



Disability Inclusive Disaster Risk Reduction and Management: Assessing Vulnerabilities and Local Responses in Maasin City, Philippines

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Received: April 02, 2025 **Accepted:** June 26, 2025 **Published:** June 30, 2025

Abstract

Disasters disproportionately impact persons with disabilities, limiting their access to essential services and increasing their risk. This study examines the vulnerabilities of persons with disabilities in times of disasters and the inclusivity of the Disaster Risk Reduction and Management (DRRM) program in Maasin City, Southern Leyte, Philippines. Employing a descriptive-evaluative design, data were collected through surveys of 232 persons with disabilities and supplemented by focus group discussions. Data analysis revealed significant gaps in the inclusion of persons with disabilities in DRRM efforts. They are often excluded from disaster management planning and community drills, leaving them unprepared and vulnerable during emergencies. Communication systems—particularly early warning mechanisms—are largely inaccessible, preventing timely and critical information from reaching them. Moreover, there are no livelihood programs tailored to their specific needs, further limiting their capacity to recover after disasters. These systemic exclusions contribute to a heightened sense of neglect and hopelessness among persons with disabilities, underscoring the urgent need for an inclusive and accessible DRRM program in Maasin City.

Keywords: disability, vulnerability, inclusion, disaster, disaster risk reduction and management

Introduction

Disasters—whether natural or human-induced—tend to magnify existing social inequalities, disproportionately impacting vulnerable populations. Among those most at risk are persons with disabilities, who frequently encounter systemic barriers that limit their access to early warnings, safe evacuation procedures, emergency assistance, and long-term recovery support (Rofiah et al., 2024; Villeneuve et al., 2021). Disability often intersects with other social vulnerabilities such as poverty, age, and gender, compounding the challenges faced by individuals in disaster contexts (Crawford et al., 2023). Although inclusive disaster risk governance has been strongly emphasized in recent international frameworks such as the Sendai Framework for Disaster Risk Reduction (United Nations Office for Disaster Risk Reduction, 2015), the integration of disability-inclusive measures remains inadequate. Globally, assessments across seven countries reveal that weak internal implementation mechanisms, fragmented inter-agency coordination, and limited institutional engagement with organizations of persons with disabilities continue to hinder effective disability inclusion in disaster risk reduction (Disability Inclusive Disaster Risk Reduction Network, n.d.).

As of March 2023, the World Health Organization (WHO) estimates that approximately 1.3 billion people, or 16% of the global population, experience significant disability. This equates to roughly 1 in 6

individuals worldwide. In the context of disaster, while it continually threatens all people from all walks of life, there is no denying that persons with disabilities are disproportionately affected over their non-disabled counterparts. For instance, in Turkey, individuals with physical and sensory disabilities affected by the 2020 İzmir earthquake reported major barriers to evacuation, inaccessible emergency shelters, and inadequate communication of emergency instructions (Kaya & Karanci, 2023). Similarly, in Australia, qualitative findings from persons with disabilities during bushfires and floods showed that even when preparedness strategies exist, challenges such as disrupted care support systems and inaccessible transport options severely undermine their safety (Chang et al., 2023). In East Java, Indonesia, persons with disabilities experienced exclusion from community decision-making and limited access to relief services, revealing how systemic neglect perpetuates risk during emergencies (Setijaningrum et al., 2024). A similar pattern of exclusion and inaccessibility is evident in the Philippines. Persons with disabilities report significant challenges during major calamities, such as Typhoons Haiyan (2013) and Rai (2021), particularly in terms of inaccessible evacuation centers and inadequate emergency responses (Harvard Humanitarian Initiative, 2023). To make matters worse, an evaluation of 12 municipalities in Camarines Norte, Philippines reported that majority of these local government units have insufficient knowledge about the needs of persons with disabilities and are not yet ready to cater them before, during and after disasters (Manalo-Asay, 2024).

Against this backdrop, it becomes imperative to examine how local disaster risk reduction and management (DRRM) programs address or overlook the specific needs of persons with disabilities. The Vulnerability and Capacity Assessment (VCA) framework developed by the International Federation of Red Cross and Red Crescent Societies (IFRC, 1999) identifies four key types of vulnerability, which are particularly relevant in disaster contexts involving persons with disabilities: (1) Physical or environmental vulnerability refers to barriers related to mobility, inaccessible infrastructure, and limited access to early warning systems or evacuation procedures, (2) Social or organizational vulnerability stems from exclusion in decision-making processes and insufficient representation of persons with disabilities in community-based disaster governance, (3) Economic vulnerability involves limited income, dependence on aid, or lack of access to assistive devices and transportation, all of which hinder the capacity of persons with disabilities to prepare for or recover from disasters, and (4) Motivational or attitudinal vulnerability reflects social stigma, discrimination, or underestimation of the capabilities of persons with disabilities, often leading to their neglect in disaster planning and response. To address these interrelated vulnerabilities, DRRM programs must be assessed for inclusiveness across the four thematic areas defined in the Philippine DRRM Act of 2010—Disaster Prevention and Mitigation, Preparedness, Response, and Recovery and Rehabilitation (Republic Act No. 10121, 2010). Inclusive prevention and mitigation efforts involve accessible infrastructure and information systems. Preparedness includes training, education, and drills that involve persons with disabilities and adapt communication to varied abilities. Inclusive response mechanisms ensure accessible evacuation centers, transport, and relief distribution. Finally, recovery and rehabilitation efforts must address long-term needs such as housing, livelihood support, and psychosocial services (UNDRR, 2015; Handicap International, 2012).

While national policies in the Philippines, such as Republic Act No. 10121 and the Magna Carta for Disabled Persons, advocate for inclusive disaster governance, gaps in localized implementation remain evident. This study focuses on Maasin City, Southern Leyte, and aims to examine both the vulnerabilities faced by persons with disabilities and the extent to which the city's DRRM programs have adopted inclusive strategies. By identifying existing challenges and assessing current practices, the research seeks to contribute to the broader discourse on disability-inclusive DRRM and to inform more equitable and responsive disaster preparedness and response frameworks at the local level.

