

An Assessment of the Office of Civil Defense's Information Materials on Typhoon Preparedness by the Visually Challenged Community

Denver A. Moreno ^{1*} and Dr. Edna T. Bernabe ¹

¹ Polytechnic University of the Philippines, Philippines

* denvermoreno19@gmail.com

Date Submitted:

August 20, 2026

Date Accepted:

September 15, 2026

Date Published:

October 02, 2026

DOI:

10.5281/zenodo.23093714

ABSTRACT

This study assesses the awareness, knowledge, attitude, and practice (AKAP) of visually challenged residents in Region IV-A regarding the Office of Civil Defense's (OCD) typhoon preparedness materials. Analyzing accessibility barriers establishes baseline data to enhance the agency's framework, supporting a more inclusive and equitable disaster response system. The findings reveal that educational attainment primarily dictates disaster-related attitudes and practices. High mean ranks among college and master's graduates suggest formal education enhances risk perception and preventive action. Conversely, lower scores among non-college graduates highlight a communication gap, indicating OCD materials may be too complex for those with less formal schooling. Economic

status also exposes a gap in translating attitude into practice. While attitudes were consistent across income levels, actual practices differed significantly; middle-income respondents scored highest, while the lowest-income group lagged behind. This confirms that financing disaster kits or home reinforcements remains a privilege, preventing vulnerable sectors from acting on positive intentions. Furthermore, employment status impacts protocol execution despite uniform motivation. The retirees demonstrated high practice levels, likely due to greater planning time and vulnerability awareness. Conversely, overseas Filipino workers (OFWs) and the unemployed showed a distinct lack of practical application, proving that physical absence and financial constraints obstruct household safety measures. In conclusion, socio-demographic factors are key predictors of typhoon preparedness attitudes and practices among visually challenged individuals. Bridging these demographic gaps requires developing and implementing enhanced, highly accessible information materials tailored to the needs of the visually challenged community.

Keywords: *CPA Typhoon preparedness, disaster, information materials, awareness, knowledge, attitude, practice, visually challenged community, Region IV-A.*

INTRODUCTION

Climate change drives an increase in tropical cyclone frequency and severity, escalating global casualties and economic vulnerabilities. The Northwest Pacific, particularly the Philippines, remains exceptionally exposed to these catastrophic hazards. Historic typhoons like Haiyan and recent 2025 storms like Kalmaegi and Fungwong demonstrate this vulnerability. Mitigating these severe impacts relies heavily on robust disaster preparedness and risk communication strategies. However, standard emergency frameworks continue to depend on visual graphics, creating critical information barriers for vulnerable populations like the visually impaired. This demographic comprises a highly marginalized sector concentrated heavily in regions like Region IVA.

While the Philippine Disaster Risk Reduction and Management Act (RA 10121) mandates inclusive planning and the Office of Civil Defense (OCD) utilizes a traditional quad media approach, a persistent gap remains between policy ideals and real life execution. This gap leaves visually challenged individuals without accessible alternative formats. To bridge this implementation gap and support the strategic pivot of the OCD toward an adaptive audio descriptive communication ecosystem, this study evaluates the accessibility, comprehension, and application of existing typhoon preparedness materials among visually impaired individuals.

Through diagnosing specific navigation challenges and systemic barriers, this research establishes vital baseline data to transform general audience information into inclusive life-saving tools that safeguard vulnerable communities.

Statement of the Problem

While Republic Act 10121 mandates the protection of vulnerable sectors during disasters, a significant gap persists in empirical data evaluating the efficacy and navigability of general audience disaster preparedness materials for the visually challenged community. This lack of evaluation obstructs the development of inclusive communication frameworks that fit the precise needs of vulnerable populations. Consequently, emergency managers lack the necessary evidence to transition from standard information dissemination to accessible risk communication.

To address this critical gap, this study examines how existing communication barriers affect marginalized demographics during extreme weather events. Specifically, the researcher aims to answer the central research question: How do the accessibility barriers encountered visually challenged persons navigating Office of Civil Defense typhoon preparedness materials influence their awareness, knowledge, attitude, and actual preparedness practices?

To respond to the research question, these objectives were addressed:

- Profile the demographics of visually challenged respondents, including age, gender, economic status, educational attainment, and employment.
- Establish baseline data on the current awareness level of visually challenged individuals regarding OCD typhoon preparedness materials.
- Measure the knowledge level of visually challenged persons concerning the content of OCD typhoon preparedness materials.
- Examine the attitude of visually challenged persons toward OCD typhoon preparedness materials.
- Assess the level of actual preparedness practices adopted visually challenged persons based on OCD materials.
- Determine significant differences in respondent answers when grouped according to economic status, educational attainment, and employment.
- Gather data from the OCD regarding their specialized strategies, deployment challenges, and proposed solutions for inclusive typhoon materials.
- Identify specific accessibility barriers encountered visually challenged persons navigating OCD materials, focusing on format suitability, content, and clarity.
- Propose evidence-based recommendations to improve OCD typhoon preparedness materials to serve the visually challenged community.

Study Framework

This study integrates the Social Model of Disability and the Awareness, Knowledge, Attitude, and Practice (AKAP) Model to identify communication gaps in Office of Civil Defense (OCD) typhoon preparedness materials and examine their relationship with individual responses. The foundational framework relies on the Social Model of Disability, which posits that societal and institutional failure to accommodate diverse needs—rather than physical impairments—creates disabling barriers. Within this

context, the framework argues that structural barriers to knowledge emerge from institutional neglect to produce accessible alternative media, meaning visual challenges themselves do not prevent individuals from acquiring disaster information. Consequently, responsibility shifts to the OCD to modify its emergency materials rather than expecting the marginalized sector to adapt to visual only formats.

The study utilizes the AKAP Model to operationalize this perspective, diagnosing where information barriers disrupt the cognitive and behavioral progression necessary for disaster readiness. Structural deficits within existing OCD materials, such as the absence of audio descriptions or Braille, directly impede the AKAP hierarchy. This accessibility breakdown hinders accurate knowledge acquisition, fosters insufficient or negative attitudes toward risk, and ultimately results in poor preparedness practices during severe weather events. Identifying exactly where this information flow breaks down allows the integrated framework to guide the evaluation of existing systemic barriers, map their cascading effects on community resilience, and inform evidence based innovations to transition the OCD toward an inclusive accessible communication ecosystem.

