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Research Article

Community's Disaster Preparedness and Response in the Context of Typhoons

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ABSTRACT

This study aimed to determine the community's disaster preparedness and response in the context of typhoons. A descriptive research design combining quantitative and qualitative approaches was employed. A self-constructed survey questionnaire and in-depth interviews served as the main instruments for data collection. Simple random sampling was used to select 152 respondents for the survey, while interviews involved five residents from high-risk areas and four experts, including the CDRRMO Division Chief, BFP Fire Marshall, and two barangay officials.

Most respondents were aged 21–30, predominantly female, and had lived in Sitio Ibaba, Barangay Pallocan West, Batangas City, for ten years or more. Findings revealed that residents practiced pre-disaster preparations, such as charging flashlights and mobile phones and stocking essential food and medicine. In rescue and relief operations, respondents coordinated with authorities and assisted neighbors before, during, and after typhoon events. Communication was primarily through television, radio, and megaphones used by barangay officials. Residents assessed the City Disaster Risk Reduction and Management Council (CDRRMC) services positively in terms of program implementation and response and readiness, with the only limitation being the availability of printed materials. Overall, the council provided effective support through training programs, seminars, sufficient rescue and evacuation equipment, and accessible emergency hotlines. To further enhance preparedness and response, the study proposes the development and distribution of printed materials tailored to the community. These findings highlight practical strategies for improving community resilience and emergency coordination during typhoons, offering evidence-based recommendations for local governments, disaster management agencies, and community leaders.

Keywords: *Community resilience, Disaster risk reduction, Emergency preparedness, Local governance, Typhoon response*

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Introduction

The Philippines is highly vulnerable to natural disasters, particularly typhoons, which annually cause significant loss of life, damage to property, and destruction of infrastructure and agricultural lands. The dynamic nature of disaster risk requires that communities possess sufficient knowledge and preparedness to respond effectively. Communication plays a critical role in disaster risk reduction by disseminating timely warnings and guidance on preventive measures before, during, and after typhoons.

The National Disaster Risk Reduction and Management Council (NDRRMC), under Republic Act 10121, provides frameworks, plans, and resources to enhance public awareness and preparedness for disasters (NDRRMC, 2014). Despite these efforts, typhoons such as Rammasun (Glenda) in 2014 continued to cause extensive damage, particularly in areas identified as hazard-prone, including Batangas City. In more recent years, heavy rains and landslides associated with Typhoon Carina in 2024 affected several parts of Batangas province, resulting in fatalities and emergency response measures, highlighting the continuing vulnerability of communities to typhoon-related hazards (Philippine Star, 2024; GMA Integrated News, 2024). Sitio Ibaba, Barangay Pallocan West, was previously identified as a flood-prone area, with informal settlers facing higher risks due to poor housing and environmental conditions (CDRRMO, 2015). Such conditions illustrate the persistent vulnerability of communities in Batangas to typhoon-related hazards.

This study investigates disaster preparedness and response in Sitio Ibaba, Barangay Pallocan West, with a focus on the role of communication in mitigating the impact of typhoons. Specifically, it examines how warnings and precautions were disseminated, how residents responded, and how communication strategies may be optimized to improve disaster resilience in vulnerable communities. By identifying effective communication practices and potential gaps in local disaster response, this research contributes to broader understanding of community-based disaster management, providing insights that can inform disaster preparedness policies, risk communication strategies, and resilience-building efforts in similar hazard-prone areas beyond Sitio Ibaba.

Materials and Methods

Research Design

This study employed a descriptive research design to evaluate disaster preparedness and response in Sitio Ibaba, Barangay Pallocan West, Batangas City, Philippines, in the context of typhoons. A mixed-methods approach, combining quantitative and qualitative techniques, was used to gain a comprehensive understanding of the community's experiences and responses. Descriptive research is suitable for examining opinions and perceptions, enabling the researchers to characterize participants' experiences and evaluate preparedness strategies (Dantzker & Hunter, 2006).

Research Environment

Barangay Pallocan West consists of seven sitios: Ibaba, Gitna, Silangan, Ilaya, Santolan, Magnus-Tierra, and Potenciana. The barangay is located along the Calumpang River, making it prone to flooding and storm surges. It experiences two seasons: dry (January–April) and wet (May–December). Land use has shifted from primarily agricultural to mixed agricultural-commercial, with approximately 15 hectares dedicated to commercial and industrial establishments. The barangay's population is approximately 2,525, and Sitio Ibaba has 448 residents (CDRRMO, 2015). Three sitios, including Ibaba, are particularly vulnerable to flooding due to topography, heavy rainfall, and storm surges.

Participants

Participants included CDRRMC personnel, barangay officials, and residents affected by typhoons in Sitio Ibaba. For the survey component, residents aged 21 and above were considered, yielding a population of 244 individuals. Stratified random sampling was employed to ensure proportional representation across gender and age groups. A total of 152 respondents were randomly selected within each subgroup based on their proportion in the population. In-depth interviews were conducted with selected CDRRMC personnel, barangay

officials, and residents to assess knowledge, roles, and community preparedness practices. While stratified random sampling was employed, some residents were unavailable during data collection, which may slightly affect full randomness.

Data Gathering Instruments

Data were collected using self-constructed questionnaires and semi-structured interviews.

Questionnaire: The instrument consisted of three sections: (1) demographic profile; (2) community preparedness and response, including communication modes; and (3) assessment of services, programs, and activities provided by disaster management authorities. The questionnaire was validated by three experts: a communication researcher (expert in risk communication), an officer from the City Disaster Risk Reduction and Management Office (expert in disaster preparedness and community resilience), and an officer from the Bureau of Fire Protection (expert in emergency response and safety operations). Revisions were made based on their feedback. A dry run was also conducted to test reliability.

Interview: Interview guides were developed, reviewed by the adviser, and used to collect qualitative insights from officials and residents.

Secondary data were obtained from government reports, journals, and other relevant studies.