Methods

Research Design

The study employed a mixed-method approach, combining both quantitative and qualitative techniques through a descriptive-evaluative research design. For the quantitative study, a descriptive design was used by the researcher to best explain the vulnerabilities of persons with disabilities in the context of disaster. Meanwhile, an evaluative research design was deemed appropriate to assess the inclusiveness of Maasin City's Disaster Risk Reduction and Management (DRRM) program, specifically in terms of its alignment with key international frameworks such as the Sphere Standards (2018), the Minimum Standards for Age and Disability Inclusion in Humanitarian Action (2018), and the Sendai Framework for Disaster Risk Reduction (2015). For the qualitative component, data were gathered

through a focus group discussion. The responses were thematically analyzed, and the emerging themes were integrated into the Results and Discussion section to provide contextual depth to the findings.

Research Participants

The study specifically targeted registered persons with disabilities listed under the Persons with Disabilities Affairs Office (PDAO) of Maasin City. According to official records, a total of 245 persons with disabilities were registered in the city. In line with the study's objective of promoting inclusion, the researcher aimed to include the entire population of registered persons with disabilities to ensure that no one would be left behind. During the actual implementation of the survey, 232 out of the 245 persons with disabilities (94.7%) participated, either directly or through their family members or carers. To ensure the accuracy and appropriateness of responses, 73 of the 232 participants (31.4%) were represented by their carers due to age-related or functional limitations.

For the qualitative component, a non-probability purposive sampling method was employed for the Focus Group Discussion (FGD), using the registry from the Persons with Disabilities Affairs Office (PDAO) as the sampling frame. A total of five (5) persons with disabilities and five (5) carers were selected based on the following criteria: (1) ability to comprehend and respond to questions; (2) residence in identified hazard-prone areas; (3) age classification of either 18 years old and below or 50 years old and above; and (4) completion of at least elementary or college-level education. For participants aged 18 years and below, informed consent was obtained from their parents or legal guardians prior to participation, in compliance with ethical research standards

Research Locale

Given that this study seeks to promote inclusion of persons with disabilities, it was deemed essential to investigate their vulnerabilities across Maasin City. Maasin City is a 4th class city in the Province of Southern Leyte, Philippines, comprising 70 villages. It covers a land area of 21,171 hectares (52,310 acres) and has a population of 87,446 people (Philippine Statistics Authority, 2020). Maasin City is considered disaster-prone due to its vulnerability to various natural hazards, including typhoons, floods, and landslides. The province of Southern Leyte, where Maasin is located, is one of the most disaster-prone areas in the Philippines, with 64% of the population highly susceptible to flooding (Philippine Atmospheric, Geophysical and Astronomical Services Administration [PAGASA], 2020; Southern Leyte Provincial Government, 2020). The region's geographical features and location contribute to its exposure to these hazards, making it imperative to assess how persons with disabilities are included in disaster preparedness and response efforts.

Research Instruments

In gathering the data for this study, the researcher utilized two primary instruments. The first was a researcher-developed survey questionnaire written in Cebuano (a Visayan language), designed to examine the vulnerabilities of persons with disabilities in disaster contexts and assess the level of disability inclusiveness of the disaster risk reduction and management (DRRM) program of Maasin City. Indicators used in the questionnaire were based on international standards mentioned in the research design section. The second instrument was a researcher-developed guide for the Focus Group Discussion (FGD), which aimed to elicit more in-depth perspectives and contextual insights from participants. Confirmatory questions in the FGD were aligned with the survey to help triangulate data and support the formulation of evidence-based recommendations.

The survey questionnaire underwent a series of validation processes to ensure the credibility of the data and the soundness of subsequent generalizations. It was first reviewed and approved by an Ethics Panel. Following this, a pilot test was conducted with 30 persons with disabilities from Bato, Leyte—a municipality geographically and culturally similar to Maasin City. The responses were analyzed using the Statistical Package for the Social Sciences (SPSS) software to assess internal consistency. The results indicated that the instrument demonstrated strong reliability, with Cronbach's Alpha values of not less than 0.8 across the variable groupings: (1) Vulnerability of persons with disabilities, (2) Inclusiveness of DRRM program. These values reflect good to excellent reliability, confirming the instrument's robustness in measuring the intended constructs.

Ethical Considerations.

In observance of research ethics and with due respect for the dignity of persons with disabilities, informed consent was secured from all participants prior to data collection. Participants were informed that their involvement was entirely voluntary and that they could withdraw from the study at any point without consequence. They were also assured that all responses would remain confidential and would be used solely for academic purposes and that all gathered data would be securely stored in password-protected files accessible only to the researcher. To protect their privacy and ensure anonymity,

participants were given the option to either write or not write their name on the survey questionnaire. Similarly, during the Focus Group Discussion (FGD), they were informed that they were not required to provide their full name and could use a pseudonym or first name only, if preferred. Additionally, survey instruments and FGD guides were clearly and concisely written, then translated into the Visayan language to ensure clarity and cultural relevance. Participants were given ample time to respond to all questions to minimize errors or misinterpretations. Furthermore, all enumerators and volunteers underwent a disability sensitivity orientation to ensure respectful and inclusive communication, and to heighten their awareness of the diverse needs and challenges faced by persons with disabilities. A sign language interpreter was also present during the FGD to facilitate full participation of individuals with hearing impairments.

Data Analysis

To ensure a comprehensive analysis of the data obtained from the survey questionnaire, the researcher employed a range of statistical procedures. The vulnerabilities of persons with disabilities in the context of disaster, as well as the inclusiveness of the program and services of the Maasin City DRRM Office, were interpreted and characterized using weighted mean, standard deviation, and the grand mean. To establish significant relationships, the Pearson Product-Moment Correlation Coefficient was applied to assess the connection between the inclusiveness of the program and services of Maasin City DRRM Office and the vulnerabilities of persons with disabilities. These rigorous statistical methods were crucial in providing a thorough understanding of the data, ensuring the accuracy and reliability of the study's findings.

