people with low incomes relied on, built upon, and collapsed all levels of social capital for individual, family, and community survival. Bonding social capital was important for immediate support, but bridging and linking social capital offered pathways to longer-term survival and wider neighborhood and community revitalization.
Masud-All-Kamal & Monirul Hassan (2018)	Bangladesh	Qualitative	Cyclone Aila	To explore the social capital's role played in disaster management and the recovery process among the southwest coastal villages of Bangladesh.	The findings suggest that social capital in the wake of the cyclone presents an instrumental role in personal, household, and community recovery processes. The bonding and bridging of social capital significantly assisted the villagers from the emergency period to long-term recovery. At the same time, only a few individuals reaped the advantages of linking social capital.
Sanyal & Routray (2016)	India	Qualitative	Tropical cyclones and surges	To review the role of social capital with distinct empirical evidence from studies around the world and adopt it into the perspective of the study area in Sundarbans, India.	The study revealed that the network at the community level is substantial for the viability of the community. In addition, social capital functions such as unofficial insurance in small-scale disasters. Social capital succession for the gaps in main infrastructure and appropriate disaster management institutions; therefore, social capital is more relevant in the remote study area..
Delilah Roque et al. (2020)	Puerto Rico	Qualitative	Hurricane	To explore how social capital recovers and potentially increases resilience pre and post-disaster can be used by barrios (small legal divisions).	Findings show that social capital contributes to recovery efforts and increased resilience through expanded networks, shared values, new partnerships, and the hope that communities will be forceful and less vulnerable to future environmental problems.
(Hesna & Hidayat, 2019)	Padang City, Indonesia	Qualitative	Earthquake	To identify the social capital factor required in applying the earthquake-resistant housing concept in the implementation	Social capital has valuable potential for disaster risk reduction and preparedness in non-engineered house construction. Social capital's role is to strengthen capacities at the community level to achieve better risk reduction. If an earthquake happens, bonding and bridging social capital enable community members to undertake risk reduction.

To be continued…

				of non-engineered house construction to reduce disaster risks by the community.	
Partelow (2021)	Gili Trawangan, Indonesia	Quantitative and Qualitative	Earthquake	To assess social capital's role in community resilience after numerous severe earthquakes in Gili Trawangan, Indonesia, in August 2018.	The conclusions of the study: (1) Community social capital and disaster resilience are iteratively co-shaped through collective experiences, actions, and activities. (2) Getting into context is important for understanding if and to what degree this relationship exists. (3) Social capital's mechanism enhances resilience in that it can enable collective action that can lead to the provision of needed aid and services.
Akbar & Aldrich (2018)	Pakistan	Quantitative	Flood	To observe the impact of social capital on recovery.	The study confirmed that social capital (measured in terms of social support received by flood victims and their level of socio-political trust) is a highly robust correlate with life recovery among victims of natural disasters. A high level of social capital contributes to a sense of rise despite material damage. Resilient communities endowed with social capital can recover after a calamity.
Hasegawa et al. (2018)	Japan	Quantitative	Earthquake and Fukushima Daiichi Nuclear Power Station accident	To examine the annual change in the percentage of those who prepared for disasters and utilized health checkups in Fukushima Prefecture and identify the factors influencing disaster preparedness and utilization of health checkups.	The research results show that the percentage of those who prepare for disasters decreased, while that for health checkups did not significantly change. Concerning disaster preparedness, disaster experiences improve preparedness, while ties with other local people help keep the preparedness. For health checkups, the closeness with the welfare service was the most significant factor affecting such consultations. Therefore social capital should be recommended to improve disaster preparedness.
Contreras et al. (2023)	United States (U.S.)	Qualitative	Pandemic	To know how bonding social capital, bridging social capital, and trust contributed to Hispanics/Latinos throughout the COVID-19 pandemic and explore the negative impact of social capital.	The findings suggest that Hispanics/Latinos experienced bridging and bonding social capital. Particularly interesting was how social capital copes with the Hispanic/Latino community's socioeconomic challenges as long as the pandemic. The focus groups revealed that in vaccines, hesitancy is needed, as trust and its role.
Azad & Pritchard (2023)	Bangladesh	Qualitative	Flood	To explain how the components of social capital interact with one another to build up adaptation.	Revealed bonding social capital be a priority during flood onset as a means to protect persons and property; bridging social capital came into play more influent during the flood crisis as affected people sought coping assistance from friends, neighbors, and relatives elsewhere, and linking social capital emerged as an important contributor to adaptive capacity in

