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Disaster Management Awareness And Indigenous Practices In Barangay Pinsao Proper, Baguio City

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Abstract
This study investigated the disaster risk management (DRM) strategies and the indigenous practices in Barangay Pinsao Proper, Baguio City, hypothesizing that their combination enhances community resilience. Using an explanatory sequential mixed-method approach, the research gathered data from 301 residents through surveys and qualitative interviews with local leaders and residents of the barangay. Findings indicate moderate DRM awareness but highlight deficiencies in evacuation protocols, land use planning, and vulnerability assessments. Traditional practices such as bayanihan (communal unity), binnadang (mutual aid), and ritual-based disaster predictions remain vital components of local resilience. These practices, deeply embedded in the community's culture, complement scientific DRM approaches by fostering collective action and environmental awareness. The study emphasized the need for DRM programs that integrate indigenous knowledge with modern frameworks to improve preparedness and response. To bridge existing gaps, structured educational initiatives, policy support, and multi-sector collaboration are essential. Recognizing indigenous knowledge strengthens community ownership of DRM strategies and promotes sustainable, culturally responsive disaster preparedness. This research underscores that effective DRM extends beyond technical expertise, relying on social cohesion, cultural values, and shared responsibility among government agencies, academic institutions, and local communities.
Keywords: *disaster risk management, awareness, indigenous practices, community*

INTRODUCTION

Background of the Study

In a world increasingly characterized as volatile, uncertain, complex, ambiguous, and diverse (VUCAD), the exposure to and impact of disasters continue to pose significant threats to human life, sustainable development, and environmental integrity. Rapid urbanization, climate change, and global interconnectedness have amplified the intensity and frequency of natural and man-made hazards. As Guterres (2022) emphasized, understanding and managing disaster risk is essential for achieving the Sustainable Development Goals (SDGs), since disasters can instantly undo decades of development progress.

The 2022 United Nations Global Assessment Report on Disaster Risk Reduction (UNDRR) underscores that the global community remains far from fulfilling the objectives of the Sendai Framework. The report states that current risk creation is outpacing risk reduction, calling for reframed risk communication, policy innovation, and the engagement of local communities to ensure resilient development (UNDRR, 2022). Similarly, the United Nations Educational, Scientific and Cultural Organization (UNESCO) noted that climate change, urban pressure, and insufficient preparedness are increasingly transforming natural hazards into large-scale disasters, leading to major economic and human losses. It defines disaster risk reduction (DRR) as a systematic effort to reduce vulnerabilities and minimize disaster impacts through risk analysis, early warning, and mitigation strategies (UNESCO, 2022).

The Philippines is particularly vulnerable due to its location within the Pacific Ring of Fire and typhoon belt. It is frequently struck by typhoons, earthquakes, volcanic eruptions, and landslides. As of December 2023, the country recorded high disaster risk index scores—9.7 for earthquakes and 9.4 for tsunamis—reflecting extreme exposure to geophysical hazards (Balita, 2023). In 2022 alone, tropical cyclones resulted in approximately ₱25 million in damages. While fatalities have declined significantly since Typhoon

Haiyan in 2013, disaster-induced disruptions remain a persistent concern, particularly in the education sector.

The educational system is consistently disrupted by prolonged rainfall, high heat indices, and other hazards that prompt local government units (LGUs) to suspend classes. In September 2023, the Department of Education reported 26.3 million enrollees for School Year 2023–2024, highlighting the vulnerability of a large student population to disaster impacts ("Enrollees still 2.5 million short," 2023). According to Bronfman et al. (2019), embedding DRR into the planning and development of the education sector is crucial in saving lives and ensuring the continuity of learning.

To address these challenges, the Philippines institutionalized Republic Act No. 10121, known as the Philippine Disaster Risk Reduction and Management (PDRRM) Act of 2010. This law mandates the integration of DRR into national and local government functions, including education. Its four thematic areas—disaster prevention and mitigation, preparedness, response, and rehabilitation—align with the Department of Education's (DepEd) educational outcomes in access, quality, and governance (Republic Act No. 10121, 2010). Soriano (2019) found that such initiatives have contributed to a satisfactory level of DRR knowledge in local communities, demonstrating the effectiveness of school-based disaster education.

