

# QUANTITATIVE ASSESSMENT OF COMMUNITY PERCEPTIONS AND COPING STRATEGIES IN LANDSLIDE-PRONE AREAS

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## ABSTRACT

*This study investigated the relationship between landslide risk perception and coping mechanisms among 60 purposively sampled residents in the landslide-prone community of Barangay Salasang, Arakan, North Cotabato. The socio-demographic profile revealed a predominantly low-income population, with 41.67% of households earning ₱5,000.00 or below monthly. Descriptive analysis showed an exceptionally high level of risk awareness (Grand Mean = 4.45, "Strongly Agree") and a proactive posture toward coping strategies (Grand Mean = 4.37, "Strongly Agree"), where behavioral protocols like identifying evacuation routes scored the highest, while structural household modifications lagged behind due to financial constraints. Notably, Pearson's  $r$  correlation analysis yielded a non-significant relationship ( $r = 0.185$ ,  $p = 0.157$ ), revealing a distinct "perception-preparedness gap" where acute cognitive awareness of danger operates independently from actual preparedness execution. Consequently, it is recommended that local government units shift from basic risk communication to targeted structural and financial interventions, helping vulnerable, low-income homeowners transition from behavioral avoidance to long-term physical mitigation.*

**Keyword:** Community Perception, Coping Strategies, Landslide-Prone Areas, Preparedness, Vulnerability, Quantitative Assessment

## 1. INTRODUCTION

### 1.1. Rationale

Landslides are among the most destructive natural hazards worldwide, causing significant loss of life, damage to infrastructure, and disruption of livelihoods. In recent years, the increasing impacts of climate change have contributed to the rising frequency and severity of landslides across the globe. Studies indicate that community perception plays a crucial role in disaster preparedness and response, as individuals' understanding of risks influences their behavior and decision-making processes. However, many communities still struggle with inadequate awareness and limited adaptive capacity, which heightens their vulnerability to landslide hazards (UNDRR, 2020).

Landslides in the Philippines remain a persistent environmental issue due to the country's mountainous topography, deforestation, and frequent typhoons. Various government agencies have implemented hazard mapping, early warning systems, and disaster preparedness programs to mitigate risks. Despite these efforts, studies reveal

that communities often exhibit gaps in preparedness and response, with many residents relying on limited knowledge or past experiences rather than scientific information. This situation is further compounded by socio-economic constraints, which affect access to resources and the ability to implement effective coping strategies (DOST-PHIVOLCS, 2018 and DENR, 2019).

At the local level, residents in landslide-prone areas develop coping mechanisms based on experience, cultural practices, and available resources. These include evacuation, relocation, infrastructure adjustments, and reliance on community support. However, there is limited localized research that quantitatively examines how community perceptions influence the coping strategies adopted by individuals. Existing studies tend to focus more on hazard mapping and disaster response systems rather than on the relationship between perception and behavior at the community level. This gap highlights the need for a data-driven assessment that can better inform local disaster risk reduction initiatives (Osuret et al., 2016).

In response to these concerns, the present study aims to quantitatively assess community perceptions and coping strategies in landslide-prone areas. Specifically, it seeks to examine how residents perceive landslide risks and identify the strategies they use to cope with potential hazards. By providing empirical evidence, the study aims to contribute to the development of more effective, community-based disaster preparedness and resilience programs.

### **1.2. Statement of the Problem**

This study aims to determine the community perceptions and coping strategies of residents in landslide-prone areas.

Specifically, it seeks to answer the following questions:

1. What is the demographic profile of the respondents in terms of:
  - 1.1 Age
  - 1.2 Gender
  - 1.3 Length of Residence in the Area
  - 1.4 Residence Status
  - 1.5 Monthly Income
2. What is the level of community perception regarding landslide risks?
3. What is the level of coping mechanisms practiced by the respondents?
4. Is there a significant relationship between community perceptions and coping strategies?
5. What recommendations can be proposed to enhance community resilience in landslide-prone areas?

### **1.3. Delimitation and Limitation**

This study will focus on the quantitative assessment of community perceptions and coping strategies in landslide-prone areas. It will examine the level of awareness, preparedness, and perceived vulnerability of residents, as well as the coping mechanisms they employ.

The study will be limited to selected residents living in identified landslide-prone communities. Only individuals with direct exposure or experience related to landslide risks will be

included. The research will utilize survey questionnaires as the primary data collection tool.

## **2. METHODOLOGY**

### **2.1. Research Design**

This study will utilize a quantitative research design anchored in a descriptive-correlational framework. Quantitative research involves the systematic collection and analysis of numerical data to identify patterns, test relationships, and generate objective findings (Creswell & Creswell, 2018). This approach is appropriate for the present study as it aims to measure the level of community perceptions regarding landslide risks and examine how these perceptions are associated with the coping strategies employed by residents in landslide-prone areas.

A descriptive-correlational design is used to both characterize existing conditions and determine the relationships among variables without manipulating them (Mertens, 2015). In this study, it enables the researcher to explore whether the level of awareness and perception of landslide risks among community members is linked to the types of coping strategies and preparedness measures they adopt.

