IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

What Do They Know?: Extracting Local Disaster Knowledge of Flood-Prone Communities in Valenzuela City for Policy Integration

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Abstract: The Philippines is a highly disaster-prone country, and Valenzuela City is no exception. Approximately 25% of the city is situated below sea level, which makes natural drainage challenging and causes frequent severe floods that significantly impact the city's socioeconomic fabric (Designing Resilience in Asia, n.d.). In response, researchers have conducted a study on extracting local flooding disaster knowledge of the communities in Valenzuela City towards disaster policy enhancement. The study aimed to identify and document the local knowledge and experiences of residents in flood-prone communities in Valenzuela City regarding flooding disasters. The researchers used a qualitative method including interviews and surveys to gather community data. The data collected were then analyzed using thematic analysis to identify key themes and patterns in the residents' knowledge and experiences. The study revealed that the residents of Valenzuela City have a wealth of knowledge and experiences related to flooding disasters. They possess knowledge about the causes and effects of flooding and strategies to mitigate its impact. The study also found a strong sense of community among the residents, as they work together to cope with the effects of flooding. The findings of the study have significant implications for disaster policy enhancement in Valenzuela City. By incorporating the local knowledge and experiences of the residents, authorities can develop more effective policies and strategies to mitigate the impact of flooding disasters. The study also highlights the importance of community participation in disaster policy-making, as it promotes a sense of ownership and responsibility among the residents for their own safety and well-being. In conclusion, the study on extracting local flooding disaster knowledge of the communities in Valenzuela City towards disaster policy enhancement provides valuable insights into the knowledge and experiences of residents in flood-prone communities. The findings of the study can inform the development of more effective policies and strategies for disaster risk reduction and management in Valenzuela City and other flood-prone areas in the Philippines. The study also emphasizes the importance of community participation in disaster policy-making, as it promotes a more inclusive and effective approach to disaster risk reduction and management.

Index Terms **-** disaster risk reduction management plans, local disaster knowledge, local knowledge, Valenzuela City.

I. INTRODUCTION

Over time, the majority of local governments are supervised by national agencies, their flood disaster risk reduction management has been improved with more proactive and systematic ways to prevent and cope with the risks and hazards of flooding. Therefore, the establishment of a Disaster Risk Reduction Management Plan (DRRMP) has been made to achieve the objective of reducing disaster risk. The Philippines has Republic Act 1021 or The Philippine Disaster Risk Reduction and Management Act of 2010 which was created to strengthen the Disaster Risk Reduction and Management System of the Philippines. This mandates every city, municipality, and barangay is expected to establish the Local Disaster Risk Reduction and Management Office and Barangay Disaster Risk Reduction and Management Committee (BDRRMC) which will be responsible for setting the direction, development, implementation, and coordination of disaster risk management programs within their territorial jurisdiction.

About this, Valenzuela City has the Valenzuela City Disaster Risk and Reduction Management Office (VCDRRMO) Search and Rescue Unit which was established by virtue of Republic Act 10121 and provides assistance during calamities. This initiative is just part of the big steps toward building resiliency and minimizing the adverse impacts of natural hazards. The city's barangays also have their respective DRRM Councils. The focus of this study is within the scope of the City Government of Valenzuela, specifically, its flood-prone communities having its Barangay Disaster Risk Reduction Management Office to maintain and implement disaster knowledge. Referring to Valenzuela City Disaster Risk and Reduction Management Office (VCDRRMO) the majority of the 33 barangays, only the Barangay Dalandanan and Barangay Viente Reales of District One, and Barangay Marulas of District Two are still flood-prone communities. However, the local disaster knowledge has been institutionalized with the cooperation of the Barangay Disaster Risk Reduction and Management Offices (BDRRMOs) of the three communities.

The study aimed to analyze enlightenment in the reality of the residents and the government practically in times of flood disaster within the three given flood-prone barangays. Learning how people in a particular area view and interact with their environment is important. A thorough study is, therefore, necessary to know how the local knowledge of the people living in these three barangays affects the policies and programs being implemented in their area. This led the researchers to raise possible improvements related to flood disaster risk reduction management. Every data that was gathered is beneficial to the local government of Valenzuela, specifically the Valenzuela City Disaster Risk Reduction and Management Office (VCDRRMO) and the Barangay Disaster Risk Reduction and Management Committee (BDRRMC) established in the respective chosen barangay community. The conclusions at the end of this study could be useful to them in improving and enhancing the policies and programs institutionalized in the city as a whole and each barangay. Involved people on the committee could also gain insights at the end of this study to further improve the citizens' participation which will be beneficial to all in building resiliency in their community.