Research also supports the importance of integrating Indigenous knowledge systems into contemporary DRR frameworks. While modern disaster risk management heavily relies on scientific data and technology, Indigenous communities have long employed locally developed strategies grounded in ecological understanding and cultural practices. Räsänen, Lien, Bird, and Setten (2020) emphasized that community resilience depends on how the community is conceptualized and that strategies for strengthening resilience must be adapted to specific contexts. Ryan, Johnston, Taylor, and McAndrew (2020) found that community engagement techniques—especially face-to-face interactions—are effective in increasing preparedness. On the other hand, Bali (2022) demonstrated that countries with strong community participation in DRR experience lower disaster-related losses. This is especially true for developing countries where limited government resources make community-based approaches both practical and impactful.

In this light, the present study focuses on Pinsao Proper Barangay in Baguio City, a high-risk area identified in the 2008 Detailed Landslide Hazard Map of Baguio City published by the Department of Environment and Natural Resources - Mines and Geosciences Bureau (DENR-MGB). With the barangay classified as having high landslide susceptibility and considered a critical zone, the research aims to explore how Indigenous knowledge systems can be effectively integrated with scientific and institutional DRR strategies. It seeks to identify community-based approaches to disaster preparedness and response, examine local perceptions and capacities, and contribute to a more inclusive and sustainable disaster risk governance model that supports national and international resilience objectives.

RELATED LITERATURE

This study is grounded in a growing body of interdisciplinary research emphasizing the value of integrating indigenous knowledge into disaster risk management (DRM) and enhancing community resilience. As the threats of climate change and disaster-related events increase, the potential for Indigenous knowledge to supplement scientific approaches has gained greater recognition (Hiwasaki et al., 2018; Kelman et al., 2018).

Indigenous knowledge refers to systems of understanding developed over generations, deeply rooted in local contexts, environments, and cultural traditions. Bruchach (2014) defined it as a network of knowledge, beliefs, and traditions that communicate and preserve Indigenous relationships with culture and landscape. This knowledge is not merely factual but encompasses religious beliefs and traditional practices, often indistinguishable from each other in Indigenous epistemologies.

The integration of Indigenous practices into modern DRM systems offers valuable, culturally grounded alternatives to conventional methods. Hiwasaki et al. (2018) argue that this traditional knowledge, specific to environmental and cultural contexts, provides actionable insights in disaster prediction, preparedness, and response. Similarly, a 2023 study on Indigenous knowledge and disaster risk reduction highlights that engaging local communities through their traditional frameworks can lead to more sustainable and contextually relevant DRM interventions.

Mammalogy (2022) observed that while the inclusion of Chepang Indigenous practices in development planning benefits both communities and government, the erosion of intergenerational knowledge

transfer threatens its long-term viability. This trend is mirrored in the Philippines, where the Aeta community utilizes traditional weather forecasting and environmental indicators to mitigate disaster risks (Mercer et al., 2019). Timilsena and Devkota (2022) affirm that while Indigenous systems are invaluable for early warning and disaster reduction, their continuity is increasingly jeopardized by disinterest among younger generations.

Moreover, Indigenous knowledge is intertwined with identity and resilience strategies. Kelman et al. (2018) cited the Maori people's ecological knowledge as central to both their cultural heritage and adaptive responses to environmental hazards. However, Nakashima and Krupnik (2018) noted a persistent disconnect between the acknowledged value of traditional knowledge and its practical implementation in institutional DRM frameworks.

Savo et al. (2018) emphasize that Indigenous agricultural methods—such as soil fertility management and water conservation—improve resilience to climate-driven hazards. Likewise, McAdoo et al. (2019) advocate for the inclusion of Indigenous strategies in early warning systems and disaster preparedness planning. Mavhura (2020) further supports this view, asserting that communities combining traditional and modern DRM practices possess greater adaptive capacity and disaster readiness.

Theoretical and Conceptual Framework

This literature aligns with theoretical models underpinning this study. It is grounded on four key theoretical perspectives: Resilience Theory, Indigenous Knowledge Systems, Integrative Risk Management, and Community-Based Disaster Risk Management (CBDRM). Resilience Theory (Cutter et al., 2020; Folke et al., 2016) highlights communities' adaptive capacities and their ability to absorb, respond to, and recover from disasters. It frames the study's goal of fostering resilience by integrating diverse disaster risk management (DRM) strategies.