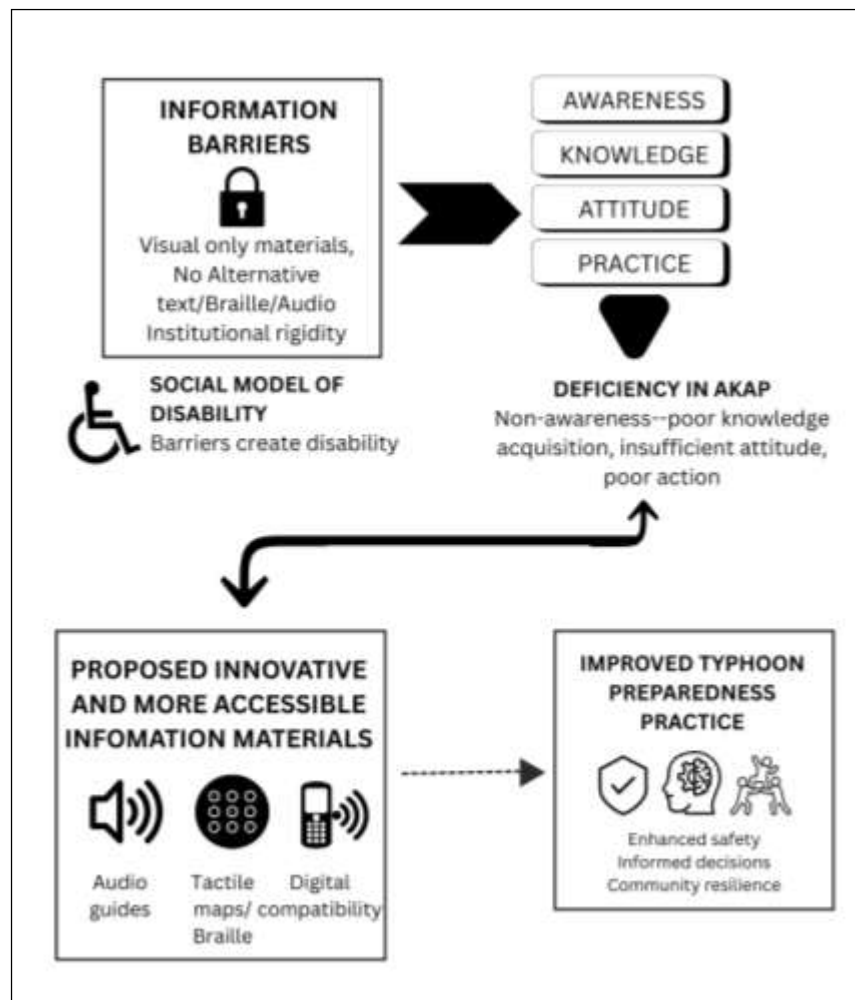


Figure 1. Theoretical and Study Framework

METHODS

This research employed an explanatory sequential mixed methods design, collecting quantitative data prior to qualitative investigation to evaluate Office of Civil Defense (OCD) typhoon preparedness materials. The initial quantitative phase utilized a descriptive design to systematically observe, quantify, and summarize baseline levels of awareness, knowledge, attitude, and practice among respondents without altering variables. This descriptive approach generated reliable statistical data to document existing conditions, pinpoint structural problems in current communication practices, and establish clear indicators of information inaccessibility.

The subsequent qualitative phase expanded upon those statistical results to isolate specific accessibility barriers and navigation challenges encountered the visually challenged community. Integrating these two methodologies moved the study beyond simple description toward data driven policy solutions, ensuring robust human centered insights. The resulting empirical framework provided the OCD with vital baseline data to evaluate current disaster communication strategies, address institutional deficiencies, and inform the development of an inclusive accessible communication ecosystem.

Participants and Sampling Techniques

The target population comprised registered visually challenged individuals residing within Region IVA, encompassing the provinces of Cavite, Laguna, Batangas, Rizal, and Quezon. This location was selected because it recorded the highest concentration of visually impaired citizens in the Philippines, documenting 29,821 registrants according to the Department of Health. This dense regional concentration provided an ideal demographic landscape necessary for executing a robust assessment of disaster risk reduction communication strategies.

To address the dual quantitative and qualitative dimensions of the research, distinct sampling strategies structured the data collection process. The initial quantitative phase determined the required sample size using Cochran's formula, which established an initial baseline of 384 individuals. Applying the finite population correction factor adjusted the final requirement to 379 respondents, and convenience sampling facilitated participant recruitment across the five provinces based on localized population percentages: Batangas yielded 95 respondents, followed by Quezon with 84, Laguna with 78, Cavite with 72, and Rizal with 50.

Conversely, the qualitative phase employed purposive sampling to recruit key informants capable of providing depth regarding institutional communication structures and lived navigation experiences. Institutional insights emerged from interviews with the Office of Civil Defense Communications Head, selected based on direct oversight of typhoon preparedness campaigns. Community perspectives derived from visually challenged representatives who met strict inclusion criteria, specifically holding a valid person with disability identification card, maintaining residency within one of the five target provinces, and demonstrating willingness to participate.

Research Instruments

The investigation utilized multiple instruments to validate the findings through an explanatory design. The initial quantitative phase featured a structured, multi sectional questionnaire administered through a hybrid online and pen and paper platform. To ensure comprehension among the visually challenged community, the instrument underwent translation into Filipino. The questionnaire comprised five distinct sections tracking demographic profiles, a ten item scale evaluating familiarity with Office of Civil Defense (OCD) typhoon preparedness materials, a ten-point quiz measuring knowledge levels based on an established transmutation table, a ten item four point Likert scale assessing attitudes, and a final ten item four point Likert scale measuring actual preparedness practices.

The subsequent qualitative phase generated deeper operational insights through semi structured focused interviews targeting distinct stakeholder groups. One interview protocol engaged the Communications Head of the OCD to investigate institutional strategies concerning messaging, channels,

and content tailored for vulnerable demographics, while exploring deployment challenges and potential systemic solutions.

Concurrently, a separate interview series engaged representatives from the visually challenged population to uncover specific experiential barriers regarding the format suitability, content, and clarity of existing OCD materials, satisfying the qualitative requirements of the study.

Data Gathering and Analysis Procedures

The quantitative phase utilized a hybrid data collection approach across Region IVA, supported by initial institutional endorsements from the five provincial governments. Data generation occurred through interviewer administered surveys during site visits to regional massage clinics for the blind, where reading questions aloud ensured clarity and accessibility. Concurrently, a digital version of the questionnaire deployed within specialized social media groups expedited data gathering, with all entries encoded into a statistical dataset. Descriptive statistics, including frequencies, means, and percentages, summarized the demographic profiles and behavioral variables, while the non-parametric Kolmogorov Smirnov test and Kruskal Wallis H test evaluated significant differences across the independent groups.

The subsequent qualitative phase focused on semi structured interviews to capture deeper institutional and experiential insights. Formal coordination with the Office of Civil Defense facilitated a recorded video conference interview with the Head of Communications regarding agency strategies, while focused interviews with five qualified community representatives captured specific navigation barriers. The researcher transcribed these sessions under strict confidentiality protocols to execute a systematic thematic analysis. This qualitative step coded and categorized the narratives to uncover recurring patterns regarding messaging, content, and channel accessibility, merging both methodologies to validate the overarching research questions.

RESULTS AND DISCUSSION

The data collection results from the CALABARZON region indicate that a majority of the respondents fall within the working age cohort of 26 to 45 years, representing 55.1% of the sample. In terms of educational attainment, 58.1% of the participants did not complete a college degree, whereas 38.5% successfully graduated from an undergraduate program. Furthermore, the economic profile reveals a concentration within lower income brackets, as 51.07% of the individuals reported monthly earnings below ₱10,957. Employment distribution shows that 33.9% work within private corporations, 19.9% hold government positions, and 27.5% remain unemployed.

This demographic composition aligns with the requirements for executing localized disaster risk reduction assessments. The socioeconomic characteristics of the sample reflect critical vulnerabilities, particularly regarding income levels and educational backgrounds, which directly influence disaster preparedness.