II. METHODOLOGY

In this study, sequential mixed methods are employed, and the application is designed to construct a comprehensive strategy that extracts the local disaster knowledge and practices of the residents in the most flood-prone communities. The triangulation procedure of both quantitative and qualitative research approaches was administered wherein all findings were analyzed and statistically treated.

First, the secondary data sources review was conducted as a qualitative approach that obtained a particular legal basis from different national and local government offices and websites, including existing local and international related literature and studies published in various platforms as the alternative supporting claims and evidence analyzed with content and textual analysis

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Second, the survey was conducted with four parts as a quantitative approach. The survey was used to determine the local disaster knowledge and practices of the target population. There were 90 qualified participants from the three flood-prone communities of Barangay Dalandanan, Veinte Reales, and Marulas in Valenzuela City. Participants stated their personal information and experiential inputs on socio-demographic profiles in the first part. In the second part, their thoughts and observations were rated and measured on a Likert Scale with corresponding levels of agreement that are all descriptively analyzed. In the enumeration as the third part and open-ended as the fourth part, their distinct insights and observations encompass the three categories which are the before, during, and after the disaster that was thematically analyzed.

Third, a semi-structured interview was conducted as a qualitative approach. This was separately applied with the policy implementers and policymakers who presented and confirmed that the collected local disaster knowledge from the surveys is complementing and considerable in times of flooding. The procedure was narratively evaluated, proceeded in transcription, and Filipino to English language translation process. With interpreted information and understanding of these frameworks, the local disaster knowledge identified the similarities and dissimilarities of responses against flooding in the communities.

III. RESULTS AND DISCUSSIONS

4.1 Local Knowledge and Practices of the Residents in Flooding Disasters

The local knowledge of the communities reflects their disaster preparedness and awareness as effective practices in times of flooding. Local knowledge is mainly defined in anthropological literature. For example, according to Geertz (1983), as cited by Vandebroek et al. (2011), local knowledge is the knowledge held locally by local people and becomes common sense for people who share similar sensibilities. The local knowledge that the inhabitants held could refer to perceptions, beliefs, and values (Dekens, 2007). It became a source of power, which helps the community's vulnerabilities that disasters bring. This section examines the diverse knowledge possessed by the target residents of Valenzuela City, categorizing their knowledge and practices related to flood preparedness and response into three stages: Pre-flooding, During flooding, and Post-flooding. The findings of the study are that the residents highly agreed in the Pre-Flooding, During Flooding, and Post-Flooding categories, indicating that they have previously experienced and been affected and verse and multiple sources of flooding, particularly typhoons. As a result, locals have developed collective local disaster knowledge and strategies for dealing with associated flooding dangers. The results, summarized in the table below, reveal the extent of awareness and preparedness among the residents concerning flooding and related disasters.

4.1.1 Pre-Flooding

Before the flood comes, the residents already have collective ways to survive and be protected from the possible harm of flooding and to its related causes. The pre-flooding part showed the existing collective knowledge before flooding. These practices and observations led them to evaluate their social and disaster consciousness from their past experiences mainly highlighting their awareness.

Table 4.1.1: Pre-Flooding: Local Knowledge and Practices of the Residents in Flooding Disasters

Statement	Weighted Mean	S.D	Verbal Interpretation	Statement	Weighted Mean	S.D
I am aware of the national and local agencies regarding disaster management, especially in flooding.	3.26	0.842	Agree	I am aware of the national and local agencies regarding disaster management, especially in flooding.	3.26	0.842
I have encountered typhoons and flood experiences.	3.80	0.402	Strongly Agree	I have encountered typhoons and flood experiences.	3.80	0.402
I am aware that my area is flood-prone.	3.79	0.437	Strongly Agree	I am aware that my area is flood-prone.	3.79	0.437
I have attended public gatherings regarding typhoons and flood disasters.	2.60	1.169	Agree	I have attended public gatherings regarding typhoons and	2.60	1.169

				flood disasters.		
I know of any typhoons or flood precautions.	3.69	0.489	Strongly Agree	I know of any typhoons or flood precautions.	3.69	0.489