The concept of Indigenous Knowledge Systems (Leonard et al., 2020; Nakata, 2018) emphasizes the value of traditional, place-based knowledge developed over generations. These culturally rooted practices offer localized, sustainable approaches to disaster preparedness, early warning, and recovery, making them highly relevant to modern DRM efforts.

Integrative Risk Management Theory (Wisner et al., 2021; Kong, 2024) supports the synthesis of traditional and scientific knowledge systems, encouraging a holistic, context-sensitive approach to DRM. Meanwhile, CBDRM Theory (Gaillard & Mercer, 2013; Shaw et al., 2020) promotes community participation and empowerment in DRM planning, ensuring that strategies are grounded in local realities and capacities.

The conceptual framework of this study focuses on three interrelated components: (1) Community Awareness of DRM, encompassing knowledge and engagement across the phases of prevention, preparedness, response, and recovery; (2) Indigenous Knowledge, referring to the specific traditional practices in Pinsao Proper; and (3) Disaster Risk Management, including risk assessment, mitigation, and action planning. These components interact to form a comprehensive understanding of how local knowledge and community engagement contribute to adaptive and effective DRM in the context of Barangay Pinsao Proper, Baguio City.

Significance of the Study

This research supports accreditation-related initiatives under Area IX (Social Orientation and Community Involvement), highlighting the synergy between instruction, outreach, and community partnership. It contributes to enhancing disaster risk management (DRM) in Barangay Pinsao Proper by promoting community awareness and preserving Indigenous practices, thereby strengthening local resilience.

The study holds significance in several key areas:

- **Preservation of Indigenous Knowledge**: It safeguards traditional disaster-related practices adapted to local environments, ensuring cultural continuity and relevance.
- **Improved Preparedness and Resilience**: It highlights the value of Indigenous techniques in predicting, mitigating, and responding to disasters.
- **Community Empowerment**: It fosters local participation in DRM, enhancing ownership, cohesion, and self-reliance.
- **Sustainability**: It integrates eco-friendly Indigenous methods into disaster strategies.
- **Policy Relevance**: It informs policymakers on the integration of Indigenous knowledge in DRM frameworks.

- **Educational Impact**: It enriches teaching and learning by promoting cultural awareness and interdisciplinary engagement.
- **Global Relevance**: It offers scalable insights for Indigenous DRM integration in other global contexts.

Aligned with the University Research Agenda on Community Research, the study advances the United Nations Sustainable Development Goals—particularly SDG 11 (Sustainable Cities and Communities), SDG 13 (Climate Action), and SDG 4 (Quality Education)—through inclusive, resilient, and knowledge-based community development.

Statement of the Problem

This study investigated the level of awareness and the role of indigenous practices in disaster risk management as a basis for enhancing community resilience. In particular, it sought answers to the following:

1. What is the level of awareness on disaster risk management of Pinsao Proper Barangay residents in terms of
a. Prevention and Mitigation
b. Preparedness
c. Response
d. Rehabilitation and Recovery
2. What unique indigenous practices in disaster management are employed by the barangay?
3. How do these indigenous practices address specific local challenges?

METHODOLOGY

Research Design

This study employed an explanatory sequential mixed-methods design, beginning with quantitative data collection to identify patterns in community awareness of disaster risk management (DRM), followed by qualitative inquiry to explore indigenous practices in depth. This design enabled a comprehensive understanding of how traditional knowledge enhances community resilience in Barangay Pinsao Proper. Quantitative data were gathered through surveys, while semi-structured interviews and focus group discussions with local leaders, elders, and residents provided rich qualitative insights. Inductive thematic analysis was used to identify themes related to indigenous practices and their relevance to DRM.

The study focused on the unique socio-cultural and environmental context of Barangay Pinsao Proper, exploring both the community's level of DRM awareness and its indigenous responses to disaster events. While offering valuable localized insights, the study acknowledges limitations, including potential self-report biases, reliance on participant recollection, limited geographic scope, and resource constraints affecting data depth. Despite these limitations, the research offers focused insights into the integration of indigenous knowledge in DRM and its role in enhancing resilience at the community level.

Sample Population of the Study

The target population for this study was the residents living in Pinsao Proper Barangay, Baguio City. As of the 2020 Census, Pinsao Proper had a total population of 8,361. The sampling frame was a complete list of all households and individuals residing in Pinsao Proper, which was obtained through the barangay records or a household enumeration conducted specifically for the study.