Furthermore, this design supports the examination of naturally occurring differences among residents in terms of their understanding of landslide hazards. By applying this method, the study can analyze how variations in risk perception relate to adaptive behaviors, thereby providing empirical insights into how communities manage and respond to landslide threats (UNDRR, 2019).

### **2.2. Locale of the Study**

The study will be conducted in the selected landslide-prone barangays within the Municipality of Arakan, North Cotabato, Philippines, 9417. The areas will be identified with the help of local disaster risk reduction and management offices as high-risk zones due to their geographical features such as steep slopes, unstable soil composition, and frequent exposure to heavy rainfall.



**Figure 2:** Map of the Study Area

**Source:**

<https://www.pna.gov.ph/articles/1111983>

### **2.3. Respondents of the Study**

The respondents of the study will consist of sixty (60) residents living in identified landslide-prone areas. These individuals are selected because they have direct exposure to environmental conditions that increase the risk of landslides, making them well-suited to provide relevant information about their perceptions and coping strategies.

These residents are likely to have experienced or witnessed landslide-related events, evacuation procedures, or disaster preparedness activities within their communities. Such experiences provide them with practical knowledge regarding risk awareness and adaptive behaviors. Their insights are essential in understanding how individuals perceive hazards and how these perceptions influence their preparedness and response actions.

By focusing on residents with firsthand experience in landslide-prone environments, the study ensures that the data collected reflects real-life conditions and responses. This allows the research to capture meaningful insights into both the challenges faced by communities and the strategies they employ to mitigate risks (Gaillard & Mercer, 2013).

### **2.4. Sampling Technique**

Purposive sampling will be employed in selecting the participants for this study. This non-probability sampling technique involves the intentional selection of individuals who possess specific characteristics or experiences that are directly relevant to the research objectives (Etikan, Musa, & Alkassim, 2016).

In the context of this study, participants will be chosen based on their residency in landslide-prone areas and their exposure to landslide risks or related events. By selecting individuals who have direct experience with such hazards, the study ensures that the data collected accurately represents community perceptions and coping mechanisms.

Additionally, this approach allows the research to explore the adaptive strategies residents use to respond to landslide risks, such as evacuation planning, structural adjustments, and reliance on early warning systems. Purposive sampling thus increases the relevance and reliability of the findings by focusing on respondents who are most knowledgeable and experienced in disaster-prone conditions.

### **2.5. Research Instrument**

A structured survey questionnaire will be utilized as the primary instrument for data collection in this study. The questionnaire is carefully designed to gather comprehensive information relevant to the research objectives and is divided into three key sections.

The first section focuses on the respondents' demographic profile, including age, gender, length of residence in the area, and occupation. This information will provide contextual background and allow for the analysis of potential differences in perception and coping strategies based on socio-demographic factors.

The second section addresses community perceptions of landslide risks that measure respondents' level of awareness, perceived vulnerability, and understanding of landslide causes and impacts. These items aim to capture how individuals interpret and assess the risks present in their environment.

The third section examines coping strategies that identify the actions residents take to prepare for, respond to, or recover from landslide events. These may include preparedness measures, participation in community programs, and personal or household-level adaptations.

By structuring the survey in this way, the instrument collects quantitative data that allows for the analysis of the relationship between risk perception and coping strategies, thereby providing a comprehensive understanding of

community resilience in landslide-prone areas (Paton & Johnston, 2001).

### **2.6. Data Gathering Procedure**

The researcher will first prepare a formal letter of request to seek permission from local government units (LGUs) and barangay officials in the selected landslide-prone areas. The letter will outline the purpose of the study, the target participants, and the procedures involved in data collection. Upon approval, coordination with local officials will be conducted to identify residents who meet the study criteria.

After identifying potential participants, the researcher will approach them to explain the objectives of the study, the significance of their participation, and how the information they provide will be used. Participants will be assured that their responses will remain confidential and will be used solely for academic research purposes. Informed consent will then be obtained prior to data collection.

The researchers will administer the structured survey questionnaire individually to ensure that respondents can answer freely and without external influence. Clear instructions will be provided, and sufficient time will be allotted for completion. The researcher will be available to clarify questions while avoiding any form of bias.

Once completed, the questionnaires will be collected and reviewed for completeness and accuracy. The data will then be organized, coded, and prepared for statistical analysis to examine the relationship between community perceptions of landslide risks and the coping strategies they employ.

### **2.7. Statistical Treatment of Data**

The collected data will be analyzed using appropriate quantitative statistical techniques to determine the level of community perception regarding landslide risks and the coping strategies employed by residents.

The mean will be calculated to determine the average level of risk perception and the frequency of coping strategies used by respondents. The standard deviation will also be computed to assess the variability in responses, providing insight into how consistently perceptions and strategies are shared within the community.

To examine the relationship between the two variables, Pearson correlation analysis will be conducted. This will allow the researcher to determine the strength and direction of the relationship between community perceptions of landslide risks and the coping strategies they adopt. The significance level for all statistical analyses will be set at 0.05, which will serve as the threshold for determining whether observed relationships are statistically significant.