Level of awareness on OCD's typhoon preparedness information materials

Table 1. *Summary and verbal interpretation of the survey result*

Level of Awareness	Frequency (f)	Percentage (%)
Aware	179	54.74
Not Aware	148	45.26
Total	327	100.00
Verbal Interpretation	Aware	

Legend:

Not Aware: 0 to 5

Aware: 6 to 10

As presented in Table 1, 54.74% of the respondents demonstrated overall awareness regarding typhoon preparedness communications, peaking at 80.12% for typhoon threats and 68.20% for recognition of Office of Civil Defense (OCD) information materials. Qualitative narratives validated these findings, with one participant commending localized, on the ground distribution channels: *"Dito naman po sa amin maganda po. [Yong] barangay, umiikot po sila, meron po sila yung megaphone... naga-announce po sila na ang level ng tubig ganito na, kaya kailangan nyo na pong maghanda."* Another participant highlighted the growing efficacy of digital channels: *"Before siguro [may challenge], but now, magaling [na] mag-absorb ang mga katulad namin. Kung ano po yung SOP, SOS [kapag may bagyo], relying po talaga kami sa social media."* The interview with OCD Communications Head Emerito Junie Castillo III corroborated these dynamics, emphasizing decentralized dissemination and a multi-channel approach: *"Ang mas direct na kausap doon talaga LGU... sila yung dapat target nila... may database ako, yun yung pupuntahan ko para yun yung i-prioritize namin."* He further explained their broader accessibility efforts: *"Yung atin na kasing ginagamit ngayon is yung Quad Media... As much as possible, we try to explain things nang mas detalyado. Even if those who can just hear pero hindi naman nakikita yung ating mga IECs."*

Conversely, a substantial 45.26% segment of the sample population remained unaware of these communication materials, particularly regarding digital campaigns like Panatag Pilipinas (66.36% unawareness) and Project DINA (73.09% unawareness). This deficit stems from restricted digital access and localized distribution gaps, underscoring how a digital divide endangers physically challenged populations during crisis events (Jaeger, 2006). This barrier is exacerbated by institutional unfamiliarity, as many individuals bypass official agency hubs entirely. As one interviewee shared: *"Sa totoo lang po kasi, actually hindi po ako familiar sa website ni Office of Civil Defense... oras ng pagbagyo, madalas sa balita ko lang nalalaman."* While the OCD has secured a stable baseline of public awareness, addressing these lingering communication gaps is essential to prevent individuals with sensory impairments from remaining unprepared and vulnerable (Oraiz & Oraiz, 2025).

Level of knowledge of visually challenged persons on OCD's typhoon preparedness information materials

Table 2. *Summary and verbal interpretation of the survey result*

Level of Knowledge	Frequency (f)	Percentage (%)
Low	158	48.32
Moderate	146	44.65
High	23	7.03
Total	327	100.00
Verbal Interpretation	Low Knowledge	

Transmutation table:

Scores	Verbal interpretation
0 to 3 correct scores	Low knowledge
4 to 6 correct scores	Moderate knowledge
7 to 10 correct scores	High knowledge

The assessment of knowledge levels revealed a pronounced friction between basic awareness and functional comprehension, as 48.32% of the sample fell within the low knowledge category. Respondents

demonstrated high cognitive mastery regarding generalized safety measures like pre-emptive evacuation (88.69%), yet their understanding plummeted regarding institutional nomenclature. The vast majority failed to correctly decode standard agency acronyms, including SMS (70.95% incorrect) and PSWS (76.76% incorrect). Qualitative narratives mirrored these statistical trends, highlighting that bureaucratic and linguistic impediments obscure immediate utility: *"Minsan po kasi may mga terms na hindi agad pamilyar sa amin lalo na sa paghahanda."* Another respondent echoed this sentiment, noting that *"Kapag mga malalim na English po, hindi na po [naiintindihan],"* and acronyms posed a distinct *"struggle."*

This systemic barrier stems from institutional reliance on a unified, undifferentiated messaging strategy. As the Office of Civil Defense Communications Head stated, *"The messaging naman natin diyan, it consistently emphasizes... the importance of preparedness, regardless if you're part of the community ng PWD."* This generalized approach overlooks specialized demographic needs, creating an operational disconnect summarized a community representative who observed that the material is *"Very generic sya... target audience naman niya is not necessarily the visually challenged, but the general public."* Consequently, individuals frequently navigate these institutional barriers through transferring the accommodation burden to external assistive tools: *"Meron naman po kami ginagamit na [application] na pag tinapat mo siya doon sa document, babasahin po."* Requiring such third party adaptations violates the principles of Universal Design for Information, which mandates that emergency communications must be natively accessible to all citizens (Ellis & Goggin, 2015).

Level of attitude of visually challenged persons on OCD's typhoon preparedness information materials

Table 3. Result of the level of attitude of visually challenged individuals on OCD's information materials

Statement/ Question	Scale	f	%	Weighted Mean	Verbal interpretation and implication
1. Naibibigay ng mga information materials ng OCD ang pangangailangan ko tuwing bagyo.	4	83	25.38	3.03	Agree/Good
	3	180	55.05		
	2	55	16.82		
	1	9	2.75		
	Total	327	100.00		
2. Inihahanda ako ng mga information materials na ito kung ano ang gagawin bago at sa panahon ng bagyo.	4	86	26.30	3.06	Agree/Good
	3	183	55.96		
	2	51	15.60		
	1	7	2.14		
	Total	327	100.00		
3. Dahil sa mga ito, mas naging mapagmatyag ako sa aking paligid sa panahon ng bagyo.	4	101	30.89	3.09	Agree/Good
	3	161	49.24		
	2	58	17.74		
	1	7	2.14		
	Total	327	100.00		
4. Ang pagkakaroon ng disaster kit ay makakatulong para sa paghahanda sa bagyo.	4	115	35.17	3.20	Agree/Good
	3	166	50.76		
	2	42	12.84		
	1	4	1.22		
	Total	327	100.00		
5. Nagbago ang paraan ko ng paghahanda dahil sa mga impormasyon mula sa OCD tungkol sa paghahanda sa bagyo.	4	87	26.61	3.05	Agree/Good
	3	177	54.13		
	2	54	16.51		
	1	9	2.75		
	Total	327	100.00		

	Total	327	100.00		
6. Ang mga detalye sa mga information materials ng OCD ay sapat upang ako ay makapag handa tuwing bumabagyo.	4	91	27.83	3.01	Agree/Good
	3	159	48.62		
	2	67	20.49		
	1	10	3.06		
	Total	327	100.00		
7. Tamang tama ang oras ng dating ng mga paalala ng OCD tungkol sa bagyo upang makapaghanda ako nang walang pagmamadali.	4	95	29.05	3.03	Agree/Good
	3	161	49.24		
	2	58	17.74		
	1	13	3.98		
	Total	327	100.00		
8. Nagtitiwala ako sa kawastuhan ng mga paalalang inilabas ng OCD tungkol sa paghahanda sa bagyo.	4	100	30.58	3.04	Agree/Good
	3	152	46.48		
	2	63	19.27		
	1	12	3.67		
	Total	327	100.00		
9. Dahil sa mga information materials ng OCD, mas namomotivate akong gumawa ng aksyon at maghanda ng emergency kit at ng Go Bag tuwing may bagyo.	4	100	30.58	3.08	Agree/Good
	3	165	50.46		
	2	49	14.98		
	1	13	3.98		
	Total	327	100.00		
10. Angkop ang mga information materials ng OCD sa pangangailangan ko tuwing may paparating na bagyo.	4	105	32.11	3.05	Agree/Good
	3	152	46.48		
	2	52	15.90		
	1	18	5.50		
	Total	327	100.00		
Overall				3.06	Agree/Good

Note: 4=Lubos na sumasang-ayon, 3=Sumasang-ayon, 2=Hindi sumasang-ayon, 1=Lubos na hindi sumasang-ayon.