The survey results revealed a high level of preparedness and proactive behavior among participants in a pre-flood crisis (Table 1). Participants strongly agreed with statements regarding their experiences with typhoons and floods (3.80) and their awareness of living in flood-prone areas (3.79). Additionally, they demonstrated a high level of awareness about typhoons and flood precautions (3.69) and showed knowledge about impending weather conditions such as typhoons, heavy rain, high tides, or floods in their location (3.69). Participants also indicated awareness of the nearest evacuation sites to their homes (3.78) and the presence of emergency communication facilities in their area (3.66). Moreover, they ensured the safety of their livestock and pets by relocating them to higher ground or safer locations (3.72). Overall, the total weighted mean of 3.71, with a standard deviation of 0.432, reflects the residents' preparedness and proactive measures in response to a pre-flood crisis. Participating and connecting to the public information must be part of the social obligation that maintains awareness.

4.1.2 During Flooding

The during flooding part showed the existing repetitive knowledge while flooding. These practices and observations led them to evaluate the consistency and accuracy of their disaster routines based on their flood experiences that highlight their sustainability.

Table 4.1.2: During Flooding: Local Knowledge and Practices of the Residents in Flooding Disasters

Statement	Weighted Mean	S.D	Verbal Interpretation	Statement	Weighted Mean	S.D
I keep myself updated on the latest weather news.	3.79	0.437	Strongly Agree	I keep myself updated on the latest weather news.	3.79	0.437
I have enough food and water resources.	3.55	0.604	Strongly Agree	I have enough food and water resources.	3.55	0.604
I communicate with the LGUs as soon as I find out there will be high flooding coming.	2.91	0.990	Agree	I communicate with the LGUs as soon as I find out there will be high flooding coming.	2.91	0.990
I am aware that there is a local sub-rescue unit that might assist or guide me and my family once the flood comes.	3.63	0.589	Strongly Agree	I am aware that there is a local sub-rescue unit that might assist or guide me and my family once the flood comes.	3.63	0.589

I stay indoors when it is raining heavily.	3.57	0.765	Strongly Agree	I stay indoors when it is raining heavily.	3.57	0.765

The survey results revealed a high level of preparedness and proactive behavior among participants during a flood crisis (Table 2). The residents strongly agreed that awareness during a flood is a continuing practice by knowing the weather updates (3.90) including the environmental awareness wherein high-voltage areas must be observed (3.79) because power is involved during heavy rain. The connection with the LGUs (2.91) and any rescuing forces (3.63) is necessary to have communication for urgent rescue responses. Additionally, the willingness to wade in flood (3.54) is no longer an issue due to their experiences. While flooding, the internal factors must also be maintained such as staying inside homes to lessen the casualties (3.57), even the food and water stocks for survival (3.55), and checking the family members at stake (3.88). Overall, the total weighted mean of 3.767 with a standard deviation of 0.399 indicates the majority of the residents have proactive measurements and continuous practices as the responses during the flood crisis. The external and internal factors that affect the survival and sustainability of every family during flooding are simultaneously supervised.

4.1.3 Post-Flooding

The post-flooding part showed the existing effective knowledge while flooding. These practices and observations led them to evaluate the reliance and stability of their knowledge in recovery in the aftermath of flooding highlighting their resiliency.

Table 3. Post-Flooding: Local Knowledge and Practices of the Residents in Flooding Disasters

Statement	Weighted Mean	S.D	Verbal Interpretation	Statement	Weighted Mean	S.D
I am prepared to restart after facing a flood crisis.	3.72	0.475	Strongly Agree	I am prepared to restart after facing a flood crisis.	3.72	0.475
I still keep myself updated with the news.)	3.73	0.493	Strongly Agree	I still keep myself updated with the news.)	3.73	0.493
I share updates on the flooding situation in my area with the authorities.	3.16	0.911	Agree	I share updates on the flooding situation in my area with the authorities.	3.16	0.911
I make sure to check on my elderly, sick, disabled, and kids, even the neighbors.	3.69	0.533	Strongly Agree	I make sure to check on my elderly, sick, disabled, and kids, even the neighbors.	3.69	0.533
Before entering the house, I	3.78	0.475	Strongly Agree	Before entering	3.78	0.475

check for potential structural damage, electrical shorts, live wires, and gas leaks.				the house, I check for potential structural damage, electrical shorts, live wires, and gas leaks.		