Proportionate stratified sampling was used, where each purok (zone) within Pinsao Proper had a proportional number of respondents relative to the total sample size. This ensured representativeness across the different areas of the barangay. The sample size was determined using Cochran's sample size formula. The appropriate sample size was calculated based on the desired level of precision (margin of error), the desired confidence level, and the estimated proportion of the population with the characteristic of interest. Using an online sample size calculator, with a population size of 8,361 and the specified combination of precision, confidence level, and variability, the calculated sample size was 368.

Following the sampling methodology, the researchers distributed 400 survey questionnaires on December 19, 2024, to give ample time for the respondents to answer before the retrieval scheduled on January 11, 2025. However, they only obtained 81.75% (327) answered survey questionnaires out of the number of distributed forms; 92.05% (301) were valid, and 7.95% were invalid because of incomplete responses by the respondents. The retrieved questionnaires still allowed gathering data and insights within the desired level of statistical confidence and precision. The stratification by purok ensures coverage of the barangay's different areas in the sample.

Data Gathering Tool

This study utilized a structured survey adapted from the Global Disaster Preparedness Center (2022) and a semi-structured interview guide based on Reyes et al. (2019) to collect data from residents of Barangay Pinsao Proper, Baguio City. The tools were designed to address the research objectives and gather both quantitative and qualitative data.

The survey included:

- Section 1: Demographic Information – Captured residents' years of stay and roles in the barangay.
- Section 2: DRM Awareness – Assessed awareness across prevention, preparedness, response, and recovery phases.
- Section 3: Semi-Structured Interviews – Explored indigenous practices and their application to local disaster challenges.

The instruments were reviewed by experts and validated by the UB RIECO to ensure content accuracy and reliability. Data were collected through face-to-face interviews, facilitated by trained researchers and Barangay Purok Leaders, who were briefed on ethical standards, interview protocols, and informed consent procedures. To ensure data quality, completed forms were reviewed for consistency and encoded using validated digital tools. This approach ensured reliable, ethical, and context-sensitive data collection for the study.

Data Gathering Procedure

To gather data for this study on the residents of Pinsao Proper Barangay, Baguio City, the process began with preliminary research and community engagement. A thorough literature review on indigenous knowledge, DRM, and resilience was also conducted by the researchers for them to understand the current state of the research and identify knowledge gaps. The researchers coordinated with the barangay officials to inform them about the study, explained the research objectives, sought their support, consent, and collaboration, and obtained the necessary permissions and sampling frame. With the approval and guidance of the Barangay Captain, another meeting was set together with the Purok Leaders and the Kagawad in charge of the Barangay's DRRM, who have provided incredible support in the data gathering and determination of the participants in the interview to gather a general perspective on the research problems.

Further, the researchers utilized the approved structured survey questionnaire and semi-structured interview guide in conducting face-to-face interviews. Using proportionate stratified sampling, the research team selected the households to be included in the sample, considering the geographic spread. In relation to ensuring accurate and reliable data collection, they administered the data-gathering process with the aid of the Barangay Purok Leaders. This strategy was intended to lessen any miscommunication, particularly among participants who may not speak or understand English well. Determined as a vital step in the procedure, the researchers sought the help of the barangay officials and Purok leaders, who are not only fluent in the local dialect but are also very knowledgeable about the geographical features of the area. The researchers and Purok Leaders visited the selected households and conducted interviews using the structured questionnaire, ensuring informed consent and confidentiality and that all participants fully understood the questions and instructions, thereby enhancing the validity of the responses obtained.

After the fieldwork, the completed questionnaires were encoded by the researchers into a digital format, cleaned, and validated to identify and correct any errors or inconsistencies. The findings from qualitative and quantitative data were integrated to provide a holistic understanding of the research problems. The collected data were securely backed up and stored, with access limited to authorized personnel only.

Treatment of the Data

The study employed a mixed-methods approach in analyzing both quantitative and qualitative data. Quantitative responses on disaster risk management (DRM) awareness were analyzed using descriptive statistics, specifically the weighted mean, across four thematic areas: prevention and mitigation, preparedness, response, rehabilitation, and recovery. A 4-point Likert scale guided the interpretation of awareness levels.

