



Review Article

Local Wisdom and Disaster-Related Collective Memory in Indonesian Communities

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Abstract

This study aims to analyze the presence of collective memory and local wisdom practices in facing disasters, as well as identify the factors influencing their preservation or decline. The research employs a descriptive-analytical qualitative literature review, using secondary data from scholarly journals and research reports. The analysis was conducted thematically and comparatively across case studies. The results show that disaster-related collective memory and local wisdom in Indonesia still exist, though their presence varies and faces significant challenges. Memory is preserved through oral narratives, while local wisdom manifests in tangible forms such as disaster-resistant building structures (e.g., the Ciptagelar stilt houses resilient to earthquakes and winds) and land management patterns (forest zoning, huma systems to prevent landslides). Intangible forms include traditions, customary prohibitions (such as bans on brick houses due to earthquake risks), and customary laws that maintain environmental balance. Although local wisdom serves as mitigation, factors such as modernization and non-participatory policies can hinder its transmission. The study concludes that sustaining local wisdom requires strengthening cultural transmission channels and integrating them into participatory disaster risk reduction (DRR) policies, with local institutions and traditional leaders as key drivers at the community level.

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INTRODUCTION

Indonesia, located along the Pacific Ring of Fire and at the convergence of two major continental plates, faces high risks from various natural hazards. Disaster data in Indonesia show an increasing number of events over recent decades, both natural and human induced. Beyond earthquakes, tsunamis, volcanic eruptions, floods, and landslides, tornadoes are among the frequently occurring disasters. Although their impacts are often local, tornadoes can cause severe damage to buildings and infrastructure and even result in casualties, especially in densely populated areas or in regions with vulnerable housing. The recurring nature of tornadoes across different parts of Indonesia calls for serious attention in mitigation and adaptation strategies.

Historically, Indonesian communities have developed their own ways to adapt to and cope with disasters, passing these strategies down from generation to generation. These practices are embodied in disaster-related collective memory and local wisdom. Collective memory can be understood as the shared remembrance of past disasters within a community, shaping how people perceive risk, how prepared they are, and how they respond when similar hazards recur. For example, in tornado-prone areas, stories of past storms may influence residents to build stronger, wind-resistant homes.

Local wisdom in disaster management refers to the knowledge, practices, and values that emerge from communities and are used across generations to understand, prevent, and face disaster threats. In Kasepuhan Ciptagelar, for example, local wisdom manifests as inherited thoughts, beliefs, and behaviors embedded in culture to this day. Such wisdom is considered a community belief system that serves as social capital in disaster risk reduction, providing guidance for education and action to reduce hazards. In the context of tornadoes, local wisdom may include recognizing natural signs of impending storms (such as wind direction changes or cloud formations), constructing resilient yet flexible houses, or maintaining traditions of mutual aid during post-disaster recovery. This knowledge



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has been tested over time and is deeply intertwined with how communities interact with their hazardous environments. Indigenous peoples understand how to engage with nature in ways that preserve balance, translating symbolic cues into beliefs and practices that allow coexistence with the environment.

However, with rapid modernization, fast-paced development, and the influx of global information, critical questions arise: Do disaster-related collective memory and local wisdom—especially regarding tornadoes—still exist, endure, and remain relevant in today’s Indonesian society? Or are these values and practices fading, as changing lifestyles, mindsets, and more technology-based disaster management approaches take hold? Pre-survey findings suggest that local wisdom is eroding among traditional communities due to modernization. As technology and modernization advance, many Indonesian cultural practices have begun to fade, triggering cultural assimilation. Modern communities tend to dismiss local wisdom as outdated, weakening the vital connection between nature, tradition, and human life (Agusintadewi, [2016](#)). This cultural erosion has even been linked to increased disaster risks, such as landslides caused by unsustainable development (Raharja et al., [2016](#)). Yet, local wisdom remains vital for disaster mitigation, and in some regions, myths have been leveraged as disaster mitigation tools (Fauzan & Aziz, [2020](#)). Supported by empirical evidence, myths and legends can help experts understand natural event cycles like earthquakes, tsunamis, eruptions, floods, and landslides, thereby raising community awareness of disaster potential (Agusintadewi, [2019](#)).

The importance of this research lies in the understanding that effective, sustainable disaster management does not rely solely on advanced technology or formal regulations but also requires the active participation and utilization of existing socio-cultural capital. In Indonesia, disaster management efforts are dominated by technology and systems, followed by local wisdom, and lastly by disaster education (Hutagalung & Indrajat, [2020](#)). Thus, understanding the persistence and transformation of collective memory and local wisdom—especially in facing diverse disasters like tornadoes, which often have localized yet widespread impacts—is key to formulating more holistic, participatory, and sustainable disaster risk reduction strategies.