Results and Discussion

Table 1 presents the summary of perceived vulnerabilities experienced by persons with disabilities in the context of disasters, as assessed through four key dimensions based on the Vulnerability and Capacity Assessment (VCA) framework: physical or environmental, social or organizational, economic, and motivational or attitudinal vulnerabilities. Each category was rated on a 4-point Likert scale, where higher mean scores reflect higher levels of perceived vulnerability. The classification ranges from *Not Vulnerable* to *Very Vulnerable*, providing a nuanced understanding of how persons with disabilities experience risks across different domains. The findings indicate that while they face challenges across all areas, economic constraints are perceived to have the most significant impact on their disaster risk. The slightly lower rating of physical vulnerability may reflect either improved physical accessibility or the presence of basic accommodations in some contexts, though it remains a concern. Collectively, the table underscores the multidimensional nature of vulnerabilities among persons with disabilities.

Table 1. Summary of Vulnerabilities of the Persons with Disabilities in the Context of Disaster

Categories	Mean Rating	Std. Deviation	Description ^a
Physical or Environmental Vulnerability	2.50	0.32	Not So Vulnerable
Social or Organizational Vulnerability	2.56	0.62	Vulnerable
Economic Vulnerability	2.95	0.46	Vulnerable
Motivational or Attitudinal Vulnerability	2.55	0.29	Vulnerable
Overall Vulnerability Level	2.64	0.21	Vulnerable

^a - 3.28-4.00 = *Very Vulnerable*
 2.52-3.27 = *Vulnerable*
 1.76-2.51 = *Not so Vulnerable*
 1.00-1.75 = *Not Vulnerable*

Physical and Environmental Vulnerability

The data reveal that, on average, persons with disabilities are “Not So Vulnerable” under the Physical or Environmental category, with a grand mean of 2.50 and a standard deviation of 0.32. This overall classification, however, conceals specific areas where vulnerability remains evident.

Location of the House (Mean = 2.78, SD = 0.43)

This indicator was rated as “Vulnerable.” This suggests that many persons with disabilities live in

geographically risky or hazard-prone areas (e.g., flood zones or landslide-prone slopes). The moderate standard deviation reflects some variation in housing location among respondents, but generally, this is a shared concern. This finding points to real physical risks that intersect with having an impairment, compounding the dangers persons with disabilities face during emergencies. One FGD participant with orthopedic disability shared, “I am living in a flood-prone area; I rely on my neighbors to carry me to safety”, adding, “They should address pathways that are difficult to navigate, especially for people like me”, highlighting how the physical location of the house intensifies the risk and isolation experienced by persons with disabilities during disasters.

Housing Material or Structure (Mean = 2.53, SD = 0.72)

Also classified as “Vulnerable,” this indicator exhibited the highest standard deviation, indicating significant variability in responses. This suggests that while some houses may be constructed with sturdier materials, others are markedly unsafe during disasters. The pronounced diversity in housing quality among persons with disabilities underscores underlying socioeconomic disparities, which often influence the type and safety of shelter available to marginalized populations (Junod et al., 2024). In disaster-prone areas, poverty and inequality have been consistently identified as major risk drivers, further compounding the physical vulnerabilities of persons with disabilities (PreventionWeb, 2023). Structural inadequacies in housing not only expose them to physical harm but also hinder timely evacuation and access to support services (Thompson & Dizon, 2023).

Evacuation Centers (Mean = 2.22, SD = 0.49)

Rated as “Not so Vulnerable”, this score suggests that all the villages in Maasin City have identified evacuation centers that are perceived as moderately accessible or safe. However, this rating should be interpreted cautiously, as “Not So Vulnerable” rating does not necessarily mean adequate. Although ramps were installed in these identified evacuation centers, going to these evacuation centers remains a significant challenge. The roads leading to these centers and the surrounding terrain are often difficult to navigate, especially for individuals with mobility impairments. In many cases, the lack of proper road maintenance, uneven surfaces, and the absence of other accessible infrastructure make reaching the evacuation centers a daunting task, ultimately compromising their ability to evacuate safely and efficiently during a disaster.

Facilities for Persons with Disabilities in Evacuation Centers (Mean = 2.13, SD = 0.59)

Although rated as “Not So Vulnerable”, results imply limited or inadequate facilities for persons with disabilities in evacuation centers. This is not unusual, particularly in developing countries such as the Philippines. A 2019 study on the spatial distribution of evacuation centers in Metro Manila revealed that a significant portion of these centers are schools, multi-purpose buildings, or basketball courts due to the lack of dedicated evacuation facilities. Specifically, 63.45% of the mapped evacuation centers were schools, while only 2.86% were designated evacuation centers. This underscores the reliance on existing public structures for emergency sheltering in the absence of purpose-built facilities (Rappler, 2019). Another study reported that many evacuation centers in the Philippines lack appropriate accommodations for persons with disabilities, including accessible toilets, ramps, and communication tools (Cabauatan et al., 2021). This was also pointed out by an FGD participant with orthopedic disability, “Our evacuation center does not have ramps. It does not even have a functioning toilet”. These conditions reveal not only the physical inaccessibility of evacuation sites but also a deeper, structural gap in inclusive disaster planning—one that leaves persons with disabilities systematically unprotected during emergencies.

Emergency Transportations (Mean = 2.96, SD = 0.65)

Results reported a “Vulnerable” rating, indicating that the availability of emergency transportation in the villages is a major concern. The relatively high standard deviation suggests considerable variation across areas—while some may have access to this necessity, many others do not. This aligns with field reports indicating that numerous villages in Maasin City lack emergency vehicles. In times of disaster, this gap can mean the difference between life and death, particularly for vulnerable groups such as persons with disabilities, older adults, and those living in geographically isolated communities. The absence of reliable emergency transport severely hampers evacuation, access to medical care, and the timely delivery of aid. This systemic shortfall is compounded by limited fuel supplies, poor road infrastructure, and the lack of trained personnel to operate emergency vehicles.

Communication Services in the Evacuation Centers (Mean= 2.39, SD= 0.31)

This was rated as “Not so Vulnerable” by the respondents suggesting that while some disruptions may occur during disasters, mobile connectivity is generally available or quickly restored in many

evacuation centers. The consistency of perceptions (evidenced by the low SD) suggests uniformity in the preparedness or resourcefulness of evacuation centers across Maasin City. However, it must be noted that availability does not equate to accessibility. For persons who are deaf or hard of hearing, cellphone signals and voice-based warnings are often ineffective, rendering such services practically useless without inclusive systems in place. Nielo (2024) emphasizes the need for visual and text-based communication protocols, while Calumba et al. (2021) highlights the role of clear signage, community liaisons, and inclusive early warning systems in bridging these gaps. Without such adaptations, communication services, though operational—fail to serve the needs of persons with disabilities, reinforcing their vulnerability during disasters.