Legend of the Verbal Interpretation and Implication of the Weighted Mean

Weighted Mean Range	Verbal Interpretation / Implication
3.25–4.00	Strongly Agree / Very Good
2.50–3.24	Agree / Good
1.75–2.49	Disagree / Poor
1.00–1.74	Strongly Disagree / Very Poor

The survey results indicate a favorable attitude among respondents toward Office of Civil Defense (OCD) typhoon preparedness materials, yielding an overall weighted mean of 3.06, which denotes a good orientation level. Most participants affirmed that these resources prompt proactive safety measures; 80.74% agreed that the information modified their preparation habits, 80.00% reported motivation to assemble emergency kits, and 79.30% noted increased vigilance during storms. This behavioral influence aligns with the institutional objective of integrating social behavioral science into emergency messaging, as highlighted the OCD Communications Head: *"Preparedness should really be our way of life... hindi lang ito because*

parating na yung bagyo, doon pa lang mag-prepare. Gusto natin i-incorporate... science-based information, community experience... [and] social behavior."

Conversely, the generalized nature of this top down framework creates significant operational blind spots for marginalized demographics, leaving approximately 20.49% of respondents with insufficient preparation details and 19.27% unaffected in their preparedness behavior. This gap is exacerbated a stark lack of direct institutional engagement, a disconnect expressed bluntly a community representative: *"We never met or we never encounter yung mga people from OCD."* When communication does occur, it remains superficial and episodic, as another participant recalled: *"One time lang kami nabigyan ng gano'n... [Na] 'pag may bagyo, maghanda kayo...mag-ready kayo, mag-ipon kayo...mga ganon po."* Without localized, face to face trust building and intentionally inclusive, accessible formats, centralized national directives remain abstract, effectively isolating visually challenged populations from official safety networks (IFRC, 2018; Velmonte & Doron, 2024).

Level of practice of the visually challenged persons on the information that they get from OCD's materials on typhoon preparedness

Table 4. Result of the level of practice of visually challenged individuals on OCD's information materials

Statement/ Question	Scale	f	%	Weighted Mean	Verbal interpretation and implication
1. Nakadepende ako sa OCD para sa mga impormasyon na kailangan ko tuwing bumabagyo.	4	56	17.13	2.57	Madalas (Often)/Practiced
	3	121	37.00		
	2	104	31.80		
	1	46	14.07		
	Total	327	100.00		
2. Sinusunod ko ang mga paalala sa information materials na ito sa paghahanda bago at sa kasagsagan ng bagyo.	4	91	27.83	2.83	Madalas (Often)/Practiced
	3	108	33.03		
	2	108	33.03		
	1	20	6.12		
	Total	327	100.00		
3. Sinusunod ko ang mga hakbang sa kaligtasan na binanggit sa information materials ng OCD.	4	83	25.38	2.75	Madalas (Often)/Practiced
	3	112	34.25		
	2	99	30.28		
	1	33	10.09		
	Total	327	100.00		
4. Nag-iimbak ako ng mga pagkain, inumin, gamot at iba pang mga pangunahing pangangailangan na sasapat sa tatlong araw ayon sa rekomendasyon ng OCD kapag bumabagyo.	4	110	33.64	3.00	Madalas (Often)/Practiced
	3	125	38.23		
	2	73	22.32		
	1	19	5.81		
	Total	327	100.00		
5. Sinusunod ko ang Pre-emptive Evacuation kapag ako nasa flood-prone o landslide-prone area.	4	111	33.94	2.97	Madalas (Often)/Practiced
	3	111	33.94		
	2	90	27.52		
	1	15	4.59		
	Total	327	100.00		

6. Pinapatay ko ang main switch o fuse box kapag nagsisimula nang pumasok ang baha sa bahay.	4	125	38.23	3.10	Madalas (Often)/Practiced
	3	122	37.31		
	2	67	20.49		
	1	13	3.98		
	Total	327	100.00		
7. Bago dumating ang bagyo, sinusuri kong maigi ang aming mga bubong, bintana, at iba pang bahagi ng bahay upang masiguradong matibay ang mga ito.	4	115	35.17	3.04	Madalas (Often)/Practiced
	3	129	39.45		
	2	63	19.27		
	1	20	6.12		
	Total	327	100.00		
8. Isinusulat ko ang mga emergency contact numbers na maaaring tawagan sa panahon ng bagyo.	4	99	30.28	2.72	Madalas (Often)/Practiced
	3	92	28.13		
	2	81	24.77		
	1	55	16.82		
	Total	327	100.00		
9. Mayroon kaming meeting point ng aking pamilya sakaling magkahiwalay kami kapag bumabagyo.	4	96	29.36	2.76	Madalas (Often)/Practiced
	3	98	29.97		
	2	92	28.13		
	1	41	12.54		
	Total	327	100.00		
10. Nakahanda ang aking Go Bag at emergency kit bago pa man dumating ang bagyo.	4	110	33.64	3.02	Madalas (Often)/Practiced
	3	134	40.98		
	2	61	18.65		
	1	22	6.73		
	Total	327	100.00		
Overall				2.87	Madalas (Often)/Practiced

Note: 4=Always, 3=Often, 2=Rarely, 1=Never.

Legend of the Verbal Interpretation and Implication of the Weighted Mean

Weighted Mean Range	Verbal Interpretation / Implication
3.25–4.00	Strongly Agree / Very Good
2.50–3.24	Agree / Good
1.75–2.49	Disagree / Poor
1.00–1.74	Strongly Disagree / Very Poor

The assessment of preparedness practices yielded an overall weighted mean of 2.87, indicating that respondents frequently execute essential survival behaviors such as storing provisions, assembling disaster kits, securing power sources, and performing pre-emptive evacuations. This high rate of practical application aligns with the actionable messaging embedded within the institutional multi-channel broadcasting strategy, which prioritizes core directive details: *'What to do before, during, and after... what are the areas na dadaanan ng bagyo, gaano kalakas yung hangin.'* However, these favorable metrics must be contextualized within vulnerable demographics, where successful execution often reflects independent self-efficacy rather than the native accessibility of official communications (Gomes et al., 2021).

Qualitative evidence confirmed this compensatory resilience, illustrating how visually challenged individuals routinely navigate structural communication gaps through personal innovation. For example, one participant detailed how they independently overcome inaccessible formats: *'Kung mabibigay naman or may brochure po ako, may ginagamit po akong application doon po para mabasa ko po.'* Relying on user centric adaptations underscores a critical limitation in generalized disaster broadcasts. Transitioning these protocols into inclusive, localized social practices requires integrating vulnerable groups directly into disaster management planning to ensure communication materials remain inherently accessible (Calgaro et al., 2014; Fatin et al., 2024).