The survey results reveal, a high level of preparedness and proactive behavior among residents in a post-flood crisis (Table 3). Residents strongly agree that they are prepared to restart after facing a flood crisis (3.72) and consistently keep themselves updated with the news (3.73). They also strongly check on the well-being of the elderly, sick, disabled, and children, including their neighbors (3.69). Before entering their homes, the residents ensure safety by checking for potential structural damage, electrical shorts, live wires, and gas leaks (3.78). Additionally, they feel confident knowing what to do after a flood (3.77). However, while residents generally agree on sharing updates about flooding situations with authorities (3.16), this aspect shows more variability. Overall, the total weighted mean of 3.761 with a standard deviation of 0.412 indicates the residents' preparedness and proactive measures in response to a post-flood crisis. Setting future plans after a disaster must be part of the family assessment in order to get back to normal life.

4.2 Effectiveness of the Local Knowledge and Practices in Flooding in Reducing Disaster Risks and Impacts

The residents openly stated their local knowledge and practices in reducing disaster risks and impacts, particularly in flooding. Their responses were analyzed through thematic procedure and categorized accordingly to provide a more comprehensive understanding with the effectiveness of their local knowledge and practices. In addition, to support the analysis, four key informants were interviewed to get their viewpoint regarding the responses that the researchers acquired from the 90 respondents.

4.2.1 Preparation for Evacuation

The locals maintain their safety and their property when the flood is coming and commonly take the perspective that early preparation in evacuation stimulates their initial plans and strategies. Formulating plans and decisions, activeness, and news and updates awareness is one of the disaster instincts of locals. The residents said that "*Pag-aralan ang pagligtas ng mga gamit katulad ng pagtaas ng mga gamit at siguraduhing guided ang pamilya".* Utilizing their financial savings, early restocks of resources, and communication with the local government ensures their protection, comfort, and feasible urgent necessities. Any kind of disaster will require a developmental perspective on human resilience, risk, and vulnerability, as well as the integration of communication (Masten & Obradovic, 2008). The local residents of the three communities interchangeably responded that early or on-the-spot evacuation is one of their proactive strategies against the intense occurrence of water flood that settles their precautionary and disaster preparedness. The residents responded, "*Sa pagsisiguro na palaging updated sa mga balita at agarang paglikas kapag kinakailangan".* Evacuating is a common local disaster knowledge, this strategy varies depending on the residents' attentiveness and observance. During a calamity, most of the locals cannot quickly and securely go to evacuate, it is crucial to start evacuation at the right time to have a safe evacuation. People's demographic, geographical, and behavioral aspects, awareness of natural hazards, and management are the critical components for improved emergency actions (Sreejith & Sinimole, 2022).

On the other hand, the other locals choose the stay-in-place evacuation as one of their self-reliant ways that measure their disaster preparedness and survival stability. The locals stated that, "*Manatili na lamang sa loob ng bahay".* Stay-in-place evacuation is usually applicable during a calamity, staying inside their residential jurisdiction, avoidance of going outside, and relocating to higher floors, especially with more than one story establishment sets their protection and sustainable emergency resources. While staying inside the safe areas, communication means is limited depending on circumstances however local disaster rescuers are also prepared to attempt salvation. The shelter-in-place strategy is an alternative to evacuation during flash floods; on the other hand, evacuation remains the dominant strategy for a range of hazards. Still evacuating within designated evacuation facilities is more advisable than before (Haynes et al, 2009).