For the qualitative data, responses from semi-structured interviews and focus group discussions were transcribed and subjected to thematic analysis. Meaningful excerpts were coded, grouped, and synthesized into key themes reflecting indigenous practices and their relevance to local DRM challenges.

To enhance the validity and reliability of findings, triangulation was applied, cross-verifying insights from multiple data sources and methods. This approach ensured a more comprehensive and nuanced understanding of community resilience and the integration of indigenous knowledge into DRM practices.

Ethical Considerations

The study received ethics clearance from the university's ethics committee and followed strict protocols for data security, confidentiality, and cultural sensitivity. A comprehensive data management plan was implemented to protect sensitive information.

Informed consent was obtained from all participants after explaining the study's purpose, methods, and potential risks. Participation was voluntary, and confidentiality was ensured by anonymizing responses and securely storing data accessible only to the researchers. Participants were treated with dignity and respect, with fair and inclusive selection. The research upheld academic integrity by accurately citing sources, following approved data collection procedures, and avoiding falsification.

Conducted in collaboration with the community, the study ensured that findings would benefit participants. Results will be shared in accessible formats, and, with approval, presented to barangay officials to support localized disaster risk management efforts.

RESULTS AND DISCUSSION

Survey responses from 301 residents of Barangay Pinsao Proper indicated a moderate but meaningful level of disaster risk management (DRM) awareness, particularly in the areas of prevention, preparedness, response, and recovery. Descriptive analysis revealed strengths in basic preparedness knowledge, alongside critical gaps in localized response and recovery strategies.

To contextualize these findings, qualitative data provided culturally grounded insights, highlighting how indigenous practices and lived experiences shape awareness levels. The integrated analysis underscores the need for sustained education, active community engagement, and formal recognition of indigenous knowledge as essential components for enhancing community resilience to natural and human-induced hazards (Sauquillo et al., 2023).

A. Level of Awareness on Disaster Risk Management

Respondents demonstrated a moderate level of awareness across all disaster risk management subscales, with an overall mean of 2.95. The highest awareness was in the Response phase (M = 3.00), followed by Prevention and Mitigation (M = 2.99), indicating that residents are more familiar with actions to take during disasters and ways to reduce their impact beforehand. Preparedness scored slightly lower (M = 2.93), reflecting a fair understanding of readiness activities, while the lowest awareness was in Rehabilitation and Recovery (M = 2.89), highlighting a gap in knowledge on long-term recovery efforts.

These findings suggest the need to enhance education and training, especially in recovery-related areas, while building on existing strengths in immediate response and preventive measures. The overall moderate ratings emphasize the importance of comprehensive awareness across all phases of disaster risk management.

Level of Awareness on Disaster Risk Management in Terms of Prevention and Mitigation

The findings show that residents of Barangay Pinsao Proper have a moderate level of awareness of disaster prevention and mitigation, with an overall mean score of 2.99 (SD = 0.717). Respondents demonstrated the strongest awareness in the importance of environmental protection (M = 3.22), disaster-resilient structures (M = 3.16), and common hazards in the community (M = 3.15), reflecting a solid understanding of general concepts related to disaster prevention.

Lower levels of awareness were evident in evacuation route familiarity (M = 2.78), land use planning (M = 2.84), and vulnerability and capacity assessment (M = 2.85). Awareness of government programs (M = 2.93) and risk mapping (M = 2.89) also fell below the overall mean, suggesting gaps in practical knowledge and community engagement on essential planning and preparedness measures.

These results indicate that while broader awareness of structural and ecological risk reduction exists, there is a need for targeted educational initiatives focused on evacuation planning, land use, and vulnerability assessment. This supports the observations of Prariti (2023) and Carpio (2019), who emphasized the link between environmental stewardship and disaster resilience, and aligns with Rogayan & Dollete (2020) in underlining the importance of hazard identification and structural resilience. The low awareness in evacuation and planning echoes concerns by Sauquillo et al. (2023) and Chong et al. (2018) regarding community-level disaster response readiness and risk reduction strategies.

Level of Awareness on Disaster Risk Management in Terms of Preparedness

Residents of Barangay Pinsao Proper demonstrated a moderate level of awareness in disaster preparedness, with an overall mean of 2.93 (SD = 0.791). The highest awareness was found in having a designated family communication plan (M = 3.12) and understanding the importance of disaster drills

(M = 3.10). Moderate awareness was also seen in evacuation readiness and hazard identification at home and work (M = 3.01).