By applying these analyses, the study ensures a systematic and objective evaluation of how risk perception influences adaptive behaviors, thereby contributing valuable insights into disaster preparedness and community resilience in landslide-prone areas (UNDRR, 2019).

## **3. RESULTS AND DISCUSSIONS**

This chapter presents the results of data collected during the conduct of this study and the essential discussion for the findings.

### **3.1. Socio-demographic Profile of the Respondents.**

The socio-demographic profile of the respondents was examined to provide a comprehensive understanding of the characteristics of individuals residing in landslide-prone areas.

Demographic variables such as age, gender, length of residence, residence status, and monthly income are important factors that influence community members' perceptions of landslide risks and their ability to adopt appropriate coping strategies.

Previous studies have emphasized that socio-demographic characteristics shape disaster awareness, preparedness, vulnerability, and resilience among populations exposed to natural hazards.

Analyzing these variables provides essential starting point of information for understanding how respondents perceive landslide risks and the strategies they employ to cope with the challenges associated with living in hazard-prone environments. The results are presented and discussed in the succeeding sections.

**Table 1.** Presents the socio-demographic characteristics of the respondents in terms of age, gender, length of residence in the area, residence status, and monthly income.

Profile	Frequency (N=60)	Percentage (%)
<b>1.1. Age</b>		
18–25	23	38.33%
26–35	18	30.00%
36–45	9	15.00%
46–50	6	10.00%
51 & Older	4	6.67%
Total	60	100.00%
<b>1.2. Gender</b>		
Male	35	58.33%
Female	25	41.67%
Total	60	100.00%
<b>1.3. Length of the Residence in the Area</b>		
Less than 2 years	14	23.33%
2 – 5 Years	23	38.33%
6 – 10 Years	20	33.33%
More than 10 Years	3	5.00%
Total	60	100.00%
<b>1.4. Residence Status</b>		
Owned	47	78.33%
Rental	9	15.00%
Temporary Settler	4	6.67%
Total	60	100.00%
<b>1.5. Monthly Income</b>		
5, 000.00 and Below	25	41.67%
6, 000.00 to 10,000.00	10	16.67%
11,000.00 to 15,000.00	12	20.00%
16,000.00 to 20,000.00	6	10.00%
21,000.00 to 25,000.00	3	5.00%
26,000.00 to 30,000.00	2	3.33%
31,000.00 and Above	2	3.33%
Total	60	100.00%

**Age.** The results reveal that the largest proportion of respondents belonged to the 18–25 age group with 23 respondents (38.33%), followed by those aged 26–35 years with 18 respondents (30.00%). Respondents aged 36–45 years accounted for 15.00%, while those aged 46–50 years represented 10.00%. The smallest group comprised respondents aged 51 years and older with only 6.67%.

The predominance of younger respondents suggests that a substantial portion of the population in the study area consists of individuals in their economically productive years. Younger adults are generally more active in community activities and are often responsible for household decision-making and disaster response measures. Their participation in the study is important because they are among the sectors

most likely to be involved in preparedness activities, evacuation decisions, and recovery efforts during landslide events.

The finding is supported by studies indicating that age influences risk perception and disaster preparedness. Xu et al. (2018) found that demographic characteristics, including age, significantly affect disaster preparedness behaviors among households in landslide-prone communities. Younger and middle-aged individuals tend to exhibit greater engagement in preparedness activities because of their active social and economic roles.

Similarly, Sim et al. (2023) reported that age significantly influences landslide risk perception and the acceptability of landslide-related risks among community members. Individuals from different age groups often differ in their

understanding of hazards, risk awareness, and preparedness practices. For the present study, the dominance of younger respondents may indicate a community with the potential to adopt adaptive coping strategies, participate in disaster risk reduction programs, and engage in awareness campaigns related to landslide hazards.

**Gender.** In terms of gender, the majority of respondents were male, comprising 35 respondents (58.33%), while female respondents accounted for 25 respondents (41.67%). The higher proportion of male respondents may reflect the demographic composition of the community or the availability of male household representatives during data collection. In many rural and hazard-prone communities, males often assume responsibilities related to land management, agriculture, construction, and disaster response activities, which may influence their participation in studies concerning environmental hazards.

Sim et al. (2023) found that gender significantly influences landslide risk acceptability and perception, with males and females often demonstrating different levels of concern, preparedness, and willingness to adopt mitigation measures. Furthermore, studies on disaster risk perception indicate that women often exhibit higher levels of perceived risk and concern regarding natural hazards, whereas men may report greater confidence in managing hazard situations. These differences highlight the need for gender-sensitive disaster risk reduction programs that address the unique vulnerabilities and capacities of both men and women. The relatively balanced gender distribution provides diverse perspectives regarding landslide risks and coping mechanisms within the community.

**Length of Residence.** Regarding the length of residence, the largest group of respondents had lived in the area for 2–5 years (38.33%), followed closely by those who had resided there for 6–10 years (33.33%). Respondents who had lived in the area for less than 2 years accounted for 23.33%, while only 5.00% had lived there for more than 10 years.

These findings indicate that most respondents have accumulated sufficient experience living in the community to develop familiarity with local environmental conditions, including exposure to landslide risks. Residents who have lived longer in

hazard-prone areas are more likely to possess indigenous knowledge regarding warning signs, vulnerable locations, and effective coping strategies during disasters.