To be continued…

					flood recovery phases, even though in interaction with bridging and bonding modes.
Radyan et al. (2019)	Indonesia	Qualitative	Eruption of Mount Bromo	To explore the Tengger Community's role in Ngadirejo Village to develop resilience in the 2010-2011 explosion of Mount Bromo and their social capital.	This study showed the survival ability which the Tengger Community owns through strong ties of bonding, bridging, and linking social capital applied during the eruption of Mount Bromo. The ability was also used to rescale the situation after the explosion.
Era (2021)	Philippines	Quantitative	Typhoon Haiyan	To describe how social capital has provided and obstructed the disaster recovery of selected community residents of the municipalities of Tolosa and Dulag in Leyte Province who were victims of Typhoon Haiyan in 2013.	The study revealed that the weak social capital displayed by the community could partly explain why the respondents felt moderate satisfaction with their state of recovery, such as having more permanent and stable housing and livelihood. More robust social capital could improve satisfaction levels among the community residents of Tolosa and Dulag and enhance their overall recovery and resilience by building back better.
Lyu et al. (2023)	China	Quantitative	Rainstorm	To find out the association between social capital and shadow evacuation.	The results showed that significant positive impacts on shadow evacuation behavior were found on bonding social capital ($p = 0.037 < 0.05$, $B = 0.347$), bridging social capital ($p = 0.003 < 0.01$, $B = 0.520$), and linking social capital ($p = 0.014 < 0.05$, $B = 0.390$).
Sadeka et al. (2020)	Malaysia	Qualitative	Flood	To examine social capital's level and disaster preparedness among the Orang Asli (indigenous people) families and expands a linkage between them.	The study indicates that preparedness and response to the disaster of Orang Asli families can be improved over their social capital.
Yang & Wu (2020)	Taiwan	Qualitative	Flood	To know how types of social capital: bonding, bridging, and linking play a role by exploring the consciousness of disaster resilience in the community of Meizhou.	This study revealed that bonding social capital was afford to unite the community. Bridging social capital can facilitate collaboration among functional groups in and beyond the Meizhou locality. Linking social capital can implement Meizhou's experience on a national and even international scale.
Brockie & Miller (2017)	Australia	Qualitative	Flood	To explore how resilience in older adults is facilitated by social capital or the effect of life and previous disaster experience at the 2011 and 2013 floods in Brisbane, Australia	The results described the transformation of disaster management strategies and social capital sources.

To be continued…

Islam & Walkerden (2014)	Bangladesh	Quantitative and Qualitative	Cyclone Sidr	To explore how bonding and bridging relationships contribute to recovery from disaster.	Results show that communities affected rely massively on their ties like bonding and bridging in dealing with the trouble immediately after a cyclone. Networks of bonding and bridging are essential in the beginning. As time passed after the disaster, the performance of these networks was reduced due to the limited financial and physical capital. After a certain amount of time, bridging ties are not active enough, and occasionally drop out because of poverty, disaster impacts, rivalry, and conflict to access external support. However, bonding relationships still contribute to recovery by restricting food intake, assistance with alternative revenue and livelihood options through temporary displacement, and so on. Support through linking social systems, either from local governments, NGOs, and public organizations, is needed by disaster survivors on long-term recovery.
Murphy et al. (2023)	Australia	Qualitative	Tropical Cyclone (TC) Harold	To know how community organizations overcome the challenges to facilitate access to youth SRHR information and services.	The findings suggest that the activity carried out by community organizations and networks before disasters made it convenient to investigate and address youth SRHR risks after disasters.
Hsueh (2019)	Japan	Quantitative	Typhoon	To examine the relationship between recovery satisfaction in the post-disaster phase and cognitive social capital through the bonding, bridging, and linking of social capital.	This study's findings were : (1) during post-disaster recovery, the support of bonding social capital generated in the diverse and significant support structure—specifically, support searching from neighbours and friends through the utilization of the flow of information. Bridging social capital functioning to complete availability and partial psychological assistance when the functional failure of bonding social capital happens in the course of the same disaster. (2) Those who are increasing connection over bonding social attachment had high levels of support post-disaster. (3) Those receiving informal support had substantially positive results for recovery achievement in those with higher trust in the government.

