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ADAPTIVE SURVIVAL OF RESIDENTS IN JADE VALLEY TO THE RISING WATER OF DAVAO RIVER DUE TO MONSOON

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----------ABSTRACT----------

The monsoon is a significant problem in the realm of weather prediction in the current world. Monsoons bring drastic temperature changes and endanger the lives of people. Mostly, floods are a common problem throughout the monsoon season. In the wake of the disastrous floods that have devastated our region in recent years, the residents of Jade Valley have had to take it upon themselves to find ways to adapt their lifestyles. This qualitative study will investigate the adaptive survival of residents in dealing with floods. The phenomenology research design was used, and the participants were chosen using convenience non-probability sampling technique; there were a total of 6 participants in the interview. Data was gathered through the utilization of an in-depth interview, where the researchers conducted a face-to-face conversation with the participants. Based on the results in data analysis from the interviews, sharing of experiences and pointing out their insights, we have found out that the flooding has had a negative impact on the residents' attitudes and behaviors. (1) They are more likely to feel depressed, anxious, and stressed after being flooded. (2) When there is a flood, the livelihoods of residents are temporarily disrupted. (3) Their houses were filled with mud and water is everywhere, making it difficult for them to process from their everyday life. The researchers found that these difficulties experienced by residents are all because they don't implement any flood preventive measures.

KEYWORDS: *Adaptive Survival, Residents, Flooding and Its Impact, Community-Based Flood Risk Management, Phenomenology, Cultural Risk*----------

INTRODUCTION

One of the disasters that endanger human lives is flooding. Managing this kind of disaster is a challenge in and of itself, and it takes time to recover. For others, experiencing successive flooding made some residents think about relocating because the challenges and effects are too hard to deal with. However, despite all of this, some residents are there to withstand and are going out of their way to survive, rebuilding and choosing to stay. As a survival procedure, adaptation to floods is what residents do; social collaboration and learning mechanisms that improve the ability of residents to cope play significant roles in dealing with floods.

In many regions of the world, flooding has become more frequent as cities become more densely populated. Floods can be devastating, however humans tend to underestimate the risks of floods. As most people are well aware, living with flood risk is a complicated and challenging task; certain situations result in casualties and loss of properties. Several studies have been conducted to determine the effect of the rising incidence of floods, and it was concluded that encountering a flood could cause different consequences, including psychological and physical health. According to the World Health Organization (WHO), flooding involves a wide range of health consequences, ranging from drowning and injuries to infectious diseases and mental health issues. French et al. (2019) also said that residents whose homes had been flooded, disrupted, and damaged had a high chance of post-traumatic stress disorder (PTSD).

However, to mitigate the effects brought by the flood, risk assessment and flood management strategies are standard operating procedures that can assist residents in mitigating, preventing, preparing, responding, and recovering from

floods. According to Rehman et al. (2019), flood resilience can be developed by focusing on effective flood management and risk assessment.

In recovering from the aftermath of floods, residents tend to build resiliency as part of their adaptation procedure. This action is sometimes referred to as "coping strategies." This strategy involves a wide range of processes in recovering with its effects, such as getting emotional and social support from people they know, as well as fixing the damage caused by the floods, which could be physical or economic.

The aim of this study is to analyze and examine the vulnerability, awareness, and perceptions of local residents when their area is flooded. A phenomenology, which is a qualitative method, was used to analyze their experiences with the effects of floods in Jade Valley Homes.

This study will uncover the practice of creating disaster risk and coping strategies of residents in dealing with river floods in Jade Valley Homes and gauge their overall experience of the issue.

The purpose of this research is to explore further into the attitudes and behaviors of residents who have had to adapt to floods. The researchers wanted to gain insights from the participants on their sentiments toward surviving the disaster because it would help them to seek improvements and assess the impact of floods. It is important to know how people are ready and how they respond to floods in order to minimize flood damage and come up with effective flood strategies.

As far as we knew, there had never been any research on how people could adapt to survive in floods in the area. This was one of the reasons we decided to conduct this study.

Research Questions

The researchers in this paper are driven to leave no stone unturned in their exploration of the adaptive survival behaviors that locals have developed in the face of floods. More precisely, it sought to discover answers to the following questions:

1.What are lived experiences of Jade Valley residents in rising water due monsoon?
2.What flood-prevention measures do Jade Valley residents implement?
3.What are the insights learned by the Jade Valley residents in their plight with the rising water due to monsoon season?