Research by Chaturvedi and Dutt (2015) emphasized that residents' awareness and perception of landslide hazards are strongly associated with their experiences and familiarity with the local environment. Communities with direct exposure to hazard events often develop a better understanding of landslide risks and preparedness needs. Likewise, studies on landslide risk perception have demonstrated that previous exposure and long-term residency contribute to higher levels of hazard awareness and community resilience. Residents who have witnessed or experienced landslides tend to adopt precautionary measures and participate more actively in preparedness programs. The predominance of respondents who have lived in the area between two and ten years suggests that many participants possess relevant local knowledge that can contribute to informed perceptions and coping strategies regarding landslide hazards.

**Residence Status.** The data show that the majority of respondents were homeowners, accounting for 47 respondents (78.33%). Meanwhile, 15.00% were renting their residences, and only 6.67% identified themselves as temporary settlers. The high percentage of homeowners suggests a relatively stable population with strong attachments to the community. Homeownership often encourages greater investment in property protection, environmental management, and disaster preparedness because homeowners directly bear the consequences of property damage resulting from landslides.

Xu et al. (2018) reported that housing-related characteristics significantly influence household disaster preparedness behaviors. Households with permanent residences tend to be more concerned about protecting their homes and are more likely to adopt mitigation measures. According to Bukhari et al. (2023), he identified building-related factors and land classification as significant variables associated with landslide risk perception and vulnerability in communities exposed to landslide hazards. In the present study, the prevalence of homeowners may contribute positively to community resilience, as permanent

residents are likely to have stronger motivations to participate in risk reduction activities and implement long-term coping strategies.

**Monthly Income.** The respondents' monthly income profile reveals that the largest group earned ₱5,000 and below (41.67%). This was followed by respondents earning ₱11,000–₱15,000 (20.00%) and ₱6,000–₱10,000 (16.67%). Smaller proportions reported monthly incomes of ₱16,000–₱20,000 (10.00%), ₱21,000–₱25,000 (5.00%), ₱26,000–₱30,000 (3.33%), and ₱31,000 and above (3.33%). The findings indicate that a substantial portion of respondents belong to lower-income households. Economic limitations may increase vulnerability to landslide hazards because low-income families often have fewer resources for housing improvements, relocation, preparedness supplies, and post-disaster recovery.

Research has consistently shown that socioeconomic status influences disaster preparedness and risk perception. Bukhari et al. (2023) emphasized that landslides create significant economic impacts on communities and that socioeconomic factors are important determinants of vulnerability and resilience. Similarly, studies conducted in Brazil and China found that household socioeconomic characteristics significantly influence disaster preparedness behaviors and vulnerability levels in landslide-prone communities. Lower-income households often face greater challenges in implementing mitigation measures and recovering from disaster impacts.

Consequently, the high proportion of low-income respondents in this study highlights the need for government support, community-based disaster risk reduction programs, and livelihood interventions that can strengthen the coping capacities of vulnerable households living in landslide-prone areas.

### 3.2. Level of Community Perception Regarding Landslide Risks

Assessing the level of community perception regarding landslide risks is essential in understanding how residents recognize, interpret, and respond to hazards within their environment. Risk perception plays a crucial role in influencing disaster preparedness, decision-making, and the adoption of coping strategies among individuals living in hazard-prone areas. Communities with higher levels of awareness and understanding of landslide risks are generally more likely to participate in risk reduction activities and implement appropriate measures to minimize potential losses.

Thus, evaluating community perceptions provides valuable insights into the readiness of residents to address landslide-related threats and contributes to the development of effective disaster risk reduction and management programs. The results of the respondents' perceptions regarding landslide risks are presented and discussed in the succeeding sections.

**Table 2.** Presents the respondents' level of community perception regarding landslide risks in their area.

Statement	Mean	SD	Interpretation
1. I am aware that my community is located in a landslide-prone area.	4.40	0.69	Strongly Agree
2. Landslides pose a serious threat to the safety of residents in our community.	4.53	0.57	Strongly Agree
3. Heavy rainfall increases the risk of landslides in our area.	4.52	0.68	Strongly Agree
4. I am concerned about the possibility of future landslides.	4.50	0.68	Strongly Agree
5. The environment in our community shows signs that landslides may occur.	4.45	0.50	Strongly Agree
6. Landslides can cause significant damage to homes and properties.	4.27	0.71	Strongly Agree
7. Residents in our community are vulnerable to landslide hazards.	4.38	0.69	Strongly Agree

8. Previous landslide incidents have increased my awareness of landslide risks.	4.25	0.73	Strongly Agree
9. Living in a landslide-prone area affects my sense of security.	4.48	0.50	Strongly Agree
10. Community members should take landslide risks seriously.	4.67	0.54	Strongly Agree
<b>Grand Mean</b>	<b>4.45</b>	<b>0.64</b>	<b>Strongly Agree</b>

**Legend:**

*4.21 - 5.00 Strongly Agree*

*3.41 - 4.20 Agree*

*2.61 - 3.40 Neutral*

*1.81 - 2.60 Disagree*

*1.00 - 1.80 Strongly Disagree*

The results reveal an overall grand mean of 4.45 (SD = 0.64), which is interpreted as "Strongly Agree." This finding indicates that the respondents possess a high level of awareness and understanding of landslide hazards, their causes, potential impacts, and the need for precautionary measures. The consistently high mean scores across all indicators suggest that the community recognizes landslides as a serious threat and acknowledges the importance of disaster preparedness and risk reduction.