To be continued…

Conclusion

Overall, we found that social capital covering bonding, bridging, and linking has a high potential benefit in all phases of disaster management. Bonding social capital contributes to minimizing the impact of the disaster, such as planting trees around the residence, evacuating and staying at home after a storm alert, and providing assistance such as donations or cash advance loans, clothing, temporary shelter, and volunteer labor. The benefit of bridging social capital was seen in disseminating disaster early warning information to the community by the committee, providing appropriate information about the hazards, and helping the community members get jobs. Linking social capital provides an opportunity to connect the affected people of the disasters to those with the authority of financial internationally to assist and empower the community's capacity to drive local resources. Hence, this scoping review recognizes recommendations for social capital as part of the public policy approach to effectively manage future disasters and strengthen the community's resiliency capacity to respond to disasters. Further investigation needs to invest in mixed-method, experimental, and quasi-experimental study designs to increase our understanding of how social capital is built and observe the appropriateness of interventions that shape social capital as effective and efficient disaster management.

Acknowledgment

We are grateful for the excellent comments and suggestions given by peer reviewers to develop the quality of our paper.

References

Ahmad, J., & Ahmad, M. M. (2018). Assessing the public health impacts of disasters: A retrospective study of the October 2015 Hindu Kush earthquake in Pakistan. *International Journal of Disaster Risk Reduction*, *28*, 555–564. https://doi.org/10.1016/j.ijdrr.2018.01.004

Akbar, M. S., & Aldrich, D. P. (2018). Social capital's role in recovery: evidence from communities affected by the 2010 Pakistan floods. *Disasters*, *42*(3), 475–497. https://doi.org/10.1111/disa.12259

Aldrich, D. P., & Meyer, M. A. (2015). Social Capital and Community Resilience. *American Behavioral Scientist*, *59*(2), 254–269. https://doi.org/10.1177/0002764214550299

Azad, M. J., & Pritchard, B. (2023). Bonding, bridging, linking social capital as mutually reinforcing elements in adaptive capacity development to flood hazard: Insights from rural Bangladesh. *Climate Risk Management*, *40*, 100498. https://doi.org/10.1016/j.crm.2023.100498

Behera, J. K. (2021). Role of Social Capital in Disaster Risk Management : Theoretical Perspectives. *Geography & Natural Disasters*, *11*, 1–6.

Brockie, L., & Miller, E. (2017). Understanding Older Adults' Resilience during the Brisbane Floods: Social Capital, Life Experience, and Optimism. *Disaster Medicine and Public Health Preparedness*, *11*, 72–79. https://doi.org/10.1017/dmp.2016.161

Contreras, J., Fincannon, A., Khambaty, T., & Villalonga-Olives, E. (2023). Emergent Social Capital during the Coronavirus Pandemic in the United States in Hispanics/Latinos. *International Journal of Environmental Research and Public Health*, *20*(8). https://doi.org/10.3390/ijerph20085465

Coppola, D., & Coppola, D. P. (2015). *Introduction to International Disaster Management* (Third Edit). Elsevier Science & Technology. https://doi.org/https://doi.org/10.1016/B978-0-12-801477-6.00001-0.

CRED. (2023). *2022 Disasters in numbers*. https://www.emdat.be/

Delilah Roque, A., Pijawka, D., & Wutich, A. (2020). The Role of Social Capital in Resiliency: Disaster Recovery in Puerto Rico. *Risk, Hazards and Crisis in Public Policy*, *11*(2), 204–235. https://doi.org/10.1002/rhc3.12187

Dynes, R. (2006). Social Capital : Dealing With Community Emergencies. *Homeland Security Affairs*, *2*, 1–26.