Data Collection Procedure

Permission was obtained from the Office of the Punong Barangay and relevant disaster management offices prior to data collection. Questionnaires were administered with the assistance of barangay officials, ensuring respondent comprehension. Interviews with officials and residents were conducted at their offices and homes, respectively, and official records from CDRRMO and the barangay were reviewed to complement primary data.

Statistical Treatment of Data

Quantitative data were tallied, tabulated, and analyzed using the following statistical tools:

Relative frequency – To determine respondents' demographic profiles.

Percentage – To assess distribution of demographic variables.

Weighted mean – To evaluate respondents' level of agreement regarding preparedness, response, and communication strategies.

Independent t-test – To compare two independent groups (e.g., sex) on preparedness and response variables.

One-way ANOVA – To assess differences among groups based on age and length of residency regarding disaster management services and response readiness.

Result and Discussion

Presentation, Analysis and Interpretation of Data

1. Profile of the Respondents

This shows the profile of the respondents according to their age, sex, and the length of their residency on the chosen location of study.

1.1 Age. Table 2 shows the frequency distribution of the respondents according to their age.

Table 1. Distribution of the Respondents in terms of their Age

Age (in years)	Frequency	Percentage (%)	Rank
21 – 30	46	30.3	1
31 – 40	31	20.4	4
41 – 50	33	21.7	3
51 and above	42	27.6	2
TOTAL	**152**	**100**	

Table 1 shows that out of 152 respondents, majority with the number of 46 respondents belongs to age bracket of 21-30 numbering to 30.3 percent. Meanwhile, 20.4 percent of those in the age bracket of 31-40 had the least number of respondents.

There are only small differences in the percentage, and this may be attributed to the fact that the respondents are mainly the adults in the families, and they work together in preparing and responding to disasters mainly typhoons.

1.2 Sex. Table 2 shows the frequency distribution of the respondents according to their sex.

Table 2. Distribution of the Respondents in terms of their Sex

Sex	Frequency	Percentage (%)	Rank
Male	58	38.2	2
Female	94	61.8	1
TOTAL	**152**	**100**	

Table 2 illustrates that out of 152 respondents, 94 of them or 61.8 percent are female while the remaining 58 or 38.2 percent of the respondents are male. It revealed that there was a huge gap between the number of males and females. It showed that majority of the respondents were female. These findings are attributed to the fact that the populations in the list of the Sitio Ibaba, barangay plan that submitted to the CDRRMO, the number of females is higher; thus, it denotes that the male populace appears to be a minority.

1.2 Length of residency in the barangay. Table 3 presents the frequency distribution of the

1.3 respondents in terms of their length of residency.

Table 3. Distribution of the Respondents in terms of Length of Residency in the Barangay

Length of Residency in the Barangay	Frequency	Percentage (%)	Rank
3 years and below	17	11.2	2
4 - 6 years	3	2.0	4
7 – 10 years	5	3.3	3
10 years and above	127	83.5	1
TOTAL	**152**	**100**	

Table 3 shows that 83.5 percent, or 127 out of 152 respondents are living in Sitio Ibaba for 10 or more years. Meanwhile, 11.2 percent are living in the Sitio for 3 years and below, and 3.3 percent for 7-10 years. Lastly, 2.0 percent or 3 respondents account for 4-6 years.

The results clearly showed that majority of the respondents were living for the sitio in a long time. According to the National Statistics Office, their families are permanent residents, and the rest just moved in years ago.

2. Community's Disaster Preparedness to Typhoons

This shows the respondents' preparedness and response to typhoons, and modes of communication used.

2.1 Pre-disaster. Table 4 presents the respondent's preparedness to typhoons in terms of pre-disasters.

Table 4. Pre-disaster Preparedness of the Respondents

Pre-disaster	Weighted-Mean	Verbal Interpretation
1. I make sure that our emergency lights and flashlights are fully charged and in good condition.	3.73	Strongly Agree

Pre-disaster	Weighted-Mean	Verbal Interpretation
2. I make sure that our mobile phones are fully charged for communication purposes.	3.69	Strongly Agree
3. I keep a transistor radio at home so that I will be updated on the current events and typhoon updates.	3.13	Agree
4. I prepare dry cell batteries for our transistor radio.	2.72	Agree
5. I intend to stay home to prevent hazards outside in times of typhoon.	3.65	Strongly Agree
6. I make sure that our household, like roof leakage, is in good condition.	3.73	Strongly Agree
7. I advise my family to be prepared for evacuation.	3.61	Strongly Agree
8. I keep ready to eat food that is good for 3 days like canned goods and noodles.	3.46	Agree
9. I keep an emergency kit/first aid kit in preparation for typhoon.	3.37	Agree
10. I help in dissemination of early warnings to the community.	3.59	Strongly Agree
COMPOSITE MEAN	**3.47**	**Agree**

The respondents prepared themselves before typhoons through assuring that household was in good condition and that emergency lights and flashlights are fully charged and in good condition with a weighted mean of 3.73. It was followed by assuring that mobile phones are fully charged with the weighted mean of 3.69, next is staying at home in times of typhoons with the weighted mean of 3.65, advising their families to prepare for evacuation with the weighted mean of 3.61, and helping in the dissemination of early warnings to the community with the weighted mean of 3.59. Next to it was keeping ready-to-eat foods with the weighted mean of 3.46, keeping of emergency kit or first aid kit with the weighted mean of 3.37, keeping a transistor radio with the weighted mean of 3.13 and preparing of dry cell batteries for their transistor radio with the weighted mean of 2.72.

The results showed that the respondents agree with the said statements in terms of pre-disaster with the composite mean of 3.47. Based on the 4-point Likert scale used in this study (1 – Strongly Disagree, 2 – Disagree, 3 – Agree, 4 – Strongly Agree), the composite mean of 3.47 falls within the 'Agree' range, explicitly indicating that respondents generally practice pre-disaster preparedness measures before typhoons.