The findings of this study have a substantial impact on the people listed below. The beneficiaries of the following are highlighted in the study's preview:

Responders. The information acquired through this study serves as a basis for responders to enhance their ability to assist, respond, and rescue.

Community. The findings of this study help people in a community understand the issue better, which would enable them to partake more effectively in dealing with floods.

Local Government Unit. The data and information collected in this study serve as reference for the Local Government Unit (LGU) to efficiently assess and mitigate flood damage. They could increase the community's capacity to better deal with the adverse effects of floods.

Residents. The information gathered from this research will be shared with citizens who are the most vulnerable during times of floods so they can cope more easily and minimize damage. Residents can also address the effects of flooding in their lives; they could learn to mitigate and make an assessment of the risk.

Future Researchers. For additional and further investigation, future researchers on this topic may use this research as the reference of their study.

Definition of Terms

Adaptive Survival. This refers to the adjustments made by humans to their surroundings in order to increase their chances of surviving in that environment.

Residents. A person who lives somewhere permanently or on a long-term basis.

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Davao River. the third largest river by drainage basin on the southern Philippines in the island of Mindanao.
Monsoon. It is used to refer to the rainy phase of a seasonally changing pattern. The term is also sometimes used to describe locally heavy but short-term rains.

Review of Significant Literature

This section presents the relevant literature and the researches related to the study conducted. They are based on information found in academic journals and on the internet. This is to guide and support the study conducted.

Flooding and its impact

Floods are among the most common natural disasters in the world. It can be defined as water that overflows and submerses, typically on dry land. In the sense of "overflowing water," the term can also refer to the capacity and spread of water beyond its limits. The impact of flooding may vary depending on geography, vegetation, and rapid urbanization. Several studies conducted show that floods could be beneficial for soil improvement, nutrient allocation in the valley, and ecological support. It has also benefited in different sectors of the economy, which has transformed communities into life-giving forces. Donald (2019) suggests that frequent flooding provides fertile and productive agriculture. He also added that it aids in the preservation of ecological wetland areas and subsurface aquifers where many population centers rely on, like springs, wells, rivers, and lakes.

However, floods are seen negatively by the community due to the devastating impact on livelihood, infrastructure, human life, and public health. Flooding is a huge threat and a cause of human vulnerability, with a high mortality rate. Floods are the leading cause of catastrophic event deaths globally. Heavy rain, sudden snowmelt, a storm surge from a tropical cyclone or tsunami in coastal locations are all common causes of flooding and their impact is predicted to increase in the future as a result of climate change and population increase (Paterson et al., 2018). The rising flood risks are alarming, particularly in terms of their effects on vulnerable people with limited coping and adaptation abilities.

Floods are most frequent in tropical locations or areas near the equator, but it can also happen in areas with unusually lengthy periods of heavy rainfall. In the study conducted by Gabrysch et al. (2018), unseasonably heavy rains in Bangladesh flooded the northeastern floodplain, destroying the annual rice crop before it could be harvested. According to the research's findings, 56% of the 1335 families were severely affected by the flood, while 21% said they were not affected at all. Families who regularly cultivate rice and grow rice in 2017 harvested at least as much as usual, while 28% projected a 5-month or more shortage of rice consumption compared to a typical year. Many households reported income losses as well. Around 30% of the 2423 families were food secure six months after the flood, and 40% of the 901 women interviewed about their diet consumed a sufficiently diverse diet. Furthermore, it was concluded that food instability and nutritional variation among subsistence farmers are worsened by natural disasters. Natural disasters are growing more common in Bangladesh and abroad as the climate changes.
Additionally, according to Mensah and Ahadzie (2020), floods occur every year in Ghana, causing chaos to livelihoods, property, and displacing a large number of people. Heavy rain and thunderstorms caused flooding in Ghana's two biggest cities, which killed 14 people, forced 34,076 people out of their homes, and caused $168,289 worth of damage (National Disaster Management Organization).

According to the study by Olanrewaju et al. (2019), Nigeria has communities that are highly vulnerable to floods and outbreaks of waterborne diseases due to their proximity to water bodies, large populations, and tiny land mass. As shown in the findings, floods had a terrible influence on the people's well-being and hindered the community's economic progress. There are three factors to consider. (1) Flash floods caused human mortality from disease epidemics such as cholera and dysentery, particularly among children under the age of five and the elderly, owing to sewage and waste pollution of water. (2) Healthcare facilities were inaccessible due to flooded roads and a lack of ready access to the affected areas by healthcare staff. (3) Every year, new people move into the community, resulting in an increase in the community's population without a corresponding increase in government services. The authors concluded that, despite developing many intervention techniques, the Nigerian government has failed to alleviate the suffering of flood victims. The government's response and policies have been ineffective to a considerable extent, and

the recovery process has been delayed. Several elements have been identified as contributing to these inadequacies, which explain why individuals are unable to respond to and cope with flood disasters.