Significant Differences Across Socio-Demographic Profile

This section shows the results of the nonparametric tests conducted to determine the significant differences in the attitude and practice of the respondents when they are grouped according to their educational attainment, economic status, and employment.

1. Grouped by educational attainment

The inferential analysis revealed statistically significant variations in both the attitudes ($p=0.023$) and behavioral practices ($p=0.014$) of respondents when stratified educational attainment. Individuals holding postgraduate degrees demonstrated the highest mean ranks for attitude (182.55) and practice (201.59), whereas non college graduates recorded the lowest comparative metrics (151.88 and 151.47, respectively). This baseline disparity confirms that advanced formal education enhances cognitive risk perception and proactive self-efficacy during crisis events (Hoffmann & Muttarak, 2017). Under the lens of the Social Model of Disability, these depressed metrics among non-graduates reflect systemic communication barriers rather than an individual failure of learning; standard emergency protocols remain optimized for highly educated audiences, leaving marginalized cohorts vulnerable to structurally imposed informational gaps (Kollmuss & Agyeman, 2002).

Mitigating these systemic inequities requires decoupling disaster communication from institutional complexity and transitioning toward an inclusive framework of localized social behavior. This transformation aligns with the operational vision articulated an Office of Civil Defense representative, who advocated for a continuous culture of safety: *"Preparedness should really be our way of life... hindi lang ito because parating na yung bagyo, doon pa lang mag-prepare. Gusto natin i-incorporate... science-based information [and] community experience."* Deliberately laymanizing technical content allows disaster management networks to transcend traditional socioeconomic divides, establishing universally accessible formats as a critical imperative to ensure equitable risk reduction (Collaborating4Inclusion, 2024).

2. Grouped by economic status

The inferential analysis revealed a distinct divergence between respondents' cognitive inclinations and material capacities when stratified economic status. Regarding attitude, no statistically significant variation emerged across income cohorts ($p = 0.067$), indicating a universally shared, positive orientation toward typhoon readiness that transcends social classes. The lower middle income group (₱21,914 – ₱43,828) recorded the highest mean rank (187.03), closely tracked the lowest income cohort (below ₱10,957) at 150.42. This homogenous perspective suggests successful penetration of basic risk reduction information through mass media channels and a shared cultural resilience developed through frequent exposure to environmental threats (Gomes et al., 2021).

In contrast, actual disaster preparedness practices exhibited a statistically significant economic disparity ($p = 0.046$). The middle income cohort (₱43,828 – ₱76,699) demonstrated the highest consistency in executing safety measures with a mean rank of 198.19, substantially outpacing the lowest income group at 151.27. This disconnect highlights a critical attitude practice gap driven structural financial constraints; impoverished households possess the requisite awareness yet lack the capital necessary to reinforce structures or stockpile emergency provisions (World Bank, 2024). Because resource mobilization remains

heavily stratified, national frameworks must move beyond information dissemination and integrate targeted material support to ensure disaster practice ceases to function as a financial privilege.

3. Grouped by employment

An evaluation of typhoon preparedness across employment sectors revealed uniform cognitive orientations but distinct behavioral variations. The inferential analysis indicated no statistically significant difference in attitude ($p=0.082$), suggesting that the perceived dread of environmental threats creates a uniform baseline of psychological concern across occupational profiles. In contrast, actual preparedness practices exhibited a statistically significant divergence ($p=0.013$). Retired individuals recorded the highest mean ranks in both attitude (245.63) and practice (261.69), driven heightened awareness of physical vulnerabilities and increased residential availability. Self-employed individuals also demonstrated high operational consistency, driven the imperative to safeguard direct livelihoods and physical assets against catastrophic loss.

The lowest mean ranks for attitude (91.25) and practice (99.25) occurred among Overseas Filipino Workers (OFWs), a deficit directly reflecting geographic displacement. Unemployed individuals similarly exhibited diminished practice metrics (149.24), confirming that financial instability restricts resource mobilization. Occupational environments, however, can serve as vital conduits for structured communication; a therapist from a Batangas massage clinic highlighted how workplace networks streamline accessibility: *“Kapag naka-audio po siya, pinapakinggan nalang ng mga blind. Tapos pinapasa namin sa aming GC [group chat] naming mga therapists, kasama din doon ang mga officers namin kaya madali na lang.”* These findings underscore that while the intent to prepare is homogenous, the translation of awareness into practice is heavily facilitated economic stability, asset protection motives, and temporal availability.

CONCLUSION

The investigation established that macro level information exposure did not automatically translate into functional disaster capabilities among visually challenged citizens in Region IV-A. Quantitative metrics initially indicated a receptive target population, characterized by widespread baseline awareness of typhoon threats and a universally favorable attitude toward emergency preparedness. However, granular testing negated the assumption that superficial exposure guarantees operational security. Functional knowledge regarding technical warning signals, standard agency acronyms, and institutional procedural guidelines remained profoundly deficient across the sample. This stark friction between abstract awareness and actual cognitive comprehension exposed an operational disconnect within current disaster communication architectures, proving that the reach of a message does not guarantee its baseline utility.

Socioeconomic and educational stratification heavily dictated the boundary lines of this vulnerability. Rather than reflecting an individual lack of interest or a natural limitation of sensory impairment, depressed knowledge and practice scores were produced by systemic institutional barriers. The data confirmed that standard Office of Civil Defense communication materials were optimized for highly educated, middle class audiences, leaving non college graduates and low income households structurally marginalized. While income status did not restrict the formation of a proactive preparedness mindset, it severely constrained the material capacity required to execute safety measures, such as reinforcing household structures or stockpiling critical medical and food provisions. Disaster preparedness effectively operated as a financial and educational privilege, separating those with the cognitive and economic capital to act from those trapped by intersecting systemic vulnerabilities.

The data further dismantled the notion that high public practice scores validated the intrinsic accessibility of centralized frameworks. The widespread adoption of essential survival behaviors did not reflect successful top down communication; instead, visually challenged individuals routinely deployed independent self-efficacy, informal neighborhood networks, and third party assistive technologies to actively compensate for absent institutional accommodations. The agency’s heavy reliance on a uniform

broadcasting framework overlooked the specific sensory requirements of the population, establishing an ableist operational paradigm that shifted the burden of accessibility entirely onto the disabled end user. True democratic risk reduction requires a structural departure from generalized, top down campaigns. Eliminating these systemic communication gaps depends on migrating toward universal design models that natively feature audio descriptive formats and simplified vernacular, while cross cutting socioeconomic divides by integrating vulnerable populations directly into the policy planning phase.