Moreover, the findings revealed that the respondents practice the said statements for preparing themselves and their families before a typhoon hits. They first ensure that they have their primary needs in preparing for the hit of typhoon like flashlights, cell phones, food, first aid kit, and their household to be safe. Only some of the Respondents own transistor radios, and they also prepare batteries for them, it can be associated on the study of Osburn (2008) that preparedness planning showed that institution has developed an organizational culture that is broadly responsive to and engaged in disaster preparedness like in Sitio Ibaba they are now aware of what is going to prepare in case of typhoon strike the community and it can become their culture and become responsive in every time typhoons hits the community.

2.2 Rescue and relief operation. Table 5 illustrates the respondent's preparedness in terms of rescue and relief operation.

Table 5. Rescue and Relief Operation Preparedness of the Respondents

Rescue and Relief Operation	Weighted Mean	Verbal Interpretation
1. I coordinate with the rescuers in an emergency during typhoon.	3.39	Agree
2. I follow the advice of the authority when it is needed to evacuate immediately.	3.40	Agree
3. I coordinate to the operations of the rescuers in times of emergency.	3.45	Agree
4. I offer my kept food/medicines to others who are in need in times of typhoon.	3.47	Agree
5. I help trained personnel in giving first aid treatment in times of typhoons and emergency.	3.19	Agree
6. I ask for help from the people in authorities and other offices concerned for assistance in the community.	2.99	Agree
7. I ask for help to rehabilitate our destroyed community properties after the typhoon.	2.88	Agree
8. I have an open communication with the distributors of relief goods.	3.03	Agree
9. I follow the command and instructions of the personnel who distribute relief goods.	3.10	Agree
10. I immediately coordinate our needs with the offices concerned or groups that provide relief operation and other related services.	3.05	Agree
COMPOSITE MEAN	**3.20**	**Agree**

The respondents were willing to offer their kept food or medicines to those who are in need and coordinate to the operations of the rescuers, and it has a weighted mean of 3.47 and 3.45. Following the advice to evacuate has the weighted mean of 3.40. Coordinating the rescuers in an emergency was also agreed by the respondents, followed by helping trained personnel in giving first-aid with the weighted average of 3.19. Following the commands and instructions of the personnel who distribute relief goods have a weighted mean of 3.10, and coordinating their needs to concerned offices or groups has the weighted mean of 3.05. Next to it was having an open communication with the distributors of relief goods with the weighted mean of 3.03, followed by asking for help from the people in authorities and other concerned offices for assistance with the weighted mean of 2.99. Lastly, asking for help to rehabilitate their destroyed properties after the typhoon has a weighted mean of 2.88.

With the composite mean of 3.20, it was illustrated that the respondents agree with the statements in terms of rescue and relief operation. Also, the results revealed that the residents of Sitio Ibaba coordinates with the rescuers and authorities during typhoon, and that they are willing to lend a hand to those who are in need whether it comes to first aid or food and medicine. On the other hand, they also coordinate with and approach offices and groups for their needs and assistance in times of typhoon, according to the idea of Maartens (2011) it underscores the importance of participation in community-based disaster risk reduction initiatives because intrinsically, the respondents have initiatives in doing such rescue and relief operations and are willing to lend their hands whenever who are in need and willing to participate in the actions given by the authorities in the rescue and relief operation.

2.3 Modes of Communication Used. Table 7 shows the respondent's preparedness in terms of modes of communication used in disaster preparedness and response.

Table 6. Modes of Communication Used by the Responden

Modes of Communication used	Weighted Mean	Verbal Interpretation
1. I use mobile phones to warn and update my family to be ready for the typhoon.	3.57	Strongly Agree
2. I watch television to acquire information relative to typhoon preparedness.	3.82	Strongly Agree
3. I listen to radio to obtain an update for any advisory in case of typhoon.	3.14	Agree
4. I use two-way radio to call for help in an emergency.	2.24	Disagree
5. I listen to the announcement of the barangay officials broadcast through mobile patrols.	3.73	Strongly Agree
6. I read print materials related to disaster preparedness to be ready in times of typhoon.	2.69	Agree
7. I talk with my neighbors about the typhoon that is about to come on what we will do to prepare for it.	3.67	Strongly Agree
8. I use social media in an update in typhoon and other preparation tips shared on the internet.	2.95	Agree
9. I read newspaper to obtain some necessary information about the typhoon and preparation.	2.62	Agree
10. I read IEC to know the standards in what to do during typhoon.	2.70	Agree
COMPOSITE MEAN	**3.11**	**Agree**

Watching television to acquire information has the weighted mean of 3.82, meaning many of the respondents have televisions at home. With the weighted mean of 3.73, listening to the announcement of barangay officials broadcasted through mobile patrols was also done by the respondents. Next is talking to their neighbors about the typhoon with the weighted mean of 3.67, fourth was using mobile phones to warn and update their families with the weighted mean of 3.57 and the fifth was listening to the radio to obtain an update with the weighted mean of 3.14. Next to it was using social media in an update and other preparation tips with the weighted mean of 2.95, reading IEC to know the standards of what to do with the weighted mean of 2.70, and reading of printed materials related to disaster preparedness to be ready with the weighted mean of 2.69. It is then followed by reading newspaper to obtain some necessary information and preparation with the weighted mean of 2.62, and lastly, using of two-way radio to call for help with the weighted mean of 2.24.

With the composite mean of 3.11, it was illustrated that the respondents agree with the statements in terms of mode of communications used.

They are versatile in using different communication modes to gather information and updates about the typhoon. They are also still using radios to listen for advisories, that its availability in the community has a great number. On the other hand, reading of published materials has less weighted mean due to the availability of social media. Moreover, it is clearly illustrated that the respondents don't use two-way radios to call for help because only the barangay police and officials of the area have them. This attributed to the fact that different modes of communications are being used by the residents in responding for obtaining advisories and information about the typhoon.

3. Assessment of the CDRRMC Services

This shows the assessment of the respondents of the services of the CDRRMC in relation to program implementation and response and readiness.

3.1 Program Implementation. Table 7 presents the assessment in the services of the CDRRMC in relation to program implementation of the respondents.