However, lower levels of awareness were noted in participation in community-based preparedness activities (M = 2.73) and insurance coverage (M = 2.57), indicating limited engagement in collective preparedness efforts and financial protection strategies. These findings point to the need for targeted interventions that promote community participation and increase awareness of risk reduction tools such as property insurance.

The moderate preparedness rating reflects a baseline understanding of disaster procedures, yet also reveals vulnerabilities that may hinder effective response. As noted by Torrentira and Makilan (2018), preparedness often remains superficial without active involvement in formal training or community initiatives. This aligns with Hargono et al. (2023), who found that individuals with lower disaster awareness are significantly more likely to lack preparedness.

Strengths in areas such as family emergency planning and drill participation are consistent with recommendations from Habitat for Humanity and Nguyen et al. (2018), emphasizing household-level planning as key to safety. However, the lack of life-saving skill awareness, limited search and rescue participation, and uncertainty about government roles (M = 2.85) indicate gaps in deeper engagement with response protocols. These issues have also been observed in related studies by Chong et al. (2018), Nkombi (2022), and Nkombi & Wentink (2022), underscoring the importance of improving access to information and capacity-building opportunities.

Level of Awareness on Disaster Risk Management in Terms of Response

Residents of Pinsao Proper exhibited a moderate level of awareness in disaster response, with an overall mean of 3.00 (SD = 0.739). The highest levels of awareness were seen in following instructions from authorities (M = 3.21), protecting oneself from hazards (M = 3.19), and seeking help during or after a disaster (M = 3.16). Respondents also showed moderate awareness in effective communication and maintaining peace and order (both M = 3.10).

In contrast, lower awareness was noted in performing basic life-saving skills (M = 2.77) and participating in search-and-rescue operations (M = 2.73). These findings point to gaps in hands-on emergency skills, which are critical during actual disaster events.

While the community shows strength in compliance and basic safety understanding (Varona et al., 2017; Carpio, 2019), the lack of practical preparedness in areas such as first aid and knowledge of shelters (Chong et al., 2018; Alcayna et al., 2016) calls for targeted training programs. Broader studies affirm these results, indicating that while communities comply with instructions, they often lack technical skills and awareness of resources due to socio-economic and educational disparities (Yoro et al., 2023; World Bank, 2018).

Level of Awareness on Disaster Risk Management in Terms of Rehabilitation and Recovery

The overall awareness level of residents in this area is also moderate, with a mean of 2.89 (SD = 0.766). The highest levels of awareness were in rebuilding stronger after a disaster (M = 3.13) and learning from past disasters (M = 3.09). Awareness of psychological support for survivors also ranked fairly high (M = 2.96).

However, respondents reported lower awareness in contributing to infrastructure rehabilitation (M = 2.71), supporting livelihood recovery programs (M = 2.73), and accessing government assistance (M = 2.84). These findings suggest that while residents understand the value of resilience and learning from past events (Carpio, 2019; Varona et al., 2017), they face barriers to participation in recovery efforts, likely due to limited training, technical skills, or information access (Sauquillo et al., 2023).

The discrepancy between high awareness of general recovery principles and low confidence in practical involvement underscores the need for community-based capacity-building programs. Tailored interventions should focus on skills development, dissemination of recovery aid processes, and encouraging active participation in livelihood and infrastructure rebuilding (Tran et al., 2020; Cadiz et al., 2018). Bridging the gap between theoretical understanding and real-life application is crucial in fostering a resilient, empowered, and self-sufficient community (Chong et al., 2018).

The barangay of Pinsao Proper, Baguio City, faces frequent natural and human-induced disasters. In response, the community actively integrates indigenous practices with modern disaster risk management. Based on responses from 48 community members, key themes emerged: community-based disaster response, preparedness and training, early warning and risk reduction, environmental and structural preparedness, and cultural and indigenous practices.

Community-Based Disaster Response highlights cooperative systems like bayanihan and binnadang, reflecting deeply rooted traditions of mutual aid. Respondents noted that neighbors often assist even before formal responders arrive. These practices promote rapid, localized responses, reinforcing trust and community cohesion.