Social or Organizational Vulnerability

The computed mean score of 2.56 for Social or Organizational Vulnerability, with a standard deviation of 0.62, indicates that respondents perceive a notable level of vulnerability in the social and organizational structures relevant to their context. Although not at the extreme end of the scale, this rating falls within the range classified as "Vulnerable" suggesting notable gaps or weaknesses on the indicators mentioned below. The relatively moderate standard deviation implies some degree of consensus among respondents, indicating that this perception is shared by a broad portion of the population surveyed.

Family Relationship (Mean= 1.78, SD= 0.58)

Rated as "Not so Vulnerable" by the respondents, suggesting that, despite the challenges faced during evacuation, family dynamics tend to remain relatively stable. This rating reflects the resilience of familial bonds in evacuation settings where shared experiences of displacement may foster mutual support and coping mechanisms. This was attested by an FGD participant with visual disability, "During the time when we experienced flood in our community because of a typhoon, my mother assisted me in going to the evacuation center. Instead of me helping her because of her old age, I really cannot do anything because I cannot see". His statement may be interpreted as an expression of gratitude, yet it also conveys an underlying sense of helplessness. The moderate variability in responses (evidenced by the standard deviation) suggests that some families may face significant strain, particularly in crowded or stressful conditions, reinforcing the need for targeted psychosocial interventions. Research by Gonzalez et al. (2022) found that families in crowded evacuation centers often struggle with mental health challenges and relationship tensions due to resource scarcity and living conditions. Similarly, Hernandez et al. (2021) reported that families with limited emotional or social support networks tend to face greater relational strain during and after disasters.

Health Status of other Family Members (Mean= 1.78, SD= 0.62)

Still rated as "Not so Vulnerable," the data indicate that the general health condition within the household is relatively poor. On a scale where lower values indicate poorer health, this average reflects a concerning trend. The data further implies that two or more family members may be living with illnesses or disabilities, highlighting a situation where the family is likely experiencing significant caregiving burdens and psychosocial stress. One FGD participant, a mother caring for a child with mental disability, shared: "It's not just my child who has disability—my husband is also suffering from a condition. I'm the only one managing everything at home. Sometimes I just feel like giving up because it feels endless." This poignant account reflects the emotional and physical toll on primary caregivers who shoulder multiple responsibilities within an already burdened household. This account aligns with recent literature indicating that households with multiple members experiencing health issues or disabilities are often overburdened and under-resourced, leading to heightened emotional, physical, and financial strain (Chang et al., 2022; Li & Rose, 2021). These stressors can compound over time, impacting the well-being not only of the individuals with health challenges but also of the primary caregivers and the broader family unit (Pinquart & Sörensen, 2021).

Involvement in DRRM Initiatives (Mean= 2.83, SD= 0.91)

In the context of households with members who have disabilities, data reveals a "Vulnerable" rating. This suggests that many families, particularly those already burdened with caregiving responsibilities, are not meaningfully engaged in DRRM activities, placing them at increased risk during disasters. This is critical, as meaningful involvement in DRRM is a key determinant of household resilience and preparedness. The relative lack of involvement, therefore, should be seen as a reflection of systemic exclusion and a gap in community-level preparedness strategies. This was articulated clearly by a participant caring for a child with an orthopedic disability, who stated: "There were drills and first aid trainings, but I think those were targeted for barangay rescue volunteers. I think it would be better if we are also knowledgeable about those things." While another FGD participant with orthopedic disability

recalled, "I have joined in that kind of activity, I think that was an earthquake drill. They carried me as if it was a rescue operation." While the latter may raise awareness among responders about the presence of persons with disabilities, it does not constitute meaningful or empowering participation. Genuine inclusion in DRRM must move beyond tokenistic involvement and provide accessible, capacity-building roles where persons with disabilities and their caregivers can actively contribute and lead.

Representation in local DRRM Councils (Mean= 2.86, SD= 0.91)

This area was rated as "Vulnerable," indicating a generally limited and uneven level of inclusion of persons with disabilities in local DRRM efforts. Despite the mandates under the Philippine Disaster Risk Reduction and Management Act of 2010 (RA 10121) and the Magna Carta for Persons with Disability (RA 7277), many persons with disabilities are still not meaningfully engaged in planning or decision-making processes, which heightens their exposure to risk during disasters. This lack of representation is consistent with findings from the UNDRR Global Survey Report on Persons with Disabilities and Disasters (2023), where 86% (5,484) of respondents worldwide reported limited participation in DRR-related decision-making and planning within their communities. Such a systemic gap reinforces the exclusion of persons with disabilities and weakens the integration of their needs in community resilience planning. This was clearly expressed by an FGD participant, a 16 year old child with orthopedic disability, "We need to be represented during DRRM Planning so that we can voice out our concerns." Another FGD participant, a caregiver of a child with visual disability, expressed, "We are always the last to know when there are plans or meetings about disaster drills. We don't even know who represents us in the barangay council." These insights underscore the urgent need to move beyond symbolic inclusion and ensure the active, empowered participation of persons with disabilities in DRRM councils, where their voices can directly inform policies, preparedness activities, and response strategies that reflect the realities of their daily lives.

Knowledge of Lifesaving Skills (Mean=3.10, SD=0.79)

Also rated as "Vulnerable," this finding highlights a significant lack of comprehensive knowledge of lifesaving skills, which are crucial during emergencies. This is unsurprising, given that previous results on *Involvement in DRRM Initiatives* and *Representation in Local DRRM Councils* were also rated as vulnerable. The recurring vulnerability across these areas points to a larger systemic issue--persons with disabilities are not only underrepresented in disaster risk management decision-making but also lack the essential skills and training needed to respond effectively in crisis situations. An FGD participant, a caregiver of a child with orthopedic disability, shared, "On my part, it would be very difficult for me to cope because I am a single mother, and especially that my child has a disability." Similarly, a participant with an orthopedic disability expressed, "If ever our community will be badly hit, I don't think I will be able to save myself... much more my family." These personal accounts underscore the heightened challenges faced by persons with disabilities in disaster preparedness and response, where the lack of lifesaving skills could lead to severe consequences for both themselves and their families.