Table 7. Respondents' Assessment of the CDRRMC Services in relation to Program Implementation

Program Implementation	Weighted Mean	Verbal Interpretation
1. coordinates with the people in the community whenever they have a program relative to typhoon preparedness.	3.14	Great Extent
2. conducts a meeting and seminar with the residents in the community.	2.85	Great Extent
3. provides the residents with disaster preparedness-relative print materials to educate and prepare them in typhoon related situations.	1.89	Moderately Extent
4. conducts training for the residents related to typhoon preparedness and response.	2.50	Great Extent
5. evaluates and facilitates the community before and after the occurrence of typhoon.	3.01	Great Extent
6. encourage the residents to participate in prevention and mitigation program of the community relative to typhoon preparedness.	2.86	Great Extent
7. asks for any suggestions and recommendations to the residents relative to typhoon preparedness and response.	2.70	Great Extent
8. makes the residents critically aware of the program and resolution being implemented.	2.88	Great Extent
9. make sure that the equipment are available in program implementation.	2.85	Great Extent
10. observed and investigate new strategies to strengthen the program being implemented.	2.70	Great Extent
COMPOSITE MEAN	**2.74**	**Great Extent**

The data shows that in the criterion of program implementation, coordinating with the people whenever they have a program has the highest weighted mean of 3.14. Evaluating and facilitating the community before and after the occurrence of typhoon has the weighted mean of 3.01 then making the residents critically aware of the program and resolution being implemented with the weighted mean of 2.88. It is followed by asking for any suggestions and recommendations relative to typhoon preparedness and response with the weighted mean of 2.88, and encouraging the residents to participate in prevention and mitigation program relative to typhoon preparedness with the weighted mean of 2.86. Conducting of meeting and seminar with the residents and making sure that equipment is available in program implementation have the same weighted mean of 2.85.

Asking for any suggestions and recommendations to the residents relative to typhoon preparedness and response and observing and investigating new strategies to strengthen the program being implemented also have the same weighted mean of 2.70. Conducting of training for residents relative to typhoon preparedness and response has the weighted mean of 2.50.

Providing the residents disaster preparedness-related print materials to educate and prepare them in typhoon-related situations was with the weighted mean of 1.89.

With the composite mean of 3.56, it was showed that the respondents' assessment of the services of the CDRRMC in relation to program implementation has a great extent.

On the other hand, only the providing of print materials has the verbal interpretation of

moderately extent due to the fact that the number of these materials is limited. According to Mr. Rodrigo Dela Roca the division chief of CDRRMO, printed material is limited because of the fact that only five percent is allotted to this in general budget of the CDRRM.

3.2 Response and Readiness. Table 8 illustrates the assessment of services of the CDRRMC in relation to response and readiness of the respondents.

Table 8. Respondents' Assessment in the CDRRMC Services in relation to Response and Readiness

Response and Readiness	Weighted Mean	Verbal Interpretation
1. provides an emergency hotline for easy access of the office services.	2.38	Great Extent
2. offers a rescue and evacuation services for the people of the community.	3.23	Great Extent
3. implements participatory project to augment the knowledge of the residents relative to typhoon readiness and response.	2.88	Great Extent
4. coordinates with the residents of the community.	3.15	Great Extent
5. organize and train the rescue and response team in the community.	3.00	Great Extent
6. workout appropriate strategies in rescue operation in the community.	3.07	Great Extent
7. provides sufficient relief goods for the community in times of typhoon.	2.99	Great Extent
8. have an open 24/7 surveillance to monitor the community during typhoon.	2.89	Great Extent
9. secures that the equipment in rescue and relief operations are ready and available.	3.02	Great Extent
10. provides equipment used in rescue operations such as ropes, tugboats, life jackets, etc.	2.87	Great Extent
COMPOSITE MEAN	**2.95**	**Great Extent**

The data shows that in the criterion of response and readiness, offering of rescue and evacuation services for the people has the greatest extent in the services with a weighted mean of 3.23. Coordinating with the residents of the community has a weighted mean of 3.15, next is working out appropriate strategies in rescue operation with the weighted mean of 3.07, securing that equipment in rescue and relief operations are ready and available with the weighted mean of 3.02, and organizing and training the response and rescue team with the weighted mean of 3.00. Next was providing of sufficient relief goods with the weighted mean of 2.99, having an open 24/7 surveillance to monitor the community with the weighted mean of 2.89, and implementing participatory project to augment the knowledge of the residents relative to typhoon readiness and response with the weighted mean of 2.88. Providing equipment used in rescue operations has the weighted mean of 2.87, and lastly was providing of emergency hotline for easy access of the office services with the weighted mean of 2.38.

With the composite mean of 2.95, it was showed that the respondents' assessment of the services of the CDRRMC in relation to response and readiness has a great extent.

Overall, the council provides great service for responding to the needs of the community, and readiness through trainings and seminars. They also have enough equipment for rescue and evacuation services and accessible emergency hotline, it can be impart to the idea of Knight (2012) that the goals were met by training and action on the information learned like what CDRRMC organized corresponds executing a participatory project to augment the

knowledge of the residents in relation to typhoon readiness and response, organizing and training the response and rescue team and providing trainings and seminars in the community in order to learned the residents in disaster preparedness and response.

4. Significant Differences in the Responses of Respondents when grouped according to Profile Variables

The following tables show the differences in the responses when the respondents are grouped according to their age, sex and length of residency.

The tables 9, 10 and 11 evaluates whether there are significant differences in the responses in terms of pre-disaster, rescue and relief operation and modes of communication used when the respondents are grouped according to their profile variables.

Table 9 illustrates whether there are significant differences in the responses in terms of pre-disaster when the respondents are grouped according to profile variables.

Table 9. Differences in the Responses when Respondents are grouped according to ProfileVariable in terms of Pre-disaster

Profile Variables	Computed Value	p-value	Decision on H_o	Interpretation
Age	1.501	0.217	Accept	No significant difference
Sex	1.765	0.186	Accept	No significant difference
Length of Residency	3.647	0.014	Reject	Significant difference

There is a significant difference in the responses when the respondents are grouped according to their length of residency at the value of 0.014, while there are no significant differences when the respondents are grouped according to their age with the value of 0.217, and sex with the value of 0.186.