REFERENCES

- Abrigo, M. R. M., & Ortiz, D. A. P. (2020). *Who are the poor and where are they? Identifying the poor through a multidimensional lens* (Discussion Paper Series No. 2020-54). Philippine Institute for Development Studies. <https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidsdps202054.pdf>
- Adhikari, S. (2024). *Socioeconomic status and educational attainment: How family background influences career outcomes*. ResearchGate. <https://doi.org/10.13140/RG.2.2.35513.79203>
- Aggarwal, R., & Ranganathan, P. (2019). Study designs: Part 2 – Descriptive studies. *Perspectives in Clinical Research*, 10(1), 34–37. https://doi.org/10.4103/picr.PICR_154_18
- Aguirre, & Miguel. (2018). *Why small businesses should invest in preparedness*. Zurich Climate Resilience Alliance. <https://zcralliance.org/resources/item/why-small-businesses-should-invest-in-preparedness/>
- Alexander, D. E. (2014). Social media in disaster risk reduction and crisis management. *Science and Engineering Ethics*, 20(3), 717–733. <https://doi.org/10.1007/s11948-013-9502-z>
- Anderson, K. M., Schram, A., Nielsen, R., & Plotnick, L. (2009). *Design and implementation of a data analytics infrastructure in support of crisis informatics research*. Proceedings of the 2009 International Conference on Information Systems for Crisis Response and Management (ISCRAM). https://www.researchgate.net/publication/221554932_Design_and_implementation_of_a_data_analytics_infrastructure_in_support_of_crisis_informatics_research
- Asian Disaster Reduction Center. (n.d.). *Information on disaster risk reduction of the member countries*. Retrieved November 16, 2025, from <https://www.adrc.asia/nationinformation.php?NationCode=608&Lang=en>
- Australian Council for International Development. (2015). *Disaster risk reduction: ACFID member good practice report*. https://acfid.asn.au/sites/site.acfid/files/resource_document/DRR-Good-Practice-2015.pdf
- Bah, Y. M. (2025). Causes of persons with disabilities vulnerability to disaster: Lessons for disaster management and reduction planners. *International Journal of Development Research*, 15(10), 29935–29942. https://www.researchgate.net/publication/396904652_Causes_of_persons_with_disabilities_vulnerability_to_disaster_lessons_for_disaster_management_and_reduction_planners
- Bahreini, R. (2024). Visually impaired students in education: Challenges, innovations, and solutions. *Medical Education Bulletin*, 5(2), 1001–1003. <https://doi.org/10.22034/meb.2025.503221.1107>
- Bates, M. (2012, September 18). Super powers for the blind and deaf. *Scientific American*. <https://www.scientificamerican.com/article/superpowers-for-the-blind-and-deaf/>
- Bennett, D., & Shinew, K. J. (2018). Disaster experiences of individuals with disabilities: An assessment of vulnerability and social capital. *Journal of Rehabilitation*, 84(1), 15–24. <https://pmc.ncbi.nlm.nih.gov/articles/PMC5820628/>
- Bokingito, P. B., Beloy, J. B., Ecleo, J. J., Alce, A. R., Borinaga, N., & Galido, A. (2025). *Are we inclusive? Accessibility challenges in Philippine e-government websites* [Preprint]. Preprints.org. <https://doi.org/10.20944/preprints202502.0306.v1>
- Bollettino, V., Alcayna-Stevens, T., Sharma, M., Hernandez, P. K., & Phuong, P. (2018). *Perceptions of disaster resilience and preparedness in the Philippines*. Harvard Humanitarian Initiative. <https://hhi.harvard.edu/publications/perceptions-disaster-resilience-and-preparedness-philippines>
- Borg, J., Lindström, A., & Larsson, S. (2011). The right to assistive technology: For whom, for what, and by whom? *Disability & Society*, 26(2), 151–167. <https://doi.org/10.1080/09687599.2011.543862>
- Buder, K., & Perry, K. (2025). *The social model of disability explained*. The Social Creatures. <https://www.thesocialcreatures.org/thecreaturetimes/the-social-model-of-disability>
- Bündnis Entwicklung Hilft, & Institute for International Law of Peace and Armed Conflict. (2025). *WorldRiskReport 2025: Focus: Floods*. https://www.misereor.org/fileadmin/user_upload_misereororg/publication/en/worldriskreport-2025.pdf

- Bustam, T. D., Buta, N., & Stein, T. V. (2011). From vulnerability to transformation: A framework for assessing the vulnerability and resilience of tourism destinations. *Journal of Sustainable Tourism*, 19(1), 33–51. <https://doi.org/10.1080/09669582.2010.508703>
- Calipay, C. (2025, November 11). DA: Coconut farms in Bicol suffered most damage after Uwan onslaught. Philippine News Agency. <https://www.pna.gov.ph/articles/1263569>
- Centre for Research on the Epidemiology of Disasters. (2025). 2024 disasters in numbers: A hot and stormy year. https://files.emdat.be/reports/2024_EMDAT_report.pdf
- Cochran's sample size calculator & formula. (2025). Dissertation Data Analysis Help. <https://dissertationdataanalysishelp.com/cochrans-sample-size-calculator/>
- Courtright, P., & Lewallen, S. (2009). Why are we addressing gender issues in vision loss? *Community Eye Health*, 22(70), 17–19. <https://pmc.ncbi.nlm.nih.gov/articles/PMC2760274/>
- Cruden, A., Steverson, A., & Sergi, K. (2024). Why I'm not working: People with vision impairments explain. *Journal of Vocational Rehabilitation*, 61(1), 39–53. <https://doi.org/10.3233/jvr-240018>
- Department of Health. (n.d.-a). *Persons with disabilities*. Retrieved November 16, 2025, from <https://doh.gov.ph/persons-with-disabilities>
- Department of Health. (n.d.-b). *Prevention of blindness program*. Retrieved November 16, 2025, from <https://doh.gov.ph/national-prevention-of-blindness-program>
- Descartes Underwriting. (2024). *Understanding global weather perils: Tropical cyclone risk*. <https://descartesunderwriting.com/insights/understanding-global-weather-perils-tropical-cyclone-risk>
- Edmonds, W. A., & Kennedy, T. D. (2017). Explanatory-sequential approach. In *An applied guide to research designs: Quantitative, qualitative, and mixed methods* (2nd ed.). SAGE Publications. <https://methods.sagepub.com/book/mono/an-applied-guide-to-research-designs-2e/chpt/explanatorysequential-approach#>
- Elisala, N., Turagabeci, A., Mohammadnezhad, M., & Mangum, T. (2020). Exploring persons with disabilities preparedness, perceptions and experiences of disasters in Tuvalu. *PLOS ONE*, 15(10), Article e0241180. <https://doi.org/10.13140/RG.2.2.35513.79203>
- Ellis, K., & Kent, M. (2015). Disability media participation: Opportunities, obstacles and politics. *Media International Australia*, 154(1), 178–188. <https://doi.org/10.1177/1329878X1515400121>
- Enago Academy. (n.d.). *Descriptive research | Definition, types, and flaws to avoid*. Retrieved December 5, 2025, from <https://www.enago.com/academy/descriptive-research-design/#>
- G3ict. (2015). *Disability-inclusive community-based disaster risk management: A toolkit for practice in South Asia*. <https://g3ict.org/upload/publication/disability-inclusive-community-based-disaster-risk-management-a-toolkit-for-practice-in-south-asia/Disability-Inclusive-Disaster-Management.pdf>
- Gifford, R., & Nilsson, A. (2014). Personal and social factors that influence pro-environmental concern and behaviour: A review. *Journal of Environmental Psychology*, 38, 141–154. <https://doi.org/10.1016/j.jenvp.2014.01.004>
- Global Facility for Disaster Reduction and Recovery. (n.d.). *Philippines, Region IV-A (CALABARZON): Cyclone. ThinkHazard!* Retrieved March 15, 2026, from <https://thinkhazard.org/en/report/67166-philippines-region-iv-a-calabarzon/CY>
- Goggin, G. (2014). People with disability and new disaster communications: Access and the social media mash-up. *Australian Journal of Emergency Management*, 29(2), 44–48. https://www.researchgate.net/publication/275102599_People_with_disability_and_new_disaster_communications_access_and_the_social_media_mash-up
- Gomes, S. L., Gupta, A., & Haque, A. N. (2021). Disaster risk reduction and the Sendai Framework: What does it mean for people with disabilities? *International Journal of Environmental Research and Public Health*, 18(13), Article 6826. <https://doi.org/10.3390/ijerph18136826>
- HHI Resilient Communities. (2024, December 2). *Filipino PWDs struggle more in disaster recovery and preparedness*. Harvard Humanitarian Initiative. <https://hhi.harvard.edu/blog/filipino-pwds-struggle-more-disaster-recovery-and-preparedness>
- Huang, W., Li, S., & Guo, Y. (2025). *We studied 217 tropical cyclones globally to see how people died. Our findings might surprise you*. PreventionWeb. <https://www.preventionweb.net/news/we-studied-217-tropical-cyclones-globally-see-how-people-died-our-findings-might-surprise-you>