Community-based flood risk management

Natural disasters represent an important emergency for human societies. Even in developed countries, these events can cause significant socioeconomic impacts and even death. The response of the emergency services to such events provides an opportunity to observe the capacity of communities to overcome emergency situations. It is well known that prior preparation plays a fundamental role in mitigating the consequences of emergencies so that they are more manageable. Therefore, it is essential to study the relationship between the degree of preparedness and the positive evolution of an emergency situation.

Flood risk management is based on several factors, including a study of flood hazard, exposure to flood hazard, and people's vulnerability to danger; as well as poverty. Community-based flood risk management is an important approach to reducing vulnerabilities and strengthening people's capacity to cope with the effects of floods, droughts and other natural disasters and has proven very effective, especially when communities and local leaders are involved.

Community participation in risk management is seen as essential to achieving community readiness and resilience (Puzyreva, 2022). Community engagement empowers individuals and families with knowledge, as well as the ability to create community-level change. It also gives them the power to make informed decisions about their own emergency planning and preparedness efforts. The more engaged a community is, the better it will be able to withstand and recover from adversity.

Coping capacity

Coping mechanisms or strategies are keenly related to the concepts of survival and threat. According to Stephenson and DeLongis (2020), these are the attitudes and practices that are employed to cope with the internal and external pressures of a stressful circumstance. Coping mechanisms are an important aspect of living with the effects of flooding. However, it have no set standards; they vary in nature depending upon and are influenced by socio-cultural and contextual factors such as geography, community, socio-economic class, ethnic orientation, household composition, gender, age, and season, as well as the frequency and duration of the potential threat to livelihoods (Rahman, 2019). Community-developed coping mechanisms can be used at any stage of the hazard management cycle, including mitigation, preparedness, response, and recovery. On the basis of experiences, people can acquire new coping techniques, which can become part of what we call culture.

In coping with floods, it can be categorized into economic, physical, and social. The economic coping mechanisms include repairing the damage and prioritizing necessities. The physical coping mechanisms include cleaning the surroundings, fixing the house by arranging the things, and cleaning the canal to avoid stagnant water. Lastly, social coping mechanisms include borrowing money from the banks and consulting health workers on health problems.

Theoretical Lens

This research is grounded in the cultural theory of risk developed by Mary Douglas and her colleagues in the early 1980s as an alternative to the dominant technical, rational, and psychological approaches to risk perception. People who study cultural theory think that risk perception is a social process in which some threats are acknowledged and others are hidden, based on one's values and preferred social order (McEvoy et al., 2017).

A cultural risk perspective is engaged with collective, societal, and shared norms that shape individual perceptions. As shown by cultural theory, risk perception is a "culturally standardized response" (Douglas, 1992).

Cultural Risk Theory

Cultural Theory is a theory about how our society views and deals with risk. It is based on the idea that each society has its own way of perceiving and dealing with risk. The Cultural Theory of Risk, developed by anthropologist Mary Douglas and refined by colleagues (Douglas and Wildavsky 1982; Rayner 1992; Thompson, Ellis, and Wildavsky 1990), is a risk-perception approach that emphasizes the role of culture by first identifying how people believe society

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should function and how society and nature should interact. In other words, when people's worldviews are questioned, their ideas about society and nature, also known as worldviews, emerge as different cultural priorities and preferences. Perceptions of risk are different among individuals and groups with different worldviews (Rayner, 1992). This explains that people see risk in different ways, and that some may be more vulnerable than others to experiencing a disastrous event. Tobin and Montz (1997) also emphasize that non-geophysical elements must be considered in order to fully comprehend all aspects of natural disasters. Natural hazards are defined as the "possible interaction between humanity and extreme natural phenomena", while natural disasters are defined as the actual interactions that have an economic or physical impact on civilization. They argue that humans are not just a necessary part of this system, but that everyday social aspects like objectives, concerns, values, and institutions have a significant impact on how people perceive, mitigate, and respond to hazards. The Culture Theory of Risk (CTR) is a useful heuristic for figuring out how culture affects risk perception. Like other models, this one gives guidelines that may or may not be true in the real world, but it can help explain why there is so much disagreement about identifying and prioritizing environmental threats, and who is to blame.