This may be attributed to the fact that majority of the respondents have been living in the community for 10 years and above and there was a huge gap between them than the rest as illustrated in Table 4. Thus, the null hypothesis is accepted for all variables but is rejected in terms of length of residency. This attributed that the residents with a higher years of residency in the barangay had already adopted and much knew the appropriate action in terms of pre-disaster.

Table 10 illustrates whether there are significant differences in the responses in terms of rescue and relief operation when the respondents are grouped according to profile variables.

Table 10. Differences in the Responses when Respondents are grouped according to Profile Variable in terms of Rescue and Relief Operation

Profile Variables	Computed Value	p-value	Decision on H_o	Interpretation
Age	3.237	0.024	Reject	Significant difference
Sex	0.010	0.922	Accept	No significant difference
Length of Residency	1.431	0.236	Accept	No significant difference

There are no significant differences in the responses when the respondents are grouped according to their sex and length of residency with the values of 0.922 and 0.236, while there is significant difference with the value of 0.024 when the respondents are grouped according to their age.

The respondents have only small differences in the population distribution according to sex as showed in Table 3. Still, they have different skills and knowledge in rescue and relief operation and help the others based on their own experiences and what they were used to be doing as they age.

Table 11 illustrates whether there are significant differences in the responses in terms modes of communication used when the respondents are grouped according to profile variables.

Table 11. Differences in the Responses when Respondents are grouped according to Profile Variable in terms of Modes of Communication Used

Profile Variables	Computed Value	p-value	Decision on H_o	Interpretation
Age	5.925	0.001	Reject	Significant difference
Sex	0.270	0.604	Accept	No significant difference
Length of Residency	4.271	0.006	Reject	Significant difference

There is no significant difference with the value of 0.604 in the responses when the respondents are grouped according to their sex, while there are significant differences when the respondents are grouped according to their age with the value of 0.001 and length of residency with the value of 0.006.

The significant differences were due to the facts that earlier generations in the area use radios and prefer to read rather than using high-tech gadgets. On the other hand, the later generations uses televisions and social media for its convenience to gather information in terms of disaster preparedness.

The tables 12 and 13 evaluates whether there are significant differences in the responses in terms of the assessment of services of the CDRRMC in relation to program implementation and response and readiness when the respondents are grouped according to profile variables.

Table 12 illustrates whether there are significant differences in the responses in terms of the assessment of services of the CDRRMC in relation to program implementation.

Table 12. Differences in the Responses when Respondents are grouped according to Profile Variable in terms of Program Implementation

Profile Variables	Computed Value	p-value	Decision on H_o	Interpretation
Age	0.485	0.693	Accept	No significant difference
Sex	0.237	0.627	Accept	No significant difference
Length of Residency	2.351	0.075	Accept	No significant difference

There are no significant differences with the values higher than 0.05 in the responses when the respondents are grouped according to their age, sex, and length of residency.

The respondents do not differ on their assessment, meaning that the CRDDMC has implemented programs, trainings and seminars to every age and sex even to those who have been living in the area at shorter or longer time.

Table 13 illustrates whether there are significant differences in the responses in terms of the assessment of services of the CDRRMC in relation to response and readiness.

Table 13. Differences in the Responses when Respondents are grouped according to Profile Variable in terms of Response and Readiness.

Profile Variables	Computed Value	p-value	Decision on H_o	Interpretation
Age	0.766	0.515	Accept	No significant difference
Sex	0.028	0.867	Accept	No significant difference
Length of Residency	1.738	0.162	Accept	No significant difference

There are no significant differences with the values higher than 0.05 in the responses when the respondents are grouped according to their age, sex, and length of residency. It showed that all have the great perceptions in the response and readiness of the CDRRMC.

To deepen the study, qualitative method was implied. In-depth interview was conducted by the researchers to gather more data that will also support the result of the quantitative method.

According to the residents of the community, they described their preparedness as something they have learned through their experiences in times the typhoons hit the city.

"Natutunan na rin namin kasi paulit-ulit na lang na nangyayari pag nabagyo." ("We have learned from experience, as typhoons occur repeatedly.")

This can be verified from the interview to the CDRRMO. It was discussed that the experience is the best teacher in times of disasters. It is a fast way of learning as the people response more quickly and prepared due to the fact that they already know what will happen and what will do in case of the hit of typhoon. This might be their viewpoint in pre-disaster for them to be ready.

"*Ang pinakamabilis makapagpaturo at makapagpatuto sa tao, ang experience.*" ("Experience is the fastest way for people to learn and to teach others.")

Although some of the residents being interviewed learn through experiences, there are still some who depend on media to obtain information and advisories of the typhoon such as television, radio, print materials and announcement delivered by the barangay officials.

The psychologist Jerome Bruner of New York University has described studies that show that people only remember 10 percent of what they hear, and 20 percent of what they read, but about 80 percent of what they see and do (Paul Martin Lester, "Syntactic Theory of Visual Communication," California State University at Fullerton, 1994-1996).

According to the residents, before the typhoon hit the community, People in the community already prepared their belongings for them to be secure and ready for evacuation. It includes the basic necessity of a person such as ready to eat food that will good for three days, first aid kit and clothing. Some of them also bring pillows and blankets. These belongings are basic to bring for evacuation and are able to last for days. Also, they make sure that cell phones and flashlights were fully charged when there still power so it can be of use for communication during emergency and can be used to ask for help to the authorities. On the other hand, some residents have their transistor radios on their own so they can still be able to hear advisories although there is no electricity.

"*Naghahanda agad kami ng mga kailangan, nakahanda ang flashlight, cellphone, radyong de-battery importante yan sa lahat.*" ("We immediately prepare what we need; flashlights, mobile phones, and battery-operated radios are ready because these are essential for everyone.")