The statement that obtained the highest mean score was "Community members should take landslide risks seriously" (M = 4.67, SD = 0.54), interpreted as Strongly Agree. This result indicates a strong consensus among respondents regarding the importance of recognizing and addressing landslide hazards. The finding suggests that residents understand the potentially devastating consequences of landslides and support the need for proactive measures to reduce risks. This high level of concern may stem from previous experiences with landslides, exposure to disaster awareness campaigns, or the visible presence of environmental conditions that increase landslide susceptibility.

According to Solana and Kilburn (2003), communities exposed to geological hazards often develop heightened risk awareness when they perceive a direct threat to their safety and livelihoods. Increased awareness encourages

greater participation in disaster preparedness and mitigation activities.

The second highest-rated statement was "Landslides pose a serious threat to the safety of residents in our community" (M = 4.53, SD = 0.57), followed closely by "Heavy rainfall increases the risk of landslides in our area" (M = 4.52, SD = 0.68) and "I am concerned about the possibility of future landslides" (M = 4.50, SD = 0.68). These findings demonstrate that respondents clearly recognize both the causes and consequences of landslides. The strong agreement regarding heavy rainfall as a triggering factor reflects respondents' understanding of one of the most common causes of slope failure, particularly in tropical regions such as the Philippines where prolonged and intense rainfall often precedes landslide occurrences.

The concern regarding future landslides further indicates that respondents perceive landslide hazards as an ongoing threat rather than an isolated event. Such perceptions are important because communities that recognize the likelihood of future disasters are generally more willing to engage in preparedness and adaptation activities. Research by Wachinger et al. (2013) emphasized that individuals who perceive higher levels of risk are more likely to support and participate in disaster risk reduction initiatives.

Similarly, respondents strongly agreed that living in a landslide-prone area affects their sense of security (M = 4.48, SD = 0.50) and that the environment in their community shows signs that landslides may occur (M = 4.45, SD = 0.50). These findings suggest that residents are aware of the physical indicators of landslide susceptibility and recognize the psychological impacts associated with living in hazardous environments. The awareness of environmental warning signs may result from direct observations of soil erosion,

slope instability, ground cracks, or previous landslide events within the community.

Studies have shown that communities with firsthand exposure to hazard events often possess greater environmental awareness and hazard recognition than those without such experiences (Mendonça et al., 2019). The perceived reduction in personal security also reflects the emotional and social impacts of disaster risk, which can influence individuals' decisions regarding preparedness, evacuation, and long-term settlement.

The statement "I am aware that my community is located in a landslide-prone area" received a mean score of 4.40 (SD = 0.69), while "Residents in our community are vulnerable to landslide hazards" obtained a mean score of 4.38 (SD = 0.69). Both indicators were interpreted as Strongly Agree, indicating that respondents possess a strong awareness of their geographical vulnerability. This finding is particularly important because awareness of exposure is often considered the first step toward disaster preparedness and resilience. According to Lyu et al. (2019), risk perception is significantly influenced by individuals' understanding of their exposure to hazards, and higher awareness levels are associated with greater preparedness intentions and adaptive behaviors.

Furthermore, respondents strongly agreed that "Landslides can cause significant damage to homes and properties" (M = 4.27, SD = 0.71) and that "Previous landslide incidents have increased my awareness of landslide risks" (M = 4.25, SD = 0.73). Although these statements obtained the lowest mean scores among the indicators, they still fall within the "Strongly Agree" category, suggesting a consistently high level of perception across all dimensions.

The findings indicate that previous experiences with landslides have contributed substantially to respondents' understanding of the risks associated with such events. Experience is a key factor shaping risk perception because individuals who have witnessed or been affected by disasters often possess a stronger appreciation of potential consequences. Similar findings were reported by Miceli et al. (2008), who found that direct disaster experience significantly increases hazard awareness and motivates preparedness actions.

The relatively low standard deviations across all statements (ranging from 0.50 to 0.73) indicate that respondents shared similar views regarding landslide risks. This consistency suggests a collective awareness within the community, which may facilitate the implementation of community-based disaster risk reduction programs. When community members possess a common understanding of hazards, they are more likely to cooperate in preparedness activities, support mitigation measures, and participate in collective response efforts during emergencies.

In unity, the findings demonstrate that respondents have a very high level of community perception regarding landslide risks, as evidenced by the grand mean of 4.45. The results suggest that residents are highly aware of their vulnerability, understand the causes and consequences of landslides, and recognize the importance of taking landslide risks seriously. This high level of perception is a positive indicator for disaster risk reduction because awareness serves as the foundation for effective preparedness and coping strategies.