Therefore, the early or on-the-spot and stay-in-place evacuations strategy as the local disaster practices of the residents are always recommendable but not effective since it depends on the time and purpose of deciding on evacuating. According to the former Barangay Chairperson of Dalandanan and chairperson of the DRRM committee, said that the resident's experiences are not enough for them to be overwhelmed and secured. Even if they are habituated to the flooding, and some of them do not want to be evacuated, the local government unit and the barangay are continuously exercising the rescuing for them to know so when the time comes that the flood level is no longer manageable, these people who do not want to be evacuated at first will know where they should go. Also, the rescue team leader of the Barangay Veinte Reales, agreed and responded that with the convincing power of the barangay councils and rescuers, those families who chose not to evacuate are still being approached. Material needs are also necessary. However, human lives are irreplaceable and are being prioritized to secure them. Forced evacuation with the cooperation of police will be initiated. So, some of these families are participating because of the unpredictable intensity of typhoons and flooding, and some are being reached out with the presence of barangay chairperson. Lastly, the Chief of Research and Planning team of VCDRRMC, elaborated the Preemptive Forced Evacuation Ordinance in Valenzuela City. Once the typhoon or flooding starts to increase, the resident must be approached to obey evacuation immediately. However, as the citizens resist force evacuation will be operated to protect them from death and hazards.

4.2.2 Environmental and Public Flooding Signals

Environmental flooding signs are the observable natural measurements to the locals to determine that there will be a flood in their area based on their experiences. Continuous rainfall due to unpredictable weather status, flood water formation caused by malfunctioning drainage systems, and water sewages including the overflowing bodies of water near residential communities commonly rivers and creeks have hazardous impacts on the locals. The locals stated that, *"Base sa aming karanasan ang malakas at tuloy-tuloy na pag-ulan ang dahilan upang malaman namin na magkakaroon ng pagbaha sa aming lugar".* To the rescue team leader of the Barangay Veinte Reales, the geological features of the community are affecting the residential location, wherein the flood water increases up to six feet in height especially for families within depressed areas such as nearby bodies of water. While the former Barangay Chairperson of Dalandanan and chairperson of the DRRM committee pointed out the water level from the Meycauayan River is one meter high in Valenzuela, which makes it challenging to come out voluntarily. Due to this, pumping stations and floodgates installed by the city are utilized to prevent overflowing flood water. It is innate for people to closely monitor the weather, especially within lowland communities wherein flood formation is quick and controllable. Since typhoons and rainfalls are natural phenomena, interpreting the environmental signals is considerable. Climate change is extremely likely to induce flash floods in flood-prone urban areas and endanger the lives and safety of residents. Due to its low-lying land and overdevelopment, urban areas are flooding within streets after heavy rainfall (Chiang, 2018).

On the other hand, the locals are adopting public flooding signs that are participative governmental and integrated social measurements to be informed. The residents stated that, *"Kapag tumunog na ang San Miguel Warning alam naming tumataas na ang baha".* Local Government Units warnings are existing like announcements and loud sirens as part of their disaster precautionary to the residents. According to the Chief of Research and Planning team of VCDRRMC that having siren signals was stated in the Republic Act 10121 providing warning signals is a must but not necessarily just a siren, there are many types like the *batingting* as an indigenous equipment wherein some barangay is utilizing it affordably with the budget. Not everyone can afford a good state-of-the-art siren, the important thing is to know the principle that people should acknowledge a warning as to guide the community immediately if the flood is rising or when to evacuate. The influential online and public news are accessible with the use of devices. Having an early warning system within a community is recommended to be installed in local capacities such as speakers, mobile networks, and community centers to disseminate early warning to the residents (Khan et al., 2018). Disaster awareness is a crucial aspect enabling us to survive, also the communication status is significant wherein the latest updates, active contacts, and online information are ready to use. The function of social media technology during disruptive events tends to focus on first responders and relief organizations and is decentralized and this organizational structure can promote different types of messages to top-down information systems (Murthy & Gross, 2017).

4.2.3 Proactive Strategies

The majority are practicing early food storing as one of their preparation strategies for flooding wherein it is unsafe to go outside. Using their emergency savings, the majority tend to have an early stock of food resources either panic buying, and some are hoarding. Also, the residents responded, *"Kami ay naghahanda na ng mga pagkain, medical kit at mga mahahalagang dokumento upang mas maging hada bago ang pagbaha".* Since food to eat is part of the survival essentials, the mentality of the residents is to avoid hunger and limited stocks. The locals tend to stockpile essential items that are perceived to help them sustain themselves through the crisis period and in anticipation of supply shortages. Storing food has various reasons such as behavioral phenomenon, supply chain management, economy, political administration, disaster, and emergency management (Singh et al., 2021). The locals also consider elevating home appliances and equipment as one of their priorities to elevate. They also said that *"Nakahanda na ang aming mga gamit, nakalagay na ito sa double deck o sa second floor ng bahay".* Elevating essential resources is one of the traditional initiatives while flooding that secures respective important properties with specific functions. The majority lift their respective fundamental household appliances and equipment such as refrigerators, electricfan, and television, such that offer relief in daily living. Estimated the damage that can be avoided by implementing such flood damage mitigation measures. Forecasting potential damage that caused financial effort and distress impact is a proactive strategy to reduce flood hazards. Various adaptation strategies are relevant to the local communities' practice. Changing flood vulnerability is part of the main responsibility of the government and society (Barlian et al., 2021).