Theory of Planned Behavior and Disaster Preparedness

In 1980, the Theory of Planned Behavior was developed to forecast an individual's intention to engage in a behavior at a certain time and place. The theory was meant to describe all behaviors that humans can exert self-control over. The essential component of this paradigm is behavioral intent; behavioral intentions are impacted by an attitude about the likelihood that the activity will result in the expected outcome, as well as a subjective assessment of the risks and advantages of that event (LaMorte, 2019). Actions taken in advance of a disaster to make sure the resources needed to respond effectively are accessible are referred to as disaster preparedness. A full understanding of the variables influencing the performance or nonperformance of disaster preparedness behaviors is necessary for disaster preparedness (Najafi et al., 2017).

The Theory of Planned Behavior's prediction is based on three factors: attitude toward behavior, subjective norm (how others view you), and perceived behavioral control (the ability to stick with your plan). This theory predicts that people will make choices consistent with their attitude because they believe it will lead to their desired outcome. People will also choose activities that others view as acceptable or desirable, which helps build confidence in their own abilities. Finally, people may have more control over their behavior if they believe they have more control over other aspects of their lives.

In this study, researchers must first identify an individual's motives, values and beliefs about their intended behavior. These factors may include: their beliefs about what constitutes success, their beliefs about how much effort it would take them to attain success and whether or not there are any barriers preventing them from attaining their goal.

METHODOLOGY

Research Design

This study employed qualitative research as the method to describe and investigate whether flash floods influence residents' views, attitudes, and perceptions on adaptation. The research design for this study was a qualitative phenomenological study, including in-depth interviews. A phenomenology analysis searches for the meaning or essence of an experience rather than measurements or explanations. The qualitative research method is useful in discovering the meanings of the lives of the people who lived through those particular events and experiences. It is used to gain an understanding of underlying reasons, opinions, and motivations. It provides insights into the problem or helps to develop ideas or hypotheses for potential quantitative research. Patton (1987) stated that in-depth interviewing often involves qualitative data, which is why it is also called qualitative interviewing. Researchers use it to elicit information in order to achieve a holistic understanding of the interviewee's point of view or situation; it can also be used to explore interesting areas for further investigation.

This study used qualitative techniques in data gathering and employed an in-depth interview (IDI) to have a truthful idea, efficiency of knowledge, reliability of the information, and to have a mere fact about the research problem based on the perceptions of residents. The design is an in-depth interview (IDI) because of the data that mainly shows the views of residents in dealing with floods, which result in different behaviors.

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Research Participants

The participants of this study were the 6 residents of Jade Valley Homes in Davao City. Convenience non-random sampling technique was done in choosing the participants, who were categorized based on their age. There are 2 teenagers (ages 13–19), 4 middle-aged adults (ages 20–60), and 3 elderly (ages 60 and up) for an equal distribution of the randomly chosen participants. The participants were selected because they had personal experience with the phenomenon being investigated

Data Collection

Having this research as qualitative research involves the researcher as an instrument. The researcher's self-use is the primary tool for the data collection. The researcher had a good relationship with the participants. The researcher showed respect by asking the participants for their permission to collect the data and even in the collection of the data proper. The researcher showed no biases in gathering the data and in analyzing the data.

The researcher made use of the interview questionnaire to serve as a guide in questioning the participants in the data gathering procedure. The use of an interview questionnaire also served as an instrument to learn the views and insights of residents in dealing with flash floods that result in different attitudes toward surviving.
In order to congregate the needed data for the study, the following steps were observed as follows:

The researcher secured an approval letter to the principal of the Integrated Basic Education Department to conduct an interview with the residents of Jade Valley Homes in Davao City. An Informed Consent form from the RMC–REC was used in this study together with an introductory script that showed specifically to the participants the purpose of this study, what the study involved, why they were asked to take part, that their participation was voluntary and confidential, that their identification in the study was anonymous, what would happen to the information they gave, what would happen to the results, and what the possible advantages of taking part, and the contact number of the researcher.