Aside from the residents, the Local Government Units, the Barangay in the coordination of CDRRMC, prepares for these instances so the community will be prepared to face the disaster, particularly typhoons. The barangay does mitigation measures such as de-clogging of the drainage system and trimming of trees. They also conduct trainings to their personnel so they can be prepared and able to respond when the time comes that the residents will need them. At times of typhoons, they monitor the area, prepare the equipment needed, and they announce the need of pre-evacuation or force evacuation. The city provides support to the barangay in these operations.

The BFP added that if the PAGASA announced that the community is having a typhoon signal, forty eight hours before the impact of the eye of the typhoon, they are now giving an advisory to the people to be ready. Hon. Patricia Macatangay quoted:

"*Ang duties ko, ay tingnan ang barangay, sakaling darating ang bagyo, pag bagyo ay sa Southern Luzon, so nagpe-prepare agad ako. Ang aming creek na naging problema namin pag nag-overflow yung baha eh ang Sitio Ibaba. Ang akin namang mga tao, ang aming mga tanod, binigyan namin ng seminar regarding preparedness*." ("My duty is to monitor the barangay in case a typhoon is approaching. When a typhoon is expected to affect Southern Luzon, I immediately prepare. Our creek becomes a problem when flooding occurs, particularly in Sitio Ibaba. Our personnel, especially the barangay guards, were provided with seminars on preparedness.")

The study of Maartens (2011) also underscores the importance of participation in community-based disaster risk reduction initiatives. The participation of every individual in

the community has the duties and responsibilities in disaster management.

"*Kailangan natin magsama-sama para sa paghahanda dito sa bagyong darating. At pagtawag naman ng taga-CDRRMO, sa apektadong lugar na binabaha ay aming bibigyan ng alarma." ("We need to work together to prepare for the approaching typhoon. When the CDRRMO calls about an affected area experiencing flooding, we will provide an alert.")*

The Bureau of Fire Protection (BFP) also shared their system on how they prepare as part of the CDRRMC. From the gathered information, that the BFP is in-charge of helping the communities for rescue and relief operation and evacuation. When there is already an emergency, like for example, if they are to deal with typhoon, immediately when PAG-ASA raised already a typhoon signal, there is a need for them to preposition the equipment. Accor ding to S/Insp. Glenn Salazar, City Fire Marshall. Batangas City is prone to flood and need to identify what areas will be flooded because it is really need to conduct pre-emptive evacuation. So, when there is an evacuation going on, they are utilizing the equipment.

During the interview on the CDRRMO, it was discussed how important the trainings and equipment were. According to the study of Uluturk (2006) a whole range of activities are in need of being streamlined into the tasks of urban planning in the reduction of disaster risks.

The CDRRMO said:

"Kailangan mong may man power na marunong. Ang katapat para rumunong, training. Both management and skills. Local response team. Involving the city and the barangay level." ("You need skilled manpower. What complements this is training—both in management and technical skills. A local response team should be established, involving both city and barangay levels.")

During the interview, one of the participants declared that he is capable of giving first aid due to his attendance on a training held by the Bureau of Fire Protection.

"*Once kasi, nakaattend ako ng mga training, Tinuturo samin kung pano iligtas ang sarili, tapos yung magligtas ng mga kasamahan."* ("Once, I attended training where we were taught how to save ourselves and how to rescue our companions.")

The learning situation of the training is an interpersonal communication as it was carried out face-to-face. According to Ongkiko & Flor (1998), interpersonal communication can bring out changes in what people know, what people think, and what people do. Also, the way the facilitators deliver and perform their lectures may affect the learning and understanding of the participants.

Furthermore, the competence of a facilitator in conducting such specifically in communicating the topics to the participants may have a bearing on the general impact of the training. In relevance to this, a statement from the BFP that answers the question of what activities they've done to gain knowledge in these fields proves that they have enough knowledge to stand as facilitators in such trainings. In the sense of Bureau of fire Protection there are series of trainings which is part of 6 months course, repeated and consecutive.

In addition, the BFP affirmed that they conduct trainings.

"So my point here is to strengthen the capability of the barangay just in case, because they will always serve as the front line."

Applying the concepts learned in the trainings or seminars will help the participants to be familiar with the things about first aid and basic disaster management preparedness and response.

Aside from the trainings, the CDRRMO said that one of the most essential factors towards learning how to be prepared was the academe. It was said that disaster management preparedness should be learned starting from the young ones due to its vulnerability.

"So ito rin ay isa sa aming tinututukan kasi kailangang siguraduhin na nagagawa ng academe, ng DepEd yung talagang bulnerableng mga sector, yung pag-integrate dito sa curriculum ng school o ng DepEd ay napakahalaga." ("This is also one of our main focuses because we need to ensure that the academe and the DepEd address the most vulnerable sectors. Integrating this into the school or DepEd curriculum is very important.")

In the study of Abas (2011), the schools have greater knowledge on disaster definition,

classification, causes and effects of manmade and natural disasters. Meanwhile, the residents' statements was also a description on how they response during typhoon. The researchers noted it as well-oriented, for they know the evacuation measures of the barangay. Aside from that, they cooperate with the officials in regards with their needs and reliefs.

According to the CDRRMO and the barangay, the evacuation site of the residents of Barangay Pallocan West is the Gulod Itaas Elementary School for it met the requirements to be confirmed as an area of safety.

The residents already know the procedures of evacuation, and they just wait for the rescuers to fetch them at the pick-up point of the sitio. They willingly go with them, and not to risk their safety in staying at their houses.

"Nakabantay na. Kakatok na sa mga pinto. Sasabihin sa amin na 'Maghanda na kayo! Lilikas na kayo ng ganitong oras', tapos darating na yung mga Fire Rescue." ("They are already on watch. They knock on the doors and tell us, 'Prepare yourselves! You will be evacuated at this time,' and then the Fire Rescue team arrives.")

One of the residents shared her experienced in the evacuation center during the hit of a typhoon that they are keeping calm, following the instructions of the authorities and waiting for the further advisories of the authorities and they cannot sleep well.

A barangay council shared how the system works in the evacuation center according to their disaster management plan.

"Sila naman ay tinuturuan namin. May nadating naman doon na mga taga-CHO. Sila'y sama-sama din na binibisita ng city na para sila ay matingnan." ("We teach them. Some personnel from the CHO also arrive. They are visited together by the city so that they can be checked.")