The locals are also practicing house renovation and repairing appliances and equipment preparation wherein the foundation of their homes is stable. A lot of the residential houses of the locals have second and/or third floors and some are also planning to re-construct their houses to enable them to cope with the intense typhoon or flooding. The residents answered that *"Para hindi abutin ng baha ang mga gamit ay magpapataas kami ng bahay".* Additionally, their appliances and equipment aim to be repaired to prolong their lifespan to function without hassles. Flooding in residential property is a growing phenomenon that causes short and long-term detriment of various kinds of damages. The issue of potential decrease in value of those properties which are located on the floodplain. Enhancement and innovation of houses and internal properties have been an effective strategy since before to lessen possible destructive impacts of typhoons correlated with flooding (Lamond, 2008). Moreover, although some locals already have second floors and the three policy implementers who were interviewed agreed that the residents should also realign their houses depending on the road elevation so that their houses will not be the catch basin, the participation of the residents is expected to be inactive due to financial differences. Three of them also expressed the same opinion that when it comes to this kind of initiative, not all residents have the capability to add second floors to their houses as they want to realign to the elevated roads.In addition to this, when asked about their standpoint if there should be a law in helping these people affected to elevate their houses, they also had identical response saying that as much as the LGUs want to help these affected residents, it will not be feasible for it will cost them so much money and their houses are private properties so it is outside the government's jurisdiction to fund this kind of project. The community of Marulas has more alternative strategies to prepare for flooding that is not being practiced commonly in the communities of Dalandanan and Veinte Reales. The residents are doing the emergency preparation and floodproofing is one of their proactive strategies and their initial plans and strategies. Utilizing their financial savings, early restocks of resources, and communication with the local government ensures their protection, comfort, and feasible urgent necessities. And reconstructing their house, especially within lowlands and low house base is a need to become floodproof. Any kind of disaster will require a developmental perspective on human resilience, risk, and vulnerability, as well as the integration of communication (Masten & Obradovic, 2008).

However, the residents are keeping online and public news as an integrated social measurement to be informed. They also said that *"Nananatili kaming updated sa balita para alam namin ang nangyayari sa paligid".* The influential online and public news are accessible with the use of devices. Disaster awareness is a crucial aspect enabling us to survive, also the communication status is significant wherein the latest updates, active contacts, and online information are ready to use. The function of social media technology during disruptive events tends to focus on first responders and relief organizations and is decentralized and this organizational structure can promote different types of messages to top-down information systems (Murthy & Gross, 2017). These measures could ensure their safety as the Chief of Research and Planning team of VCDRRMC also said in the interview which shared the same idea when asked about helping the people affected by the release of water dams and answered that doing such measures would help protect lives and properties, minimize damage, and provide a more efficient response and recovery process.

4.2.4 Knowledge Application and Public Participation

Being punctual and observant improves their family preparedness. Time awareness is an innate factor that must be prioritized when it comes to planning and actions. At the same time, the human senses and mind must be active to establish strong protection for the sake of family safety. Making disaster warnings effective, the behavior during the intensity of disasters and in the subsequent emergency period, the problem of people flocking into the area, and the need and difficulties of coordination. With the control of rescuers and relief activities, the traumatic effects of disaster on its victims can be lessened by being active (Faulkner, 2013). Apart from their experiences they improve their knowledge with the application of prior knowledge that consistently protects their families as they continuously reenact their preparation strategies. With the multiple experiences of flooding, the locals are repetitively applying their collective basic local disaster insights that make them stable and confident to overcome the hazards of flooding. The residents mentioned that *"Dahil may karanasan na kami pagdating sa ganitong sakuna, ilang taon na rin naming dinaranas ang buhay na bahain ang lugar. Sanayan na lang po talaga at laging maging alisto at handa lalo na kung rainy season".* Due to their repeated flood experiences, the locals have accumulated fundamental knowledge about local disasters, which has helped them become secure and self-assured in their ability to withstand flooding risks. The common practices and knowledge may contribute to sustainable behavior toward nature and the environment by exploring how local environmental knowledge, perceptions, and handling strategies of climate and disaster-related risks may be integrated (Reichel, 2014).