Presence of Peoples Organizations or Support Groups for persons with disabilities (Mean=3.03, SD=0.83)

Another area rated as "Vulnerable" highlights the absence of strong, accessible, and well-supported networks for persons with disabilities. This significantly hampers their ability to mobilize, advocate for their rights, and access essential services, especially during times of disaster or crisis. While informal support groups exist in some villages across Maasin City, they are often inactive due to a lack of leadership and organization. An FGD participant, a caregiver for a child with mental disability, shared, "There are supposed to be support groups, but they don't do much. It's hard for us to get help when we need it most." The Persons with Disabilities Affairs Office (PDAO) Focal Person confirmed that strengthening support groups remains a challenge, further complicated by staffing shortages. This issue mirrors similar challenges reported in neighboring provinces, as highlighted by the Philippine Consortium on Social Protection (n.d.). According to the brief, the provinces of Northern Samar, Eastern Samar, Samar, and Masbate indicated that at the barangay level, persons with disabilities struggle to organize and form groups due to the lack of a master list and insufficient support from barangay local government units (LGUs) to facilitate their establishment. This highlights a pressing need for targeted interventions to strengthen and mobilize support networks for persons with disabilities, ensuring they are equipped with the resources, leadership, and organizational backing necessary to effectively respond during crises and advocate for their rights.

Economic Vulnerability

The mean score of 2.95 for Economic Vulnerability, with a standard deviation of 0.46, falls within the "Vulnerable" range, indicating that respondents perceive noticeable economic fragility or instability

within their households or communities. The low standard deviation (0.46) points to a high level of agreement among respondents, reinforcing that economic vulnerability is a common, shared experience rather than an isolated concern.

Assets/ Properties (Mean=3.22, SD=0.73)

The classification of “Assets/Properties” as “Vulnerable” reflects the broader socio-economic disadvantages that limit persons with disabilities’ ability to acquire, maintain, or protect physical assets such as homes, livelihood tools, and assistive devices. The result is consistent with one of the indicators of Physical/Environmental Vulnerability- Housing Material or Structure- suggesting that one form of vulnerability can connect with, cause, or exacerbate other vulnerabilities, reinforcing the compounded risks faced by persons with disabilities during emergencies. When disasters strike, these vulnerabilities translate into greater losses and slower recovery, as their already limited resources are destroyed and not easily replaced. An FGD participant with a visual disability expressed this clearly, “Given our economic situation, it would be very hard for us to recover. For example, if our house will be washed out by a flood.” Moreover, the loss of critical assistive technologies—such as mobility aids or communication devices—can severely compromise their safety and independence in emergency situations (UNDRR, 2023). As one FGD participant with an orthopedic disability shared, “If I lose my wheelchair or walker, I won’t be able to evacuate or move at all. That’s the scariest part.” These challenges are compounded by systemic exclusion from risk-reduction measures, asset insurance, and post-disaster recovery programs.

Source of Income (Mean= 3.17, SD= 0.72)

Still rated as “Vulnerable”, underscoring the economic precarity that many persons with disabilities face. Majority of the research participants are only engaged in seasonal work, which further exposes them to financial instability and deepens their economic vulnerability during disasters. Disasters also often rob them of their existing means of living as pointed out by an FGD participant with orthopedic disability, “Our vegetable garden is all that we have left. If that is damaged because of a disaster, I don’t know what I would do.” Limited employment opportunities, workplace discrimination, and lack of accessible livelihood programs also contribute to their restricted income-generating capacity (International Labour Organization [ILO], 2022). In times of disaster, this economic constraint reduces their ability to prepare for, respond to, and recover from impacts, compounding other vulnerabilities such as loss of property, access to basic services, and health care.

Capacity to Source Out Livelihood/ Economic Activities (Mean= 3.15, SD= 0.65)

While the previous data reports vulnerability in terms of their current income, this finding further reveals that persons with disabilities (PWDs) also face significant barriers in their capacity to actively seek and sustain livelihood or economic opportunities. Rated as “Vulnerable”, the result reflects structural challenges such as limited access to skills training, inaccessible workplaces, discriminatory hiring practices, and lack of livelihood programs that are responsive to diverse disability needs (International Labour Organization [ILO], 2022). This limited capacity to engage in, or initiate income-generating activities exacerbates financial insecurity and restricts their ability to recover from disaster-related disruptions. An FGD participant with a visual disability shared, “I placed my life entirely in my mother’s hands because it’s hard for me to find a suitable work. I feel like the door has already been shut for me.” This reflects how, without inclusive economic empowerment, efforts toward disability-inclusive disaster risk reduction (DiDRR) will remain incomplete and comprehensive resilience-building will never be achieved.

Relatives that can Provide in Cash/Kind for Emergency/ Crisis (Mean= 2.26, SD= 0.89)

Data reported a “Not so Vulnerable” rating indicating a moderate level of perceived support from relatives during times of emergency or crisis. While this indicates that some individuals can access familial support in cash or kind, it also reflects variability in responses, pointing to differentiated experiences across the population. This dispersion may imply that while a segment of the group benefits from dependable kin-based assistance, others face intermittent or uncertain support. This disparity was poignantly illustrated by an FGD participant with a speech disability, who communicated his response by writing on a small, handmade blackboard, “I have no family. I only rely on my neighbors when I need help.” While this statement may sound disheartening, it also highlights a significant and often overlooked form of resilience—community support. His testimony demonstrates the social value of neighborhood-based networks, particularly for individuals without access to familial care.

Motivational or Attitudinal Vulnerability

The mean score of 2.55 for Motivational or Attitudinal Vulnerability, paired with a standard deviation of 0.29, indicates a consistently perceived lack of motivation, low self-efficacy, or negative attitudes that may hinder individuals' capacity to engage with opportunities, adapt to challenges, or participate actively in community or institutional processes. This score falls within the "Vulnerable" range, suggesting that indicators mentioned below are negatively affecting persons with disabilities.