Consistent with the Protection Motivation Theory, individuals who perceive a threat as severe and personally relevant are more likely to adopt protective behaviors and engage in risk-reducing actions. Therefore, the strong perceptions observed among respondents may contribute to the development and implementation of effective coping mechanisms within landslide-prone communities.

### ***3.3. Level of Coping Mechanisms Practiced by the Respondents***

Evaluating the coping strategies employed by residents in landslide-prone areas is essential in determining the community's capacity to respond to, adapt to, and recover from landslide-related hazards.

Coping mechanisms reflect the practical actions, preparedness measures, and adaptive behaviors adopted by individuals and households to minimize the potential impacts of disasters. Understanding these strategies provides valuable insights into the level of community resilience and preparedness, as well as the effectiveness of existing risk reduction practices. The findings presented in this section highlight the extent to which respondents engage in various coping

measures to safeguard their lives, properties, and livelihoods against landslide risks.

**Table 3.** Presents the level of coping mechanisms practiced by the respondents in the landslide-prone community.

Statement	Mean	SD	Interpretation
1. I prepare emergency supplies in case a landslide occurs.	4.35	0.73	Strongly Agree
2. I stay informed about weather forecasts and landslide warnings.	4.47	0.70	Strongly Agree
3. I discuss disaster preparedness plans with my family.	4.33	0.80	Strongly Agree
4. I identify safe evacuation routes before an emergency happens.	4.67	0.54	Strongly Agree
5. I participate in community disaster preparedness activities.	4.02	1.03	Strongly Agree
6. I seek assistance from local authorities during landslide-related emergencies.	4.67	0.54	Strongly Agree
7. I rely on family members and neighbors for support during disasters.	4.52	0.62	Strongly Agree
8. I remain calm and follow safety protocols during landslide threats.	4.32	0.81	Strongly Agree
9. I take preventive measures to protect my home from landslide damage.	3.90	0.84	Agree
10. I adapt my daily activities when there is a high risk of landslides.	4.50	0.62	Strongly Agree
<b>Grand Mean</b>	<b>4.37</b>	<b>0.77</b>	<b>Strongly Agree</b>

**Legend:**

**4.21 - 5.00** Strongly Agree

**3.41 - 4.20** Agree

**2.61 - 3.40** Neutral

**1.81 - 2.60** Disagree

**1.00 - 1.80** Strongly Disagree

The overall data gathered reveals that the respondents demonstrate an exceptionally high level of proactive engagement, situational preparedness, and resilience in managing landslide hazards. This is comprehensively supported by a Grand Mean of 4.37 (SD = 0.77), which translates to an overall descriptive interpretation of "Strongly Agree" according to the study's established Likert scale criteria. Out of the 10 coping mechanism parameters evaluated, nine statements returned an interpretation of "Strongly Agree," while only one statement registered a descriptive equivalent of "Agree." This heavily implies that the community does not merely passively accept landslide risks but actively implements cognitive, behavioral, and structural

measures to cushion themselves from the adverse impacts of potential disaster occurrences.

The behavioral domain of preparedness garnered the highest scores in the assessment, highlighted by Statement 4 ("I identify safe evacuation routes before an emergency happens") and Statement 6 ("I seek assistance from local authorities during landslide-related emergencies"), which both tied with a peak Mean of 4.67 (SD = 0.54). These exceptionally high scores indicate that the respondents heavily prioritize situational awareness, active risk mitigation, and structural safety protocols. Knowing where to flee before the disaster strikes and establishing direct communicative pathways with local authorities represents a highly mature form of proactive coping. This behavioral trend aligns perfectly with modern Disaster Risk Reduction (DRR) literature, which establishes that high risk perception in topographically vulnerable communities directly translates to active evacuation mapping and compliance with institutional protocols. According to Bachri et al. (2022), communities living on unstable slopes dynamically develop localized, structural coping routines—relying heavily on institutional governance to bridge safety gaps

during acute environmental crises. Furthermore, risk communication baselines establish that proactive evacuation behavior is strongly driven by local leadership signaling and pre-established evacuation plans (Sito et al., 2025).

The respondents also indicated a robust reliance on interpersonal and systematic communication channels to navigate environmental vulnerabilities. This is characterized by Statement 7 ("I rely on family members and neighbors for support during disasters"), which obtained a Mean of 4.52 (SD = 0.62), followed closely by Statement 2 ("I stay informed about weather forecasts and landslide warnings") at a Mean of 4.47 (SD = 0.70), and Statement 3 ("I discuss disaster preparedness plans with my family") at a Mean of 4.33 (SD = 0.80). The consistently low standard deviations across these values suggest highly uniform agreement among the respondents. This underlines the presence of strong social capital within the community. When a geographical area is collectively vulnerable to landslides, survival instincts often become communal rather than strictly individualistic. Discussing family strategies and leaning on neighbors shows that social safety nets and open information loops are vital pieces of their coping architecture. In a qualitative assessment of landslide-prone mountain regions, Bwambale et al. (2016) observed that communal bonds, immediate neighborhood lookouts, and localized communication chains serve as primary lifeline mechanisms when formal government responses are delayed by terrain obstacles. This high level of social cohesion mitigates panic and directly improves survivability during mass soil movements.