The data was gathered through the utilization of an in-depth interview, where the researchers conducted a face-to-face conversation with the participants. According to Llemit (2022), the Inter-Agency Task Force for the Management of Emerging Infectious Diseases (IATF) has classified Davao City as being on alert level 1 since March 31, 2022. All restrictions, including venue or transportation capacity and travel, will be lifted at alert level 1, and all enterprises will be permitted to operate. In addition, there are no limitations on the number of people who can be accommodated indoors or outdoors. In conducting interviews, the researchers always wear masks and never remove them, offer alcohol to sanitize the participants, and keep a 1 meter distance. Questions were asked by the researcher, and answers were given by the participants. Questions asked were listed in order to have a continuous flow of conversation.

To start the interview, the researcher asked the participants to read the participants' consent and to affix their signature on the consent paper after they were oriented on the purpose of the study and agreed on the terms and conditions. The researcher had emphasized to the participants that they were allowed to ask questions to clarify any matter regarding the study and asked for their consent to record the course of the conversation with the assurance that everything would be kept with the utmost confidentiality.

Through an in-depth interview, the researcher was able to gather the feelings, reactions, observations, and experiences of the residents with regard to the impact of flood in their lives.

In analyzing the data gathered, the participants' narratives were transcribed. According to Koontz and Weinrich (2000), the process and narratives do not need to be transcribed verbatim as long as the essence of what the participants were communicating has been caught in the transcription. Individual transcriptions of the interviews were validated by the respective participants.

The data gathered from the in-depth interviews conducted with the participants was analyzed one by one. Since the data was gathered with the use of a smartphone recorder, it was thoroughly listened to, written in field notes, and then

encoded for the filing of the Chapter 3. Answers from the respondents were encoded verbatim and were given a connection to the study.

The following tool was used in interpreting the responses and information in this study:

In-depth Interview (IDI); This was used by the researcher to determine the behaviors and sentiments of residents when dealing with flash floods.

Thematic Content Analysis. This was used in interpreting the responses made by the key participants in determining the views and insights of the residents on the effect of flooding on their lives.

Their responses were processed and conducted through analysis. Transcripts were coded in considerable detail, with the focus shifting back and forth from the key claims of the participants to the researcher's interpretation of the meaning of the responses. They were subjectively interpreted.

Meanwhile, the notes that have been obtained from the in-depth interview will be transcribed immediately. The researcher will be looking for common themes that will be found among the responses to each question. In this phase, the researcher will use the thematic analysis in analyzing the gathered data.

RESULTS AND DISCUSSION

IMPLICATION

Based on the results, the following implication is presented:

The flooding in the Jade Valley area has affected the attitude and behavior of many residents. Based on the results in data analysis from the interviews, sharing of experiences and pointing out their insights, we have found out that the flooding has had a negative impact on the residents' attitudes and behaviors.

First, residents are more likely to feel depressed, anxious, and stressed after being flooded. This is because they are more likely to experience stressors such as loss of personal items and damage to their homes. Second, when there is a flood, the livelihoods of residents are temporarily disrupted. This means that residents' financial situations have also been impacted, as they are unable to work or earn money due to the flooding. As a result, they find it difficult for their everyday needs like food, rent, and other essentials, making it difficult for them to recover. Lastly, their houses were filled with mud and water is everywhere, making it difficult for them to process from their everyday life. However, these difficulties experienced by residents are all because they don't implement any flood preventive measures.

The residents had no longer hoped to return to normal everytime it floods. As in their words, "We are just used to it, but still hoping for assistance and someone to help". Residents shared that they feel helpless because there is nothing they can do when floods happen again and again. It's been a few years now since they've experienced this devastating flooding issue and they have not seen any improvements yet. The flooding has made them more vulnerable and less confident in their abilities to cope with such natural disaster.

RECOMMENDATIONS

Based on the conclusions of this study, the following recommendations are presented;

The responders should have a prompt assistance response in Jade Valley after every flood to help residents recover, respond, and cope with its effects.

The community should undergo a process of risk reduction management for preparedness, mitigation, and recovery. It is also recommended to partake more effectively and actively because social collaboration will help them cope with floods as a community.

The Local Government Unit should develop a flood risk assessment and preparedness plan, where it posts in the barangay of Jade Valley as well as every barangay in Davao City to educate people in evaluating the risk of floods.

The residents should listen to the news prior to floods every monsoon season for them to become more prepared. The residents should also evaluate a risk assessment that the city has implemented, which will serve as their preventive action that could help them mitigate the impacts of floods.