Disaster management efforts lead to reducing the potential losses from hazards and appropriate assistance to victims of disaster, and achieving rapid and effective recovery as well as knowledge management can enhance the process of disaster management (Seneviratne, et. al., 2010). In contrast to this local knowledge application, the rescue team leader of the Barangay Veinte Reales responded, *"Although sanay na sila, karanasan na nila sa tagal over years (na), decade (na), hindi pa rin 'yon sapat na dahilan para sabihin nilang okay sila roon sa area nila".* It is better for the residents to have corrected and additional local disaster knowledge to reduce priority loads for the barangay and the rescuers and to at least minimize possible casualties of a calamity. As the LGU has plans and programs, the residents must also participate and follow the learned local disaster understanding; however, some residents need to pay more attention to it. Furthermore, the Chief of Research and Planning team of VCDRRMC also said, *"Then why are they still being harmed? And worst, dying."* In conclusion, when floods occur, local knowledge alone may not provide sufficient information to navigate the dangers effectively. Comprehending and following evacuation plans, understanding weather forecasts, and being aware of emergency protocols are all critical aspects of survival.

Moreover, with the assistance of technology and media, the locals are also doing online research and social media updates to improve flood hazards, preparation, and modern understanding. The residents are watching or listening to the aired news on television and radio, especially the older ages. While there are social media and online websites as integrated and trending platforms, most of the young ages. To seek information or be up to date regarding weather forecasts and effective disaster preparation strategies is now accessible and hassle-free however it demands technological literacy and facts validation. The information and communication revolution are being brought about by recent developments and innovations in computers and related technologies. The use of social media platforms significantly increases during natural hazards. With the emergence of several social media platforms over the past decade, research and online public news are open to all (Karimiziarani et al, 2022).

Lastly, the residents are demanding that the LGUs conduct orientation attendance and participation to correct and adopt additional local disaster knowledge. They said that *"Mas mapapabuti namin ang aming kaalaman sa pagbaha sa pamamagitan ng mga Seminar sa Barangay tungkol sa baha".* The residents are recommending that LGUs operate active discussions as the refreshment regarding local disaster awareness and guided preparation. This public demand will empower the citizen's participation as an inclusive motive to support the government's plans and actions. Community coordination requires communication and planning of precautions when dealing with a severe threat of disaster. Assessing community responses to repeated threats of typhoons and floods. The effectiveness of coordinating community disaster response efforts affects future public preparedness (Kapucu, 2018). However, the three-barangay responded *"Nagkakaroon kami seminar training together with VCDRRMC, kino-coordinate namin sila. Bumababa kami sa mga area, binibigyan namin sila ng training at seminar kung paano nila mas mababawasan kapag andyan na ang bagyo, kung paano sila mag-pre-prepare bago dumating ang bagyo. Saka kung ano 'yong mga dapat na na-stock sa bahay nila, 'yong stock piling nila",* that disaster risk reduction activities are conducted in the community. The CBDRRMC of the community is coordinating with the VCDRRMC, the central local government rescue unit of the entire city, to visit and speak in conducting a seminar and training discussing that preparations and better ways to practice in the occurrence of typhoon and flooding, especially for the lowland areas but since the COVID-19 pandemic came, the programs also stopped, but they will continue.