Based on this background, the study raises several key questions: (1) What are the characteristics and current presence of disaster-related collective memory, particularly concerning tornadoes, in Indonesian communities? (2) To what extent are local wisdom practices related to tornadoes still practiced and transmitted in various Indonesian communities? and (3) What factors influence the sustainability or erosion of disaster-related collective memory and local wisdom? This research aims to contribute to the development of disaster sociology, disaster anthropology, and culturally informed disaster management studies, particularly in Indonesia, while enriching our understanding of the intersections between culture, social memory, and community resilience. Practically, the findings are expected to provide valuable input for policymakers, regional disaster management agencies (BPBD), and field practitioners in designing more locally contextualized, participatory, and sustainable disaster risk reduction strategies. This aligns with the idea that, alongside government assistance, community efforts to maintain their environment through culturally grounded recovery practices are indispensable components of disaster recovery (Kusumasari & Alam, [2012](#)).

METHOD

This research adopts a qualitative approach using a descriptive-analytical design. This approach was chosen to develop a deep understanding and comprehensive portrayal of the presence of disaster-related collective memory and local wisdom in Indonesian communities. The study seeks to examine and analyze cultural and social phenomena related to how communities respond to disasters and understand how disaster mitigation is conducted through their local wisdom.

As a literature-based study, the primary data sources are secondary data drawn specifically from national and international scholarly journals. Priority was given to national journals that directly address issues of collective memory, local wisdom, and disaster management in Indonesia, including published case studies.

The data collection technique relied entirely on literature review. This process involved systematic stages of searching, identifying, evaluating, and synthesizing information from selected

scholarly articles. Researchers began by identifying relevant keywords such as “disaster-related collective memory,” “local wisdom in disaster management,” “disaster mitigation,” “Indonesian tornadoes,” and “Indonesian disaster case studies” to search various journal databases and digital repositories. Articles most relevant to the research questions and objectives were carefully selected. From each chosen source, essential information regarding the presence, forms, functions, and influencing factors of collective memory and local wisdom was meticulously extracted.

Data analysis was carried out using thematic analysis and cross-case comparison techniques. Data gathered from various journals were categorized according to emerging themes (e.g., types of collective memory, forms of local wisdom, supporting or hindering factors). Comparisons across different Indonesian case studies were then conducted to identify patterns, similarities, and differences in the context of disaster-related collective memory and local wisdom. Data interpretation was grounded in relevant theoretical frameworks to provide a comprehensive understanding of the studied issues.

RESULT AND DISCUSSION

The Existence of Disaster-Related Collective Memory in Indonesian Communities

Disaster-related collective memory forms an essential foundation for community preparedness and adaptation. The literature review reveals that such collective memory still exists in Indonesia, although its form and strength vary across communities. This shared memory is often passed down through oral narratives, folklore, myths, rituals, and place names (toponyms) associated with past disaster events. For example, myths or legends supported by empirical evidence can help experts understand natural event cycles—such as earthquakes, tsunamis, volcanic eruptions, floods, or landslides—and thus build community awareness of potential hazards (Agusintadewi, [2019](#)).

In some communities, collective memory remains robust, particularly in areas regularly exposed to major disasters, such as coastal Aceh following the 2004 tsunami or settlements on the slopes of Mount Merapi. In Aceh, efforts to strengthen tsunami collective memory through community-based disaster education serve as strategies to keep these memories alive (Ujianto, [2019](#); Ridha et al., [2021](#)). This indicates that collective memory is not only naturally formed but can also be reinforced through social and educational interventions. However, in communities that rarely experience similar disasters or among younger generations less exposed to traditional narratives, collective memory tends to weaken or even fade. The shift from oral traditions to modern culture and formal education systems without local disaster narratives contributes to this erosion.

Analysis of Local Wisdom in Disaster Management in Indonesia

Local wisdom is an asset for disaster mitigation and adaptation in Indonesia. Various case studies show that local wisdom is still practiced in many forms, though it faces challenges from modernization. Local wisdom consists of inherited thoughts, beliefs, and behaviors embedded in culture that continue today. It is considered a community belief system that serves as social capital in disaster risk reduction through time-tested practices and educational impact.

The Indigenous Kasepuhan Ciptagelar community in Sukabumi, West Java, exemplifies how local wisdom is highly relevant to disaster mitigation. Facing risks such as earthquakes, erosion, landslides, and climate change, the community integrates local wisdom as a medium for disaster mitigation.