While the overall scores remain high, a noticeable shift occurs when evaluating physical, preventive, and material adaptations. The lowest registered parameter in the dataset is Statement 9 ("I take preventive measures to protect my home from landslide damage"), which yielded a Mean of 3.90 (SD = 0.84) with an interpretation of "Agree." Concurrently, Statement 5 ("I participate in community disaster preparedness activities") scored a Mean of 4.02, but notably carried the highest standard deviation in the entire dataset (SD = 1.03). The drop from "Strongly Agree" to "Agree" in home-protection measures points to a critical structural or financial bottleneck. While respondents possess high cognitive willingness to

cope (such as planning routes and checking weather forecasts), applying physical engineering interventions to a household (such as retaining walls, slope reinforcing, or deep-root vegetation planting) requires substantial financial resources and technical expertise that ordinary citizens might lack.

Meanwhile, the high standard deviation in community participation reveals a polarization in the community; while many participate, a noticeable segment does not consistently show up, likely due to competing socioeconomic priorities, such as daily livelihood commitments or varying levels of trust in institutional activities. This discrepancy is heavily documented in disaster literature, where structural adaptations (like reinforcing foundations against debris flows) are often cost-prohibitive for vulnerable populations living in high-risk zones (Ready.gov, 2023). A study by the Brihanmumbai Municipal Corporation / Geological Survey of India (2026) highlighted that while structural mitigation is desperately needed on risky slopes, logistical constraints, high financial outlays, and a lack of technical sensitization often stall localized civil works, leaving communities to rely on behavioral avoidance and evacuation rather than structural prevention.

In conclusion, the community demonstrates an excellent, proactive posture toward landslide coping mechanisms, showing maturity in psychological readiness, family communication, and evacuation planning. However, their lower emphasis on physical structural prevention highlights a latent vulnerability. The study suggests that while the community is brilliant at executing behavioral protocols ("getting out of harm's way"), they remain restricted in their ability to perform material alterations to mitigate the physical hazard itself, necessitating localized government support for physical engineering interventions.

### ***3.4. Relationship Between Community Perceptions and Coping Strategies***

Determining the relationship between community perception and coping mechanisms is an important aspect of understanding how residents respond to landslide hazards. Through correlation analysis, this study seeks to establish whether higher levels of landslide risk perception correspond to stronger implementation of coping

mechanisms among residents living in landslide-prone areas. The findings presented in this section provide empirical evidence regarding the nature and significance of the relationship between these two variables.

**Table 4. Pearson’s r Correlation Analysis on the Relationship Between Community Perception and Coping Mechanisms**

Variables	Pearson Correlation (r)	p-value	Interpretation
Community Perception and Coping Mechanisms	0.185	0.157	Not Significant

**Note:** Significance level is set at alpha = 0.05

Table 4 explain the statistical computation yielded a Pearson correlation coefficient of  $r = 0.185$  with an associated **p-value of 0.157**. Because the p-value is markedly greater than the established significance level (0.05), the null hypothesis cannot be rejected. Consequently, the relationship between community perception and coping mechanisms is interpreted as **Not Significant**.

This indicates that a change in the level of landslide risk perception among the respondents does not statistically translate to a corresponding, predictable change in the implementation of their coping mechanisms. Even though the correlation value is positive, its negligible strength combined with the high p-value statistically affirms that community perceptions and actualized coping strategies operate independently of one another within this specific population.

This non-significant finding uncovers a compelling paradox often referred to in disaster literature as the "**Perception-Preparedness Gap**." It reveals that merely having an acute cognitive awareness or a high perception of landslide risk does not automatically drive an individual to adopt or amplify tangible coping strategies. This statistical disconnect can be directly contextualized by the baseline data discussed in Table 3. In that analysis, the community displayed exceptionally high behavioral coping mechanisms—specifically tying at a peak Mean of 4.67 for identifying evacuation routes and seeking aid from authorities. However, their physical, structural coping mechanisms (such as reinforcing households against landslide impacts) dropped significantly to the lowest recorded score of 3.90.

When these findings are synthesized, it becomes apparent that while a resident might perceive a landslide as highly dangerous and looming, their

actual capacity to expand their coping mechanisms is constrained by external factors rather than their mental perception. A person’s severe anxiety or deep understanding of slope instability cannot structurally reinforce a house if they lack the technical know-how or disposable income to build a retaining wall. Therefore, the coping mechanisms practiced by this community are shaped by structural, economic, and logistical realities rather than being a direct psychological byproduct of how they perceive the hazard.

This phenomenon is strongly supported by contemporary international research on disaster risk reduction. In a comprehensive study investigating landslide risk management, Perera et al. (2024) documented that the relationship between risk perception and preparedness remains notoriously non-linear and weak, often due to a false sense of security from surviving prior events or because of localized socioeconomic constraints that stifle action.

Similarly, research compiled by Damm et al. (2013) regarding landslide-prone slopes highlighted that while non-expert residents frequently possess highly elevated risk perceptions, their actual mitigation behaviors do not correlate with those perceptions; instead, they shift the physical and financial responsibility to public authorities due to the cost-prohibitive nature of structural engineering works. Furthermore, Roudini et al. (2025) validated that risk perception fails to serve as a meaningful predictor of adaptive resilience or coping behavior when communities experience resource depletion or disaster fatigue.