Preparedness and Training

emerged through mentions of barangay-led disaster drills, BLS training, and knowledge-sharing seminars. Community efforts to preserve survival techniques passed down through generations supplement formal training. The combination of traditional knowledge and modern preparedness strategies increases the community's capacity to respond effectively.

Early Warning and Risk Reduction is exemplified by information dissemination through megaphones and group chats. The community values timely alerts from barangay officials and tanods, which help residents prepare and respond quickly. Integration of traditional vigilance with modern communication tools enhances collective resilience.

Environmental and Structural Preparedness is shown in tree planting, community meetings, and barangay monitoring during calamities. These actions reflect environmental stewardship and proactive risk reduction. The community's swift responses and regular area checks by barangay officials emphasize structural preparedness and localized governance.

Cultural and Indigenous Practices remain central to disaster management. Practices like the Kanyaw ritual demonstrate the community's spiritual connection to the environment and reinforce collective readiness. These cultural elements promote social cohesion and adaptive behaviors.

B. Thematic Analysis of Indigenous Practices in Disaster Management

When the respondents were asked how the local practices of Barangay Pinsao Proper address challenges brought by calamities, four major contributions emerged:

1. Enhancing Preparedness, Awareness, and Immediate Response – Respondents emphasized that indigenous practices increase alertness and readiness. Early warnings, drills, and the binnadang system contribute to reduced casualties and better preparedness.

2. Promoting Community Cooperation and Support – The values of bayanihan and mutual assistance foster cooperation and faster recovery. Collective efforts strengthen relationships and reduce burdens on affected individuals.

3. Preserving Indigenous Knowledge and Traditions – Storytelling and teachings from elders preserve valuable survival strategies, ensuring intergenerational learning and community memory.

4. Building Emotional and Social Resilience – Psychological support and social trust create a strong emotional foundation for disaster response and recovery. These practices promote inclusivity and sustained community participation.

The indigenous practices of Barangay Pinsao Proper reflect a holistic, culturally anchored approach to disaster management. Combining traditional knowledge with modern tools builds resilience, strengthens community bonds, and ensures an inclusive and effective disaster response system.

C. Joint Presentation of Quantitative and Qualitative Findings with Integrated Interpretations

Disaster Risk Management Subscales	Quantitative Finding	Qualitative Theme	Integrated Interpretation
Prevention and Mitigation	Moderate awareness, but relatively higher in environmental protection and resilient structures	Environmental Preparedness	Supported by tree planting, but limited personal planning and evacuation knowledge
	Moderate awareness, lower within the domain in evacuation routes and land use planning	Early Warning Systems	Residents rely on barangay alerts; evacuation knowledge remains informal
Preparedness	Moderate awareness, relatively higher in communication plans and disaster drills	Preparedness and Training	Consistent with barangay-led drills and traditional survival teachings

	Moderate awareness, lower scores in insurance, community participation, and first aid	Need for Formal Training	The community lacks access to technical training and financial guidance
Response	Moderate awareness, relatively higher in following instructions, self-protection and seeking help.	Community Response & Cooperation	Strong reliance on cultural mutual aid systems (bayanihan/binnadang)
	Moderate awareness, lower within the domain in rescue operations and life-saving skills	Practical Skill Deficit	Explains the need for targeted technical capacity-building programs
Rehabilitation and Recovery	Moderate awareness, relatively higher in rebuilding stronger, and learning from past disasters	Cultural Resilience	Residents understand the value of building back better and learning from the past
	Moderate awareness, lower end in livelihood recovery, and infrastructure rehabilitation	Access and Skills Barrier	Residents lack access to or the technical ability for post-disaster recovery work

The table presents the integrated findings from both the quantitative and qualitative phases of the study. It highlights how the community's awareness across the four DRM domains—prevention and mitigation, preparedness, response, rehabilitation, and recovery—is reflected in both statistical trends and thematic insights. The discussion below elaborates on how the qualitative data helped explain or enrich the quantitative results in each domain.

Awareness of Prevention and Mitigation

Quantitative results indicated a moderate awareness level (M=2.99), with the highest scores in environmental protection (M=3.22), disaster-resistant structures (M=3.16), and hazard identification (M=3.15). Awareness of evacuation routes (M = 2.78) and land use planning (M = 2.84) was comparatively low.