Era, M. D. L. (2021). Mobilization of social capital during post Haiyan in the two municipalities of Leyte Province, Philippines. *IOP Conference Series: Earth and Environmental Science*, *708*. https://doi.org/10.1088/1755-1315/708/1/012099

Hasegawa, M., Murakami, M., Takebayashi, Y., Suzuki, S., & Ohto, H. (2018). Social capital enhanced disaster preparedness and health consultations after the 2011 great East Japan earthquake and nuclear power station accident. *International Journal of Environmental Research and Public Health*, *15*(3), 1–18. https://doi.org/10.3390/ijerph15030516

Hawkins, R. L., & Maurer, K. (2010). Bonding, bridging and linking: How social capital operated in New Orleans following Hurricane Katrina. *British Journal of Social Work*, *40*, 1777–1793. https://doi.org/10.1093/bjsw/bcp087

Hesna, Y., & Hidayat, B. (2019). Social capital factors in disaster risk reduction on West Sumatera non-engineered house. *MATEC Web of Conferences*, *276*, 02004. https://doi.org/10.1051/matecconf/201927602004

Hsueh, H. Y. (2019). The role of household social capital in post-disaster recovery: An empirical study in Japan. *International Journal of Disaster Risk Reduction*, *39*, 101199. https://doi.org/10.1016/j.ijdrr.2019.101199

Islam, R., & Walkerden, G. (2014). How bonding and bridging networks contribute to disaster resilience and recovery on the Bangladeshi coast. *International Journal of Disaster Risk Reduction*, *10*, 281–291. https://doi.org/10.1016/j.ijdrr.2014.09.016

Jovita, H. D., Nashir, H., Mutiarin, D., Moner, Y., & Nurmandi, A. (2019). Social capital and disasters: How does social capital shape post-disaster conditions in the Philippines? *Journal of Human Behavior in the Social Environment*. https://doi.org/10.1080/10911359.2018.1556143

Kawamoto, K., & Kim, K. (2019). Efficiencies of bonding, bridging and linking social capital: Cleaning up after disasters in Japan. *International Journal of Disaster Risk Reduction*, *33*, 64–73. https://doi.org/10.1016/j.ijdrr.2018.09.010

Lynch, K. A., & Merdjanoff, A. A. (2023). Impact of Disasters on Older Adult Cancer Outcomes: A Scoping Review. *JCO Global Oncology*, *9*, 1–13. https://doi.org/10.1200/go.22.00374

Lyu, M., Sun, B., Tian, X., & Wang, Y. (2023). How does social capital influence shadow evacuation behavior under rainstorm disaster in China. *Safety Science*, *162*, 106098. https://doi.org/10.1016/j.ssci.2023.106098

Masud-All-Kamal, M., & Monirul Hassan, S. M. (2018). The link between social capital and disaster recovery: evidence from coastal communities in Bangladesh. *Natural Hazards*, *93*(3), 1547–1564. https://doi.org/10.1007/s11069-018-3367-z

Mohamed Shaluf, I. (2007). An overview on disasters. *Disaster Prevention and Management: An International Journal*, *16*(5), 687–703. https://doi.org/10.1108/09653560710837000

Murphy, N., Azzopardi, P., Bowen, K., Quinn, P., Rarama, T., Dawainavesi, A., & Bohren, M. A. (2023). Using social capital to address youth sexual and reproductive health and rights in disaster preparedness and response: A qualitative study highlighting the strengths of Pacific community organisations and networks. *PLOS Global Public Health*, *3*(5). https://doi.org/10.1371/journal.pgph.0001624

Nowlin, M. C., & Wehde, W. (2021). Social capital and hurricane warning response. *International Journal of Disaster Risk Reduction*, *65*(August), 102536. https://doi.org/10.1016/j.ijdrr.2021.102536

Panday, S., Rushton, S., Karki, J., Balen, J., & Barnes, A. (2021). The role of social capital in disaster resilience in remote communities after the 2015 Nepal earthquake. *International Journal of Disaster Risk Reduction*, *55*(December 2020), 102112 https://doi.org/10.1016/j.ijdrr.2021.102112

Partelow, S. (2021). Social capital and community disaster resilience: post-earthquake tourism recovery on Gili Trawangan, Indonesia. *Sustainability Science*, *16*, 203–220. https://doi.org/10.1007/s11625-020-00854-2

Putnam, R. D. (1994). *Social Capital and Public Affairs*. *47*(8), 5–19.