On the other hand, the barangay discussed the problems they encounter during evacuation in times the typhoons hit the community. They described some of the residents as hardheaded. This was due to the fact that not all of the residents want to evacuate. They don't want to leave their houses due to their belongings being left and the possibility of theft. They are worried about the securities of their home.

"Ang ibang mga tao naman, ayaw umalis ng bahay at naghihintay pa. kung kailan naman kabagyuhan saka pa sila 'Sasama na po kami, sasama na". ("Some people refuse to leave their homes and keep waiting. Only when the typhoon is already approaching do they say, 'We will go now, we will go now.'")

The BFP also said that Filipinos have very poor practice in terms of safety. Not unless bad things happened, that is only time that they will learn. As such, they really have difficulty in terms of telling the people that they really need to evacuate.

This was supported by statement from the CDRRMO during the interview. They even filed a case over someone who was not able to obey the police during force evacuation on a different community. During the force evacuation, Police power is used.

On the other hand, one of the interviewed residents reasoned out why these events happen during evacuation measures. He claimed:

"Depende po kasi sa paglilikas kung sasama, halimbawa po pag hindi pa masyadong affected ay pinalilipat na naman agad. Eh hindi pa naman po affected ng bagyo." (It depends on the evacuation. For example, if the area is not yet severely affected, people are immediately relocated. But the typhoon has not even affected them yet.")

The researchers found out through these statements that some of the people wait for the typhoon to happen and inflict flood in their residences first before obeying the order of evacuation.

In terms of the communication in times of typhoons, it was clearly stated in the interviews that the barangay conducts door-to-door visitation, patrolling, and broadcasting through megaphones. They watch televisions for advisories and some listen to the radios whether it's available in the household.

"Ano, talagang dito kasi e nagroronda. Nagroronda sila… May megaphone sa van na naronda." ("Here, they really conduct rounds. They patrol… There is a megaphone in the van they use while patrolling.")

Only the barangay personnel have two-way radios so they can easily report and respond with each other during evacuation measures.

The CDRRMO shared their programs for the community relative to disaster preparedness and response such as pre-evacuation, force evacuation and informing the people and also as the secretariat of the CDRRMC, CDRRMO had to proposed a convene or council meeting these are very important:

"Organize, train and equip, supervise the local emergency response team, preposition of responders and equipment, contingency and DRRM Plan workshop. Kasi don, ina-identify, ano ang problem, needs, and possible solutions."

It was discussed in the interviews with the residents that the services offered by the barangay has a good feedback, that they are responsible in program implementation and in response and readiness.

"Ano, responsible sila. Yun. Talagang maaasahan… Madami, madaming naiitulong sa amin." ("They are responsible. Truly reliable… They have helped us a lot.")

Although, one of the interviewed residents does not have much a good feedback regards the service of the barangay for preparedness and response in the context of typhoon. But, instead, he has a good feedback towards the city's service.

"*Buti na lang yung taga-Batangas City Rescue, yung Fire Rescue, talagang dumating sila. Mayroon naman ditong umiikot na nagbobroadcast."* ("Fortunately, the Batangas City Rescue, the Fire Rescue, really arrived. There is also someone here who goes around broadcasting announcements.")

In terms of the residents' evaluation of the CDRRMC for disaster preparedness and response in the context typhoon, based on the interviews, the researchers noted that there are more who approves their programs than those who do not.

Trainings for the residents of the community conducted by the barangay were also mentioned in the interview. It was stated that they have programs for all ages, sex and sector of the community. The chairperson stated:

"Bawat sitio namin, nagconduct dito ang Barangay at CDRRMC ng seminar sa kabataan, senior, sa kababaihan at sa lahat ng sektor sa ating barangay para in case na dumating yung mga ganong pagkakataon ay alam na nila ang kanilang gagawin." ("In each of our sitios, the Barangay and CDRRMC conducted seminars for the youth, seniors, women, and all sectors in our barangay so that in case such situations occur, they already know what to do.")

In the study of Asim (2006), it assessed the functional and efficiency and effectiveness of coordinating councils. On the other hand, the researchers encountered in the interview with the residents a different response due to the fact that the resident just moved in to the place.

From the researchers' view point, this is only because the resident has not yet been able to attend the said trainings and experience the hit of typhoon on the said barangay. Since they were new, they were not yet familiar with the disaster management plan of their community.

Least of the response from the residents was affected due to the length of their residency in the given community. Aside from it, the services and program rendered by the CDRRMC was implemented to all residents. As said by the CDRRMO:

"So, sino dapat ang naoorient? Sino ang dapat na marunong? Dapat lahat marunong… So, everybody's concern ang disaster management program." ("So, who should be oriented? Who should know? Everyone should know… So, the disaster management program is everybody's concern.")

The BFP also shared that it should be the community and the people, on which to be given the right information, and they should be trained because in every household, the families have responsibility.

In addition to the services of the CDRRMC to the community, they also mentioned that the number of leaflets, a part of their information dissemination campaign, is not that big due to the limited number of sponsors.

"Maliit ang pondo, na five percent lang, na kinukuha sa general budget. Hindi karami yung ganitong leaflet kasi sobrang liit nung pondo. At mostly sa ating fund ay naifocus sa mitigation projects." ("The budget is small, only five percent taken from the general budget. There aren't many leaflets because the budget is very limited. Most of our funds are focused on mitigation projects.")

Given the data, the researchers concluded, that the result of the quantitative approach matched the result of the qualitative approach done by the researchers regarding the community's disaster preparedness and response in the context of typhoon.

5. Proposed Print Materials to Intensify the Community's Disaster Preparedness and Response

I. Rationale

Communication plays a vital role in the society in any means for acquiring new knowledge and ideas to simplify the problems encountered. It's the basic which is the best medium to deliver the ideas to the people, the system and process that are used to communicate or broadcast information.