Adaptability to Changes (Mean= 2.20, SD= 1.80)

Rated as "Not so Vulnerable", reflecting a moderate capacity among respondents to adjust to evolving circumstances particularly in the aftermath of disasters. Although the average suggests that adaptability is not consistently high across the population, it does not necessarily indicate pronounced vulnerability. Instead, it points to a baseline level of coping that, while variable, demonstrates some degree of functional resilience. Such intra-group variation is not uncommon in contexts characterized by socio-economic precarity or systemic marginalization, yet it also reflects the presence of adaptive behaviors, coping strategies, and personal or community assets that buffer against more severe vulnerability.

Initiative in Getting Things Done During and After Disaster (Mean= 2.80, SD= 2.40)

This area was rated as "Vulnerable", suggesting a pattern of limited individual agency and self-directed action in disaster contexts within the study population. Responses were also highly dispersed, suggesting that while a few individuals may demonstrate strong initiative, a substantial portion of the population experiences difficulty in mobilizing themselves or others during critical phases of disaster response and rehabilitation. This inconsistency points to underlying structural and psychosocial barriers—such as lack of access to resources, insufficient information, dependency on external aid, psychological distress, or diminished self-efficacy. As one FGD participant caring for a bedridden family member shared, "We cannot act immediately during disasters because my father, who cannot move, relies entirely on me." From the perspective of the bedridden individual, this reflects a compounded vulnerability—not only due to their physical limitations but also because their safety and response capacity are entirely contingent on the availability and well-being of their sole caregiver. This underscores the critical role that caregivers play in disaster preparedness and response, often acting as the primary lifeline for persons with severe disabilities. However, while caregiving support is indispensable, the findings also highlight the importance of fostering as much autonomy as possible among persons with disabilities. Striking a balance between necessary support and empowered self-reliance is key to building a more inclusive and resilient disaster response system.

Awareness regarding the Situation or Happenings in the Community (Mean= 2.80, SD= 2.40)

The finding revealed low to moderate levels of awareness among participants regarding the situation or ongoing events in their respective communities, positioning this area as "Vulnerable." This result suggests a significant gap in access to timely, accurate, and inclusive information, particularly critical during periods of disruption such as disasters or community emergencies. A lack of awareness in these contexts can severely undermine the capacity of individuals to make informed decisions, respond promptly, or participate meaningfully in community-based initiatives (Tan & Gaillard, 2023). This result was also confirmed during the FGD as one participant with hearing disability shared, "I cannot hear the village announcements, so I just wait for my neighbor to notify me." Another participant, a mother of a child with developmental disability, noted, "Sometimes, we only find out about relief distributions or evacuation plans too late". Further compounding this vulnerability is the tendency of conventional early warning and risk communication systems to disregard the unique needs of persons with disabilities, which can result in slower response times and increased risk of harm. During village visitations in Maasin City, the researcher observed that early warning systems were largely generic in nature. For instance, announcements were often made using traditional methods such as a "*trumpo*" (megaphone), and dikes were color-coded to indicate rising water levels and potential danger. While these systems are widely accessible, they fail to account for the specific communication needs of persons with disabilities, potentially limiting their effectiveness during disaster situations.

Knowledge of One's Rights and Privileges as a person with disability (Mean= 2.68, SD= 2.28)

The results indicated a "Vulnerable" rating, reflected in participants' low to moderate understanding of their rights and privileges. This limited awareness is concerning, as it can hinder individuals from effectively advocating for themselves or accessing essential services, thus contributing to their ongoing social exclusion. Many participants expressed uncertainty or lack of clarity about legal protections such as the Magna Carta for Disabled Persons (Republic Act No. 7277), which ensures rights to education,

employment, healthcare, and disability-related benefits. One FGD participant with visual disability expressed his frustrations, “I don’t know my rights as a person with a disability, I have no idea what assistance I could get.” In the context of disaster, another FGD participant with orthopedic disability shared, “When our area was flooded, I didn’t know if I had the right to ask for help or if there was a place I could go—no one told us what to do.” These expressions run counter to the principles of the Sendai Framework for Disaster Risk Reduction 2015–2030, which explicitly calls for “a more people-centered preventive approach to disaster risk” that is inclusive of persons with disabilities at all stages of disaster preparedness, response, and recovery. Similarly, Article 29 of the UN Convention on the Rights of Persons with Disabilities (UNCRPD) affirms the right of persons with disabilities to “effectively and fully participate in public and political life,” which includes being informed of and exercising their rights during emergencies. The lack of localized, accessible education on disability rights in the study communities represents a critical gap in realizing these international commitments.

Understanding the specific vulnerabilities of persons with disabilities in disaster contexts raises critical questions about how well local disaster risk reduction and management (DRRM) programs respond to these needs. While persons with disabilities in Maasin City are perceived to face vulnerabilities across economic, social, and motivational/attitudinal dimensions, the effectiveness of disaster governance ultimately depends on how inclusive local programs and services are in each phase of disaster management. Table 2 presents a summary of the perceived inclusiveness of the Maasin City DRRM Office’s programs and services across the four thematic areas prescribed by the Philippine DRRM Act: prevention and mitigation, preparedness, response, and recovery and rehabilitation. This section explores whether existing DRRM initiatives sufficiently reflect the principles of disability inclusion and align with national policy frameworks advocating for inclusive disaster governance.