In addition, the Chief of Research and Planning team of VCDRRMC also agreed that the City Government of Valenzuela has various activities which are PPAs or programs, projects, and activities. He mentioned that *"Of course nag pro-provide ang cities ng mga trainings, seminars, orientations, awareness para sa kung ano-ano ang mga dapat nilang gawin bago, during and after ng hazard o ng disaster na pwedeng mangyari sa atin. So nag-co-conduct tayo ng media trainings nag-co-conduct tayo ng capacity building sa lahat ng klase ng trainings like basic first aid, basic life support ah nagbibigay din tayo ng planning formulations"*, they have these in any hazards that the city might experience such as typhoons, severe winds, and tsunamis. He brought up the capacity building in every barangay or community and other stakeholders. This capacity building includes conducting seminars, and training such as basic first aid and basic life support. In conclusion, various seminars about flood preparedness and prevention were being organized. These seminars aimed to educate people on the importance of understanding flood risks, implementing precautionary measures, and responding effectively during flood emergencies. The objective was to minimize the devastating impact of floods on people's lives and communities. However, just as these seminars were gaining momentum, the unforeseen problem of the COVID-19 pandemic emerged. The sudden outbreak of COVID-19 forced authorities to impose strict restrictions on gatherings and social distancing. As a result, many planned flood seminars had to be postponed or canceled altogether. This presented a major obstacle in the efforts to raise awareness about flood risks and educate communities on disaster preparedness. Nevertheless, it is important to find innovative alternatives to continue educating people on flood-related matters during these challenging times.

4.3 Framework Development

The City Government of Valenzuela is one of the well-known highly urbanized cities with a rescue unit, the VCDRRMC, which grows its office and activities by forming subunits in each barangay unit to oversee the state of their disaster committees and management. Despite being one of the most advanced cities, it is nonetheless prone to flooding. The major focus of enhancing the city's resilience is on reducing the negative impact of these occurrences on the lives of its citizens, the integrity of its infrastructure, and its economic stability.

This proposed framework development is anchored the City Disaster Risk Reduction and Management Plan ware formulated primarily to serve as a DRRM Plan of the Valenzuela City Disaster Risk Reduction and Management Council (VCDRRMC) aligned under the Republic Act 10121, also known as the Philippine Disaster Risk Reduction and Management Act of 2010, which is a comprehensive law that aims to strengthen the country's disaster risk reduction and management capabilities. And the Community Based Disaster Risk Reduction and Management Committees (CBDRRMC's) which are the barangay units designed to make Valenzuela City a safe and resilient city.

This will serve as a guide for the VCDRRMCs in developing and implementing a forward-thinking disaster risk reduction policy. The goal of this framework development is to offer improvements to the existing flood disaster management awareness and public precautionary measures that are useful for the Barangay DRRM Committees based on collective local disaster knowledge and practices that are regularly used in the city. One significant goal is to improve community and city government unit coordination, as well as resident inclusiveness. This aims to build adaptable, consistent, and creative disaster responses, resulting in a more effective and proactive response to prospective catastrophes. It also supports financial support for the administration and installation of effective disaster-preparedness equipment. Including enabling local disaster committees and rescuers to carry out salvation and disaster risk reduction measures. Finally, encourage citizens' participation in community resiliency by sharing social and mutual obligations.

IV. CONCLUSION AND RECOMMENDATION

The study highlights the current state of local disaster awareness practices, acknowledging their effectiveness in contributing to better disaster response results. It emphasizes the positive aspects, such as community readiness and resilience, successful application of protocols, and the use of local knowledge to mitigate flooding effects. However, it identifies gaps and challenges, particularly in communication tactics, urging the need for improvement in sharing and understanding information among communities and the government. The study also stresses the importance of continuous learning and adaptability in the face of dynamic disaster scenarios. In conclusion, while recognizing the effectiveness, the study calls for improvements through addressing communication challenges, promoting continuous learning, and adapting to evolving circumstances to enhance local communities' capacity for effective disaster response.

The researchers emphasize the need to enhance local residents' knowledge, particularly regarding flooding disasters in Valenzuela City. Despite a shared level of agreement on disaster preparedness, response, and recovery, there's a call to strengthen existing knowledge through awareness-raising activities. This involves community involvement, targeted treatments, and training programs for vulnerable groups. The study proposes implementing a mandatory survival kit (Go Bag) monitored by the CBDRRMC to aid evacuation. The research highlights the collective local disaster knowledge as a sign of flood disaster resilience. Recommendations include adapting warning signal systems, updating flood level measurement units, and creating a proposed framework for active resident participation and local knowledge incorporation into policy. The proposed framework also calls for budget allocation for CBDRRMCs to improve their plans and activities, contributing to the overall resilience of Valenzuela City.

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