Disaster Risk Reduction Management can be utilized by the aid of proper communication to avoid the disaster itself. In the recent years, our country experienced the devastating effects of disasters, man-made and natural calamities such as earthquake, volcanic eruptions, monsoon rains, typhoons, flash floods, and landslides.

Moreover, in Barangay Pallocan West, Batangas City, particularly the area of Sitio Ibaba, one of the hazard-prone and vulnerable in flashflood during typhoons which is in the river side of Calumpang River, was where different modes of communication was utilized to make the community ready, aware, knowledgeable and have a factual response in times of typhoon. In the survey that the researchers had conducted to the community about their preparation and their assessment of the services of the CDRRMC which provides the possible services, it was found out that only the providing of print materials has the verbal interpretation of moderately extent due to the fact that the number of these and donors are limited. In response with this, the researchers proposed different print materials such as poster, leaflet and sticker to intensify the communication process of the CDRRMC.

Examples of printed materials are books, journals, periodicals, magazines, newspapers, works of visual arts, as well as photography, comics, flyers, leaflets, brochures, pamphlets, stickers and posters.

II. Significance

Print materials still maintains its stance as a powerful and necessary component of a campaign. Its credibility, there is something about print that give a sense of legitimacy. There is no imminent danger in print materials. This should have a consistent aesthetic in terms of fonts, colors and types of images to establish content recognition. Print materials are more applicable to the areas that lacks at the service of electricity. It is easy to understand and its more engaging reading printed materials, unlike websites which are often skimmed in as a 15-second visit. A study shows that people read digital screen text 20% - 30% slower than printed paper (Alshaali & Varshne, 2005). Print materials can be easily reproduced. Its tangibility, a print piece is a physical thing that it can stay in the house for years, and it is more formal and accurate. It is for easy reach to the people, it can be read often times if you forget something about it especially to those who don't have an access in the internet particularly to the senior citizens which they still prefer to read such as print materials rather than to access in the internet.

Vision

A community that understands how print media affects the awareness and knowledge in Disaster Preparedness and Response (DPR) and their action plan for the improvement and development.

Mission

To gained knowledge about the community's disaster preparedness and response. To know how the CDRRMC renders all the services and programs to the community. To appreciate and realized the importance of print media in

helping the community in preparation and mitigation to typhoons.

Goal

To propose to the community copies of print media materials so they can be more knowledgeable on what do before and how to respond during and after the occurrence of typhoons.

Objectives

1. To gain knowledge about DPR program of the community.
2. To recognize the importance of print media/materials in DPR.
3. To guide the residents in the preparation and response during typhoons.

Activities

The researchers targeted the residents of Sitio Ibaba, Barangay Pallocan West, as audiences for the print materials because most of them have no electrical services and access to the internet.

The print materials will also be introduced to the CDRRMC and in the Barangay. The researchers proposed print materials to the Barangay and respondents are: (1) a poster entitled "Aksyong Batangueño: Alisto sa Bagyo"; (2) a leaflet entitled "Batangueño: Maghanda sa Peligrong dulot ng Bagyo"; and (3) a sticker entitled "Iwas-Peligro Hotline Numbers"

Key Messages

The key messages of the activities:

1. Organizing their roles and responsibilities in terms of disaster preparedness and response at home.
2. Be knowledgeable individual when there is an occurrence of typhoon.
3. Act immediately when there is typhoon coming along the area

Communication Channel/Materials

Poster:

Title: Aksyong Batangueño: Alisto sa Bagyo
Objective/s:

To make the community aware of the rescue operations.

To educate the community in basic rescue operations.

Description:

The poster will be printed on a tarpaulin with at least 2ft x 1.5ft in size. It will be designed as understandable at least within 3ft. The texts to be used were simple and readable. Some clip arts related to typhoon will be used to catch more attention.

Contents:

Barangay's Evacuation Route
Things to prepare for evacuation
Emergency Hotline Numbers

Leaflet:

Title: Batangueño: Maghanda sa Peligrong dulot ng Bagyo
Objective/s:

To educate the community what to do before and during typhoons

To know the basic preparation tips.

Description:

The leaflet will be printed on a letter-sized bond paper. The texts to be used were simple and readable. The terms to be used will be easy to understand and the topics will be highlighted. Some clip arts related to typhoon and things to prepare will be used to catch more attention.

Contents:

Different preparation tips for the typhoon signals in the community

What their emergency kits should contain
Emergency Hotline Numbers

Sticker:

Title: Iwas-Peligro Hotline Numbers
Objective/s:

To promote emergency hotline numbers to the community.

To make the community aware of what numbers could be contacted during an emergency.

Description:

The emergency hotline numbers provided by the council will be bold and easily read even in a distance with a simple font. It will be printed in a letter-sized sticker paper.

Content/s:

CDRRMC Emergency Hotline Numbers

Conclusion

This study examined the disaster preparedness, response, and communication practices of residents in Sitio Ibaba, Barangay Pallocan West, Batangas City, in the context of typhoons. The findings indicate that most respondents were young adults, predominantly female, and long-term residents of the community, suggesting a population with substantial local experience and exposure to recurring disasters.

Results show that residents generally practiced appropriate pre-disaster preparedness measures and actively coordinated with authorities during rescue and relief operations. Communication played a critical role in these processes, with residents utilizing multiple communication modes to access warnings and updates. Traditional media, particularly radio, remained a key source of information, especially among older and long-term residents, highlighting the continued relevance of conventional communication channels alongside newer technologies.

The services provided by the CDRRMC and BDRRMC were assessed as highly effective in terms of program implementation, response, and readiness, although the provision of printed informational materials was identified as an area needing improvement. Differences in preparedness and communication practices were observed across age groups and length of residency, reflecting variations in experience, skills, and information preferences within the community. However, overall assessments of disaster management services did not significantly differ by age, sex, or residency length, indicating inclusive implementation of disaster risk reduction programs.

Based on these findings, the development of improved and accessible printed communication materials is recommended to further strengthen information dissemination, enhance community preparedness, and support effective disaster response. The study underscores the importance of context-specific communication strategies in reducing disaster risks and improving resilience in vulnerable communities.

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