Tangible forms include their traditional stilt houses with thatched roofs, bamboo or wooden frames, and bamboo flooring. These structures are proven to withstand earthquake shocks, wind, and structural loads, while the flexibility of bamboo allows them to protect inhabitants during earthquakes without causing fatalities. Their modular design also enables relocation. This represents structural mitigation based on local wisdom.

Their land-use patterns also embody structural mitigation. Ciptagelar applies forest zoning (Leuweung Titipan, Leuweung Tutupan, Leuweung Bukaan/*Garapan*) to conserve the environment and prevent landslides. Farming practices, such as dryland cultivation (*huma*) and terracing (*geobang*), further prevent erosion on steep, hazard-prone slopes.

Intangible local wisdom includes cultural practices such as dress codes, dietary rules, marriage customs, and the Sereh Taun Ceremony, expressing gratitude for rice harvests and reinforcing social cohesion—an essential factor in disaster response. Customary prohibitions also play a role, including bans on selling rice (considered selling one's life), using rice mills, and building brick houses—believed to be ancestral advice to avoid earthquake damage. Adat law emphasizes reciprocity (what is planted is what is reaped), with sanctions for harming forests, such as mandatory replanting or social exclusion. Harmonization of customary and state law in forest protection helps prevent disasters like landslides, water shortages, and floods.

Non-structural mitigation includes community preparedness, forest zoning, and water and food resource management. Some homes even have wooden slit drums (*kentongan*) serving as early warning systems (EWS). Their food resilience tradition—planting rice once a year based on constellations and storing harvests in *leuit* (granaries)—ensures stocks sufficient for up to 90 years, providing security during droughts and climate change (Gantini, 2015).

Factors Influencing the Persistence or Erosion of Collective Memory and Local Wisdom

The existence of disaster-related collective memory and local wisdom in Indonesia is dynamic, shaped by supportive or erosive forces. Supporting factors include the central role of customary institutions and leaders (as in Ciptagelar), active intergenerational transmission of narratives and practices, strong integration into belief systems and customary law, practical effectiveness (e.g., earthquake-resistant bamboo houses), and external support from governments or NGOs applying participatory approaches that respect local values.

Erosive factors include rapid modernization and globalization, which prompt cultural assimilation and the neglect of local wisdom. Modern communities often see local wisdom as outdated and irrelevant. Pre-surveys indicate the fading of local wisdom in traditional societies under modernization pressures. Social and demographic changes, such as urbanization or migration, disconnect communities from their ancestral environments and knowledge. Formal education systems that fail to incorporate local values accelerate this disconnection, particularly when older generations stop transmitting knowledge or younger generations lose interest. Conflicting views between governments and customary communities, especially over forest management, also hinder preservation. Top-down, reactive policies reduce community involvement, and economic pressures can push residents toward illegal practices like logging, despite customary bans. Ultimately, the existence of collective memory and local wisdom in Indonesian disaster management is a tug-of-war between internal community forces of preservation and external modernizing pressures.

CONCLUSION

Based on the synthesis and analysis of the literature, this study concludes that disaster-related collective memory and local wisdom still exist within Indonesian communities, but their presence is varied and facing significant challenges. Collective memory is generally preserved through oral narratives and rituals passed down across generations, while local wisdom is manifested in tangible forms (such as earthquake- and wind-resistant traditional houses and forest zoning systems) as well as intangible forms (such as customs, taboos, and environmental management rules). These local knowledge systems play an essential role in mitigating disaster risks, strengthening social cohesion, and enhancing community preparedness and resilience.

However, factors such as modernization, the fading of intergenerational transmission, the marginalization of local actors in formal disaster management policies, and the lack of participatory approaches threaten the continuity and effectiveness of collective memory and local wisdom. Without interventions to support preservation, these cultural resources risk being eroded or forgotten, particularly among younger generations and in urbanizing communities.

Therefore, this study recommends strengthening cultural transmission channels and integrating collective memory and local wisdom into participatory disaster risk reduction (DRR) strategies. Local institutions, traditional leaders, and customary law should serve as key drivers of these efforts at the community level. Furthermore, national, and regional governments, NGOs, and DRR practitioners

should develop adaptive and inclusive policies that acknowledge and incorporate local knowledge, ensuring that technological approaches complement rather than replace the socio-cultural assets that have long served as the foundation of disaster resilience in Indonesia.

Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

The author has given approval for the publication of this manuscript.

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