- Inocencio, A. D. (2023). Local knowledge and practices on disaster risk reduction and management in a flood-prone community in the Philippines. *Journal of Nature Studies*, 22(2), 64–77.
<https://ejournals.ph/article.php?id=21293>
- International Federation of Red Cross and Red Crescent Societies. (2018). *World disasters report 2018: Leaving no one behind*. <https://www.ifrc.org/document/world-disasters-report-2018>
- Investopedia Staff. (2024, July 18). *T-Test: What it is with multiple formulas and when to use it*. Investopedia.
<https://www.investopedia.com/terms/t/t-test.asp>
- Jaeger, P. T. (2006). Telecommunications policy and individuals with disabilities: Issues of accessibility and social inclusion in the policy and research agenda. *First Monday*, 11(9). <https://doi.org/10.5210/fm.v11i9.1391>
- Jevtić, M., Cvetković, V. M., Gačić, J., & Raonić, Z. (2025). Factors of vulnerability and resilience of persons with disabilities during disasters: Challenges and strategies for inclusive risk reduction. *International Journal of Disaster Risk Management*, 7(1), 91–113.
https://www.researchgate.net/publication/390193536_Factors_of_Vulnerability_and_Resilience_of_Persons_with_Disabilities_During_Disasters_Challenges_and_Strategies_for_Inclusive_Risk_Reduction
- Kollmuss, A., & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research*, 8(3), 239–260.
<https://doi.org/10.1080/13504620220145401>
- Lee, D. K., Shim, J. K., & Lee, S. (2015). T test as a parametric statistic. *Korean Journal of Anesthesiology*, 68(3), 220–223. <https://doi.org/10.4097/kjae.2015.68.3.220>
- Lee, S. Y., Gurnani, B., & Mesfin, F. B. (2024, February 27). *Blindness*. In *StatPearls*. StatPearls Publishing.
<https://www.ncbi.nlm.nih.gov/books/NBK448182/>
- Lord, A., Sijapati, B., Baniya, J., Chand, O., & Ghale, T. (2016). *Disaster, disability, and difference: A study of the experiences of persons with disabilities in the 2015 Nepal earthquake*. United Nations Development Programme. https://www.un.org/disabilities/documents/2016/Disaster-Disability-and-Difference_May2016_For-Accessible-PDF.pdf
- Manalapaz, A., & Center for Disaster Preparedness. (2019, September 1–3). *Making the invisible visible! The significance of an integrated data management system for persons with disabilities at national level* [Paper presentation]. 14th National Convention on Statistics, Tagaytay City, Philippines.
<https://www.psa.gov.ph/sites/default/files/8.3.3%20Making%20the%20Invisible%20Visible%21%20The%20Significance%20of%20an%20Integrated%20Data%20Management%20System%20for%20Persons%20with%20Disabilities%20.pdf>
- McCready, A. (2025, November 6). *Typhoon Kalmaegi makes landfall in Vietnam after 142 killed in Philippines*. Al Jazeera. <https://www.aljazeera.com/news/2025/11/6/typhoon-kalmaegi-bears-down-on-vietnam-after-114-killed-in-the-philippines>
- Memon, M. A., Alkassseh, H. M., Al-Ghazali, B. M., Al-Ghazali, A. M. K., Jumaat, H. M., Tan, M. K. S., & Suber, Z. A. (2025). Purposive sampling: A review and guidelines for quantitative research. *Journal of Applied Structural Equation Modeling*, 9(1), 1–16. https://jasemjournal.com/wp-content/uploads/2024/12/JASEM90101_Memonetal2025.pdf
- Meniano, S., & Amazona, R. (2024, November 8). *Survivors told to learn disaster lessons from 'Yolanda'*. Philippine News Agency. <https://www.pna.gov.ph/articles/1237381>
- Mileti, D. S., & Sorensen, J. H. (1990). *Communication of emergency public warnings: A social science perspective and state-of-the-art assessment* (Report No. ORNL-6609). Oak Ridge National Laboratory.
https://www.researchgate.net/publication/255056072_Communication_of_Emergency_Public_Warnings_A_Social_Science_Perspective_and_State-of-the-ART_Assessment
- Mina, C. D. (2013). *Employment of persons with disabilities (PWDs) in the Philippines: The case of Metro Manila and Rosario, Batangas* (Discussion Paper Series No. 2013-13). Philippine Institute for Development Studies. <https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidsdps1313.pdf>
- Morante, A. S., & Cerado, E. C. (2025). From policy to practice: Investigating the effectiveness of DRRM implementation in shaping student disaster competence. *American Journal of Environment and Climate*, 4(3), 88–99. <https://doi.org/10.54536/ajec.v4i3.5215>
- National Library Service for the Blind and Print Disabled. (n.d.). *Emergency preparedness*. Library of Congress. Retrieved November 16, 2025, from <https://www.loc.gov/nls/resources/general-resources-on-disabilities/emergency-preparedness/>