Putnam, R. D. (2000). *Bowling Alone : The Collapse and Revival of American Community*. Simon & Schuster.

Radyan, D. O., Zakiyyatun, N., & Amelia, N. A. (2019). STRENGTHENING SOCIAL CAPITAL TO BUILD DISASTER RESILIENT COMMUNITY: A STUDY ON TENGGER COMMUNITY IN NGADIREJO, SUKAPURA OF PROBOLINGGO REGENCY, INDONESIA. *Eurasia: Economics & Business*, *8*(26), 3–14. https://doi.org/https://doi.org/10.18551/econeurasia.2

Rustinsyah, R., Prasetyo, R. A., & Adib, M. (2021). Social capital for flood disaster management: Case study of flooding in a village of Bengawan Solo Riverbank, Tuban, East Java Province. *International Journal of Disaster Risk Reduction*, *52*(November 2020), 101963. https://doi.org/10.1016/j.ijdrr.2020.101963

Sadeka, S., Mohamad, M. S., Sarkar, M. S. K., & Al-Amin, A. Q. (2020). Conceptual Framework and Linkage Between Social Capital and Disaster Preparedness: A Case of Orang Asli Families in Malaysia. *Social Indicators Research*, *150*, 479–499. https://doi.org/10.1007/s11205-020-02307-w

Saeed, S. A., & Gargano, S. P. (2022). Natural disasters and mental health. *International Review of Psychiatry*, *34*(1), 16–25. https://doi.org/10.1080/09540261.2022.2037524

Sanyal, S., & Routray, J. K. (2016). Social capital for disaster risk reduction and management with empirical evidences from Sundarbans of India. *International Journal of Disaster Risk Reduction*, *19*, 101–111. https://doi.org/10.1016/j.ijdrr.2016.08.010

Su, Y. (2022). Networks of recovery: Remittances, social capital and post-disaster recovery in Tacloban City, Philippines. *International Journal of Disaster Risk Reduction*, *67*, 102641. https://doi.org/10.1016/j.ijdrr.2021.102641

Szreter, S., & Woolcock, M. (2004). Health by association? Social capital, social theory, and the political economy of public health. *International Journal of Epidemiology*, *33*(4), 650–667. https://doi.org/10.1093/ije/dyh013

Tammar, A., Abosuliman, S. S., & Rahaman, K. R. (2020). Social capital and disaster resilience nexus: A study of flash flood recovery in Jeddah City. *Sustainability (Switzerland)*, *12*(11). https://doi.org/10.3390/su12114668

Vallance, S., & Rudkevitch, A. (2021). *Post-Disaster Recovery and Social Capital*. Oxford Research Encyclopedia of Global Public Health. https://doi.org/https://doi.org/10.1093/acrefore/9780190632366.013.311

Windiani, Fahmi, A., & Muhibbin, Z. (2019). Social Capital in Community Development at Prone Disaster Area: A Lesson Learnt at Sempu Village. *IPTEK Journal of Proceedings Series*, *6*, 2354–6026.

Yang, A. H., & Wu, J. S. H. (2020). Building a disaster-resilient community in taiwan: A social capital analysis of the meizhou experience. *Politics and Governance*, *8*(4), 386–394. https://doi.org/10.17645/pag.v8i4.3106

Zahnow, R., Wickes, R., Taylor, M., & Corcoran, J. (2019). Community social capital and individual functioning in the post-disaster context. *Disasters*, *43*(2), 261–288. https://doi.org/10.1111/disa.12317