Table 2. Summary of Inclusiveness of the Program and Services of the Maasin City Disaster Risks Reduction and Management Office

Indicator	Mean Rating	Std. Deviation	Description ^c
Disaster Prevention and Mitigation	2.33	0.10	Not So Inclusive
Disaster Preparedness	2.27	0.33	Not So Inclusive
Disaster Response	2.67	0.15	Inclusive
Disaster Recovery and Rehabilitation	1.94	0.14	Not So Inclusive
Overall Inclusiveness Level	2.33	0.27	Not So Inclusive

^c - 3.28-4.00 = *Very Inclusive*
 2.52-3.27 = *Inclusive*
 1.76-2.51 = *Not So Inclusive*
 1.00-1.75 = *Not Inclusive*

Inclusiveness of Disaster Prevention and Mitigation

Three key indicators under Disaster Prevention and Mitigation —Mainstreaming of BDRRMC Development Policies and Budget (M = 2.34, SD = 0.87), Organizing Pool of Experts (M = 2.42, SD = 0.77), and Formulation of Fund Utilization Guidelines (M = 2.22, SD = 0.90)—were rated as “Not so Inclusive.” These scores suggest limited participation of persons with disabilities despite existing legal mandates such as Republic Act No. 10121 (Philippine DRRM Act of 2010) and Republic Act No. 7277 (Magna Carta for Disabled Persons), which require inclusive planning and decision-making processes down to the village level. One FGD participant with visual disability remarked, “We don’t know how the funds are being used, or whether any assistance is set aside for persons with disabilities”. This reflects broader issues of transparency, expert accessibility, and procedural inclusion. Another pressing issue is there is no organized pool of experts that can cater to the differing needs of persons with disabilities particularly during disaster response. The City’s DRRM Officer recognized this gap, noting that the current staff lacks the necessary training to effectively address the unique needs of individuals with disabilities in disaster situations.

Inclusiveness of Disaster Preparedness

Several key indicators under disaster preparedness—such as the conduct of community risk assessments (M = 2.34, SD = 0.79), installation of early warning systems (M = 2.49, SD = 0.61), provision of hazard maps (M = 2.46, SD = 0.71), and disaster preparedness trainings (M = 2.12, SD = 0.66)—were

rated as “Not So Inclusive,” reflecting a lack of disability-responsive planning and implementation. The lowest-rated item, production and distribution of IEC materials ($M = 1.63$, $SD = 0.71$), reveals significant gaps in accessible communication for persons with disabilities. An FGD participant with low vision commented, “Hazard maps and leaflets are useless for me because I can’t read them. No one explains what they mean in a way I can understand.” Meanwhile, procurement of emergency equipment ($M = 2.24$, $SD = 0.75$) reveals that while some emergency supplies have been procured, there may be insufficient consideration for the specific needs of persons with disabilities in the selection and availability of these resources. These results highlight the urgent need for inclusive preparedness strategies that ensure all sectors—especially persons with disabilities—are informed, equipped, and involved.

Inclusiveness of Disaster Response

The results revealed that disaster response measures in Maasin City were rated as “Inclusive,” as reflected in the activation of the Operations Center for the provision of basic needs to affected families ($M = 2.56$, $SD = 0.72$) and the activation of evacuation center management ($M = 2.78$, $SD = 0.63$). With a grand mean of 2.67 ($SD = 0.15$), these findings suggest a functional level of responsiveness during emergencies, wherein essential services such as food, water, and temporary shelter were generally accessible. However, qualitative data from FGDs indicate that while basic provisions were available, they were not always tailored to the specific needs of persons with disabilities. For instance, evacuation sites lacked appropriate mobility features, and relief goods were distributed without consideration of dietary or medical restrictions unique to some persons with disabilities. One FGD participant caring for her bedridden father shared, “We received food packs, but no adult diapers or hygiene kits—things we urgently needed.” Another participant with visual disability added, “When my elderly mother and I got to the evacuation center, no one explained to us where to go or what was available. We had to wait for someone to guide us.” These accounts underscore the importance of embedding accessibility and disability-specific provisions into response mechanisms to ensure that inclusiveness goes beyond mere availability and meets the nuanced needs of vulnerable populations.

Inclusiveness of Disaster Recovery and Rehabilitation

The overall inclusiveness of disaster recovery and rehabilitation efforts in Maasin City was rated as “Not So Inclusive,” with all key indicators receiving low evaluations. The restoration of the environment, livelihoods, and psychological well-being ($M = 2.13$, $SD = 0.68$), enhancement of economic activities ($M = 1.90$, $SD = 0.69$), and rehabilitation of basic infrastructure ($M = 1.81$, $SD = 0.67$) all reflected insufficient consideration for the specific needs of persons with disabilities. Similarly, efforts addressing physical and psychological recovery ($M = 1.89$, $SD = 0.78$) were reported as lacking depth, especially for individuals facing heightened emotional or mental health challenges post-disaster. These limitations were echoed in the qualitative data. One participant with an orthopedic disability shared, “After the disaster, they fixed the roads, but nothing was designed for us. It’s hard to go out, and I still rely on others to move around.” Another participant, a caregiver of a child with visual impairment, added, “They said they were giving support for livelihoods, but I never received any. I wanted to start a small business from home, but there was no assistance for people like us.” These accounts underscore how persons with disabilities continue to face significant barriers in rebuilding their lives. Economic constraints, limited access to livelihood opportunities, and the absence of targeted financial or material support often leave them excluded from the recovery process. Without inclusive strategies and dedicated resources, their vulnerability not only persists but is further exacerbated in the aftermath of disasters.

While the findings in Table 2 provide a descriptive assessment of inclusiveness, it is equally important to determine whether program inclusiveness is statistically associated with the perceived vulnerabilities of persons with disabilities. Table 3 presents the results of a correlation analysis between the inclusiveness of DRRM programs and the different dimensions of vulnerability. This analysis aims to explore whether more inclusive DRRM efforts are significantly linked with reduced levels of vulnerability among persons with disabilities, thereby offering insights into the potential impact and responsiveness of current disaster governance practices.

Table 3. Correlation between the Inclusiveness of the Program and Services of the Maasin City Disaster Risk Reduction and Management Office and the Vulnerabilities of Persons with Disabilities

Vulnerability ^a	Program Inclusiveness ^b				
	Prevention and Mitigation	Disaster Preparedness	Disaster Response	Recovery and Rehabilitation	Overall
Physical or Environmental	-0.135*	-0.204**	-0.089	-0.076	-0.156*
Social or Organization	-0.138*	-0.153*	0.019	-0.044	-0.131*
Economic	0.070	0.010	-0.022	0.096	0.051
Motivational or Attitudinal	-0.242**	-0.339**	-0.130*	-0.133*	-0.260**
Overall	-0.217**	-0.337**	-0.114	-0.078	-0.229**

^a - 1= Not Vulnerable 2= Not so Vulnerable 3= Vulnerable 4= Very Vulnerable

^b - 1= Not Inclusive 2= Not So Inclusive 3= Inclusive 4= Very Inclusive

* - significant ($p\text{-value} \leq 0.05$, $n = 232$)