- Nedelko, Z., Leal, S., Nascimento, J., Piki, A., Tekerek, A., Güzel, A., Loureiro, A., Gonçalves, C., Messias, I., Simons, J., Teunen, L., Barradas, L. C. S., Palmer, N., Mongelli, T. L., & Oliveira, S. (2024). Exploring sustainable development perceptions among higher education students: An empirical study on knowledge, attitudes, and behaviours. *Cleaner and Responsible Consumption*, 14, Article 100223. <https://doi.org/10.1016/j.clrc.2024.100223>
- New Jersey Council for the Blind. (n.d.). *Emergency preparedness and people who are blind and visually impaired*. Retrieved November 16, 2025, from https://www.njcounciloftheblind.org/brochures/emergency_preparedness_and_people_who_are_blind_and_visually_impaired.htm
- Nguyen-Trung, K., Thuy, T. T. T., Anh, N. P., Cong-Lem, N., Huyen, D. T., Diu, L. T., Giang, N. H., & Simon, M. (2025). Vulnerabilities of people with different types of disabilities in disasters: A rapid evidence review and qualitative research. *Disasters*, 49(3), Article e12686. <https://doi.org/10.1111/disa.12686>
- Oshio, J. P., & Alcantara, A. J. (2024). *Disability inclusive disaster risk reduction and management: Assessing vulnerabilities and local responses in Maasin City, Philippines*. ResearchGate. https://www.researchgate.net/publication/393456292_Disability_Inclusive_Disaster_Risk_Reduction_and_Management_Assessing_Vulnerabilities_and_Local_Responses_in_Maasin_City_Philippines
- Parliamentary and Health Service Ombudsman. (n.d.). *Introduction to the social and medical models of disability*. https://www.ombudsman.org.uk/sites/default/files/FDN-218144_Introduction_to_the_Social_and_Medical_Models_of_Disability.pdf
- Philippine Disaster Risk Reduction and Management Act of 2010, Rep. Act No. 10121 (2010). https://lawphil.net/statutes/repacts/ra2010/ra_10121_2010.html
- Philippine Statistics Authority. (2016). *2016 National Disability Prevalence Survey*. <https://psa.gov.ph/sites/default/files/2016%20NDPS.pdf>
- Quaill, J., Barker, R., & West, C. (2018). Experiences of individuals with physical disabilities in natural disasters: An integrative review. *Australian Journal of Emergency Management*, 33(3), 40–44. <https://knowledge.aidr.org.au/resources/ajem-jul-2018-experiences-of-individuals-with-physical-disabilities-in-natural-disasters-an-integrative-review/>
- Rajeevan, M. (2024, April 14). Increasing tropical cyclones of higher intensity necessitates a new category. *The Hindu*. <https://www.thehindu.com/sci-tech/science/increasing-tropical-cyclones-of-higher-intensity-necessitates-a-new-category/article68006554.ece>
- Reynolds, B., & Seeger, M. W. (2005). Crisis and emergency risk communication as an integrative model. *Journal of Health Communication*, 10(1), 43–55. <https://doi.org/10.1080/10810730590904571>
- Samenow, J. (2020, November 2). Super Typhoon Goni explodes into 2020's strongest storm on Earth, and is slamming into Philippines. *The Washington Post*. <https://www.washingtonpost.com/weather/2020/10/30/super-typhoon-goni-philippines-rolly/>
- ScienceDirect. (n.d.). *Emerging adulthood*. Retrieved March 15, 2026, from <https://www.sciencedirect.com/topics/psychology/emerging-adulthood>
- Senate of the Philippines. (2015, July 14). *Philippines: Engage PWDs in disaster risk reduction planning - Legarda*. PreventionWeb. <https://www.preventionweb.net/news/view/45165>
- Setijaningrum, E., Kassim, A., Soegiono, A. N., & Ariawantara, P. A. F. (2024). Beyond tokenism, toward resilience: Furthering a paradigmatic shift from intersecting narratives of disaster and disability realities in East Java, Indonesia. *Cogent Social Sciences*, 10(1), Article 2319376. <https://doi.org/10.1080/23311886.2024.2319376>
- Shinija, K. (2024). *Descriptive research design*. ResearchGate. https://www.researchgate.net/publication/380104452_DESCRIPTIVE_RESEARCH_DESIGN
- Stakeholder Group of Persons with Disabilities. (2023). *Persons with disabilities and the Sendai Framework: Where are we standing?* CBM Global. https://cbm-global.org/wp-content/uploads/2023/05/Final-Version-Position-Paper-SFDRR-Political-Declaration_Disability-Stakeholder-Group.pdf
- Steelman, T. A., Nowell, B., Baylor, J. K., & McCaffrey, S. (2014). What information do people use, trust, and find useful during a disaster? Evidence from five wildland fire events. *Natural Hazards*, 71(1), 679–703. <https://doi.org/10.1007/s11069-013-0938-z>
- Sun, S., Zhang, G., & Wang, H. (2024). A study on the suitability of information retrieval models for different types of queries. *Information Retrieval Journal*, 27(4), Article 9460. <https://doi.org/10.1007/s10791-024-09460-7>

- Tetzner, I., & Becker, M. (2022). High-stakes testing and student well-being: A longitudinal study on the role of teacher support. *International Journal of Environmental Research and Public Health*, 19(11), Article 6483. <https://doi.org/10.3390/ijerph19116483>
- Thomas, L. (2020, September 18). *Stratified sampling | Definition, guide, & examples*. Scribbr. <https://www.scribbr.com/methodology/stratified-sampling/>
- Twigg, J. (2014). *Disability and disasters: The importance of an inclusive approach to vulnerability and social capital*. PreventionWeb. <https://www.preventionweb.net/publication/disability-and-disasters-importance-inclusive-approach-vulnerability-and-social-capital>
- United Nations. (n.d.). *Disability-inclusive disaster risk reduction and emergency situations enable*. Retrieved November 16, 2025, from <https://www.un.org/development/desa/disabilities/issues/disability-inclusive-disaster-risk-reduction-and-emergency-situations.html>
- United Nations Office for Disaster Risk Reduction. (2015). *Sendai framework for disaster risk reduction 2015–2030*. <https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030>
- United Nations Office for Disaster Risk Reduction. (2019). *Disaster risk reduction in the Philippines: Status report 2019*. https://www.unisdr.org/files/68265_682308philippinesdrmsstatusreport.pdf
- United Nations Office for Disaster Risk Reduction. (2023, October 12). *World must act on unacceptable failures to protect persons with disabilities from disasters*. <https://iddrr.undrr.org/2023/news/world-must-act-unacceptable-failures-protect-persons-disabilities-disasters.html>
- United Nations Office for Disaster Risk Reduction. (2025, June 4). *Promises yet to be fulfilled: Accelerating disability inclusion in disaster risk reduction and humanitarian action*. Global Platform for Disaster Risk Reduction. <https://globalplatform.undrr.org/conference-event/promises-yet-be-fulfilled-accelerating-disability-inclusion-disaster-risk>
- University of California, San Francisco. (n.d.). *Medical and social models of disability*. Office of Developmental Primary Care. <https://odpc.ucsf.edu/clinical/patient-centered-care/medical-and-social-models-of-disability>
- Vecchio, Y., Sannino, G., Giudice, F. P., & Coppola, A. (2026). Circular aquaculture: Unpacking views from farm to fork. *Marine Policy*, 185, Article 106961. <https://doi.org/10.1016/j.marpol.2025.106961>
- Welsh Government. (2021, November 8). *EU structural funds 2014 to 2020: Social model of disability*. <https://www.gov.wales/eu-structural-funds-2014-2020-social-model-disability>
- World Food Programme. (n.d.). *Disability inclusion key messages for emergency preparedness* (WFP-134215). WFP Executive Board. https://executiveboard.wfp.org/document_download/WFP-134215
- World Health Organization. (2021, February 26). *Blindness and vision impairment* [Fact sheet]. <https://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment>
- Ziegler, N., & Kang, L. (2016). Mixed methods designs. In A. J. Moeller, J. W. Creswell, & N. Saville (Eds.), *Second language assessment and mixed methods research* (pp. 51–83). Cambridge University Press. <https://www.cambridgeenglish.org/Images/735110-studies-in-language-testing-volume-43.pdf>