These findings align with the qualitative theme "Environmental and Structural Preparedness," where residents emphasized practices like tree planting and community-based monitoring. Such actions affirm ecological awareness. However, many rely on barangay officials for evacuation plans and warnings, indicating a gap in personal knowledge, which supports the low scores in evacuation and planning.

Awareness on Preparedness

Quantitative data again showed moderate awareness (M=2.93), with higher ratings in communication planning (M=3.12) and awareness of disaster drills (M=3.10). Lower scores were seen in community participation (M=2.73) and insurance coverage (M=2.57).

The qualitative theme "Preparedness and Training" further explains this. Respondents praised barangay-led drills and seminars and shared how traditional knowledge is passed down through elders. Still, the community expressed a desire for formal training in first aid and BLS, and insurance remained largely unfamiliar, supporting the quantitative gaps in technical and financial preparedness.

Awareness of Response

Respondents showed moderate response awareness (M=3.00), scoring highest in following authorities (M=3.21), self-protection (M=3.19), and seeking help (M=3.16). The lowest awareness was in search and rescue participation (M=2.73) and performing basic life-saving skills (M=2.77).

The themes "Community-Based Disaster Response" and "Early Warning and Risk Reduction" explain these results. Cultural practices like bayanihan and binnadang foster immediate, neighbor-led assistance. This supports the community's strength in compliance and cooperation, though it also explains the lack of formal rescue involvement.

Awareness on Rehabilitation and Recovery

This domain had the lowest overall awareness (M=2.89). Residents valued rebuilding stronger (M=3.13) and learning from past events (M=3.09), but scored low in infrastructure involvement (M=2.71) and livelihood recovery (M=2.73).

Qualitative themes such as "Cultural and Indigenous Practices" and "Preserving Indigenous Knowledge" surfaced here. Practices like Kanyaw and storytelling support emotional recovery and learning. However, many respondents cited limited technical capacity and access to support systems, explaining the lower involvement in rehabilitation activities.

CONCLUSION

This study concludes that while Barangay Pinsao Proper exhibits a moderate level of disaster risk management (DRM) awareness, there remain critical areas for improvement to enhance long-term community resilience. The integration of quantitative and qualitative results reveals that this awareness is deeply rooted in indigenous knowledge, cultural practices, and collective experiences rather than formal training or institutional mechanisms.

Indigenous systems such as bayanihan, binnadang, and ritual-based reflection serve as informal yet powerful tools for disaster preparedness and response. However, gaps in technical knowledge, financial preparedness, and rehabilitation engagement stem not from indifference but from limited access to resources, training, and formal support systems.

To build a more resilient community, it is essential to systematically integrate traditional wisdom into formal DRM strategies, address information and capacity gaps, and strengthen policy and institutional support. A hybrid approach—merging modern scientific frameworks with community-based and indigenous practices—offers the most effective and sustainable path toward comprehensive disaster resilience in Barangay Pinsao Proper.

The integration of quantitative and qualitative findings reveals a moderate level of disaster risk management (DRM) awareness in Barangay Pinsao Proper. Across all DRM subscales—prevention and mitigation, preparedness, response, rehabilitation, and recovery—the community demonstrates strengths grounded in cultural and indigenous practices, yet faces gaps in technical training and access to formal resources.

Recommendations

Based on the conclusions, some recommendations can be made that would be helpful to national and local governments, especially the LGU of Pinsao Proper Barangay, in enhancing disaster resilience and prioritizing policy integration of indigenous practices.

National and local governments must formally incorporate traditional disaster management strategies into DRM frameworks through legislative recognition and community-driven consultations. Strengthening disaster preparedness and training is equally critical, requiring regular sessions on emergency response, first aid, and search-and-rescue operations. Schools and community centers should be leveraged as hubs for continuous DRM education.

Enhanced early warning systems should blend traditional methods with modern technology, such as mobile alerts and community-wide information networks, to improve timeliness and reach. Community-led DRM action plans should empower residents through barangay-level committees that collaborate with local officials and NGOs to ensure proactive disaster prevention and resource sustainability. Sustaining environmental conservation efforts, including tree planting, watershed management, and land-use planning, will help mitigate risks linked to environmental vulnerabilities.

Cultural preservation and knowledge transfer must also be emphasized by documenting indigenous practices and integrating them into DRM curricula. This ensures that younger generations adopt hybrid resilience strategies that combine traditional wisdom with scientific approaches.

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