** - highly significant ($p\text{-value} \leq 0.01$, $n = 232$)

The correlation analysis reveals a significant inverse relationship between the inclusiveness of Maasin City's DRRM program and the vulnerabilities of persons with disabilities. Overall, as program inclusiveness increases, reported vulnerability decreases ($r = -0.229$, $p < 0.01$), with the strongest associations observed in the preparedness ($r = -0.337$, $p < 0.01$) and prevention and mitigation ($r = -0.217$, $p < 0.01$) phases. Motivational or attitudinal vulnerabilities showed the most consistent and highly significant negative correlations across all phases, especially in preparedness ($r = -0.339$, $p < 0.01$), suggesting that inclusive planning can enhance engagement and confidence among persons with disabilities. Social/organizational and physical/environmental vulnerabilities were also significantly reduced by inclusive practices, particularly during the early stages of disaster planning. In contrast, economic vulnerability showed no statistically significant relationship with inclusiveness in any DRRM phase, suggesting that financial and livelihood challenges faced by persons with disabilities may not be directly addressed or mitigated by the existing DRRM interventions in Maasin City. These findings underscore the importance of inclusive strategies—particularly in early DRRM phases—to reduce non-economic vulnerabilities, while also highlighting the need for targeted economic support.

Conclusion and Suggestions

Conclusion

This study provides empirical evidence that inclusive Disaster Risk Reduction and Management (DRRM) program in Maasin City is significantly associated with reduced vulnerability among persons with disabilities, particularly in the preparedness and prevention and mitigation phases. The negative correlations observed—most notably in motivational or attitudinal domains—affirm the value of inclusive planning in fostering engagement, confidence, and participation among persons with disabilities. Furthermore, the consistent reductions in social/organizational and physical/environmental vulnerabilities indicate that inclusive strategies during early DRRM phases can meaningfully enhance the safety and resilience of this marginalized group. However, the absence of a significant relationship between inclusiveness and economic vulnerability reveals a critical gap in existing interventions, suggesting that economic dimensions of risk are insufficiently addressed. These findings call for a more comprehensive, intersectional approach to DRRM—one that integrates economic empowerment alongside inclusive planning to ensure that all facets of vulnerability among persons with disabilities are systematically mitigated. Future research should explore the design and effectiveness of economic support mechanisms within DRRM frameworks to promote holistic resilience for persons with disabilities.

Suggestions

Inclusive disaster risk reduction is not just a local imperative, but a global commitment aligned with the Sendai Framework and the UN Convention on the Rights of Persons with Disabilities. The findings of this study highlight the necessity for inclusive DRRM strategies that go beyond immediate disaster response and recovery to include proactive, equitable planning. By enhancing inclusivity at every stage, from preparedness to recovery, Maasin City can contribute to global efforts in making disaster resilience accessible for all, particularly persons with disabilities. With this, the following suggestions can be inferred:

1. **Strengthen Inclusive Engagement in Early DRRM Phases.** Given the strong inverse relationship between inclusiveness and vulnerabilities—particularly in preparedness and prevention—local government units (LGUs) should institutionalize mechanisms for the active participation of persons with disabilities in the early stages of DRRM planning. This can include consultative assemblies, participatory mapping, and the co-development of accessible early warning systems. Such initiatives will align with global standards set by the Sendai Framework for Disaster Risk Reduction, emphasizing the importance of inclusiveness in disaster planning at all levels.
2. **Prioritize Attitudinal and Social Interventions.** The consistent reduction in motivational/attitudinal vulnerabilities suggests that inclusive DRRM practices foster greater agency and trust among persons with disabilities. Thus, DRRM policies should integrate psychosocial support, disability sensitivity training for DRRM personnel, and community education to counter stigma and enhance social cohesion. This approach also supports global commitments to reducing social exclusion, as outlined in the UN Convention on the Rights of Persons with Disabilities (CRPD).
3. **Enhance Physical and Environmental Accessibility.** Given the significant correlations in physical/environmental domains, infrastructure and evacuation planning should comply with universal design standards. Investments in accessible and inclusive shelters, transportation, and communication tools should be prioritized in DRRM budgets. This would not only support national efforts but also contribute to global goals of equitable disaster resilience for all, particularly for those with disabilities.
4. **Integrate Economic Resilience Strategies in DRRM program.** The absence of a significant correlation between inclusiveness and economic vulnerability underscores the need to go beyond participatory planning. LGUs should embed disability inclusive livelihood programs, cash transfer schemes, and disability-responsive social protection measures into the DRRM program to address the economic precarity of persons with disabilities during and after disasters. It is essential that these efforts are aligned with international development frameworks that recognize the critical role of economic resilience in disaster recovery.
5. **Develop Inclusive DRRM Monitoring and Evaluation Tools.** To ensure the sustained impact of inclusive DRRM efforts, outcome monitoring tools should disaggregate data by disability type and assess changes in vulnerability across dimensions. Participatory evaluation methods can also enhance accountability and program relevance. Additionally, all post-disaster programs should be subject to inclusive Monitoring and Evaluation (M&E) frameworks, developed with the active participation of persons with disabilities, ensuring that no one is left behind in the recovery process.
6. **Promote Cross-sectoral and Multi-stakeholder Collaboration.** Addressing the complex vulnerabilities of persons with disabilities requires coordinated efforts between DRRM offices, social welfare departments, civil society, and organizations of persons with disabilities (OPDs). Collaborative governance models should be institutionalized to ensure continuity, inclusivity, and resource alignment. By integrating multi-sectoral efforts, Maasin City can advance toward meeting global commitments to inclusive disaster risk reduction under both the Sendai Framework and the UN CRPD.

Acknowledgement

We extend our heartfelt gratitude to all stakeholders who contributed to the successful implementation of this research. Our deepest appreciation goes to the persons with disabilities and their carers, whose valuable insights, time, and experiences have enriched this study. Their participation and willingness to share their stories have been instrumental in shaping meaningful findings that advocate for inclusivity and empowerment. This research is a testament to the power of collective effort, and we sincerely appreciate each and every individual, organization, and community partner whose contributions made this work possible.

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