Under such conditions, heightened risk perception merely induces stress rather than proactive, structural changes. These empirical studies collectively justify the data in Table 4, proving that

in topographically vulnerable ecosystems, behavioral coping and material adaptations are governed by socioeconomic capabilities and institutional support, leaving cognitive risk perception statistically detached from actual preparedness actions.

The collective results demonstrate a distinct separation between what the community mentally understands and what they are practically capable of executing. The demographic profile establishes a population primarily composed of young adults and permanent homeowners who possess a profound, uniform awareness of their environmental vulnerability and a readiness to carry out behavioral coping strategies, such as setting up evacuation plans and seeking help from authorities. However, the correlation analysis proves that this high-risk perception does not statistically drive an increase in active coping mechanisms. This disconnect empirically highlights the presence of a perception-preparedness gap, proving that an acute cognitive awareness of a threat does not automatically translate into a corresponding expansion of practical or structural adaptive behaviors. Ultimately, while the community relies heavily on high social capital and behavioral avoidance to stay out of harm's way, this critical perception gap demonstrates that heightened hazard awareness operates entirely independently of actualized preparedness actions, leaving their physical coping limits determined by structural and logistical constraints rather than their mental recognition of the risk.

#### 4. CONCLUSIONS

Based on the empirical findings generated in this study, the following conclusions are drawn:

1. The community is dominated by permanent, young adult homeowners who have a long-term attachment to the area and localized experience with environmental hazards. However, they simultaneously grapple with severe low-income socioeconomic constraints.
2. There is a unified, heightened cognitive understanding of landslide hazards across the community. The respondents are clearly aware of their geographical exposure, understand environmental warning signs, and recognize weather patterns like intense rainfall as direct threats to their personal safety and properties.

3. The community relies heavily on high social capital and behavioral avoidance protocols ("getting out of harm's way") to manage risks. They excel at executing immediate emergency routines, maintaining family disaster plans, and relying on neighborhood networks. However, their capacity to pivot from behavioral avoidance to structural physical prevention is heavily constrained.
4. There is a distinct, measurable "perception-preparedness gap" within the studied population. An acute mental awareness of landslide dangers does not automatically drive an expansion of practical protective behaviors. Because cognitive hazard awareness operates independently of actual preparedness execution, the community's coping limitations are dictated by external, physical, and economic realities rather than a lack of understanding or psychological recognition of the risk.

#### 5. RECOMMENDATIONS

In light of the conclusions established, the following targeted recommendations are proposed:

1. Local Government Units (LGUs) and Local Disaster Risk Reduction and Management Councils (LDRRMCs) should transition to co-impact engineering partnerships. Building upon the community's incredibly high awareness and baseline preparedness, the LGU can implement collaborative engineering projects where they supply structural designs, retaining wall components, slope-stabilizing geotextiles, or deep-root hydro-seeding assets directly to neighborhoods to augment the physical safety of vulnerable residential perimeters.
2. Local Government Units (LGUs) should establish targeted resource-matching initiatives by integrating disaster resilience grants into municipal development plans. Because household structural adaptation scored the lowest among community practices, providing accessible technical assistance or subsidized building materials will empower permanent homeowners to physically manifest the high disaster awareness they already possess.

3. Local Government Units (LGUs) should institutionalize early-warning systems integration to leverage the profound public trust and high institutional reliance exhibited by the respondents. Installing high-fidelity, rain-gauge integrated sirens and digital localized warning platforms will maximize lead time during heavy precipitation events and optimize emergency response coordination.
4. Community leaders and barangay officials should optimize community drill frameworks to resolve the observed polarization and high standard deviation in community activity participation. Introducing decentralized, zone-specific sub-sessions tailored around the primary livelihood schedules of working residents will optimize overall attendance, collaboration, and collective safety.
5. Barangay leaders should formalize community-led buddy systems and localized safety networks. By capitalizing on the community's exceptional level of mutual reliance and high density of capable young adults, officials can construct designated neighborhood lookouts and pair active youth with vulnerable or less-mobile residents to ensure the efficient execution of pre-identified evacuation plans.
6. Barangay officials should launch localized environmental monitoring groups to mobilize the community's collective hazard recognition. Organizing voluntary monitoring committees to conduct routine inspections of vulnerable slopes for ground cracks or soil erosion establishes a reliable, community-driven data loop that connects directly to the municipal disaster center.
7. Future researchers should conduct mixed-methods inquiries by incorporating qualitative interviews or focus group discussions into their frameworks. This will allow researchers to explicitly isolate the precise socioeconomic, logistical, and technical barriers that prevent high risk perceptions from manifesting as physical household mitigation.
8. Future researchers should expand to path analysis models using structural equation modeling (SEM). Testing whether variables such as financial capacity, access to technical knowledge, or tenure status act as mediators

or moderators between risk perception and coping mechanism adoption will provide deeper statistical insights into the perception-preparedness gap.

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