Lastly, future researchers should conduct a study that is comparable to the one that was not investigated in this study but instead investigates the other elements that influence residents' adaptive survival in encountering floods. It is also recommended to investigate other possible factors influencing the change in behaviors and attitudes of residents as a result of the flood.

REFERENCES

1. *Andrada, M., & San Miguel, I. (2020, December). Community -Based Disaster Preparedness of Valenzuela City and Iriga City. Www.researchgate.net. https://www.researchgate.net/publication/348917779_Community_-Based_Disaster_Preparedness_of_Valenzuela_City_and_Iriga_City*
2. *Baloran, A. (n.d.). Disaster Risk Reduction and Management Office. City Government of Davao. Retrieved June 27, 2022, from https://www.davaocity.gov.ph/departments/social-services/cmo-disaster-council/?fbclid=IwAR1AIQKi0XpqDL7J0BciDQPn0qVWmjowl-Bv9RwT67Wbcv0OQOm8jacBBMM*
3. *Basconcillo, J. A. (2019). Gender and Climate Change Adaptation: A Case Study of FloodProne Rice-Farming Villages in Bulacan, Philippines. Cgspace.cgiar.org. https://cgspace.cgiar.org/bitstream/handle/10568/100189/SEARCA_Gender_Dimension_of_Climate_Change_Research_in_Agriculture_Case_Studies_in_Southeast_Asia.pdf?sequence=4#page=71*
4. *Cayamanda, K. J., Paunlagui, M., Baconguis, R., & Quimbo, M. A. (2021). Vulnerability Profile and Risk Perception towards an Inclusive Disaster Risk Reduction for the Flood Vulnerable Communities of Davao City. International Review of Social Sciences Research, 1(1), 25–53.*
5. *Cayamanda, K. J., & Paunlagui, M. (2020, August). A Participatory Management Model for Flood-Risk Communication (PMMFRC) in Davao City, Philippines. ResearchGate. https://www.researchgate.net/publication/346078640_A_Participatory_Management_Model_for_Flood-Risk_Communication_PMMFRC_in_Davao_City_Philippines*
6. *Chan, F., & Adekola, O. (2022). As sea levels rise, coastal megacities will need more than flood barriers. The Conversation. https://theconversation.com/as-sea-levels-rise-coastal-megacities-will-need-more-than-flood-barriers-176935*
7. *Charisna, N., Hamidah, & Adib, M. (2018). Coping Strategies for the Flood Disaster Practiced by the Pekauman Community in Sidoarjo Regency. Www.scitepress.org. https://www.scitepress.org/Papers/2018/75524/75524.pdf*
8. *Chechina, M., Neveux, Y., Parkins, J., & Hamann, A. (2022). Balancing Conservation and Livelihoods: A Study of Forest-dependent Communities in the Philippines. Jstor.org. https://www.jstor.org/page-scan-delivery/get-page-scan/26500656/0*
9. *https://doi.org/10.53378/346474*
10. *Cherry, K. E., Calamia, M., Elliott, E. M., & Nguyen, Q. P. (2020). Adult Age Differences in Coping Strategies After the 2016 Flood. Innovation in Aging, 4(Supplement_1), 437–437. https://doi.org/10.1093/geroni/igaa057.1412*
11. *Chioma, O., Chitakira, M., Olanrewaju, O., & Louw, E. (2019). Impacts of flood disasters in Nigeria: A critical evaluation of health implications and management. Jàmbá: Journal of Disaster Risk Studies, 11(1). https://doi.org/10.4102/jamba.v11i1.557*
12. *Cobley, D. S. (2015). Typhoon Haiyan One Year On: Disability, Poverty and Participation in the Philippines. Repositoriocdpd.net. https://doi.org/http://repositoriocdpd.net:8080/handle/123456789/1654*
13. *Danso, S. Y., & Addo, I. Y. (2016). Coping strategies of households affected by*
14. *flooding: A case study of Sekondi-Takoradi Metropolis in Ghana. Urban Water Journal, 14(5), 539–545. https://doi.org/10.1080/1573062x.2016.1176223*
15. *Dariagan, J. D., Atando, R. B., & Asis, J. L. B. (2020). Disaster preparedness of local governments in Panay Island, Philippines. Natural Hazards. https://doi.org/10.1007/s11069-020-04383-0*
16. *Donald, D. (2017). Positive Effects of Floods. Sciencing. https://sciencing.com/positive-effects-of-floods-12489990.html*
17. *Dube, E., Mtapuri, O., & Matunhu, J. (2018). Flooding and poverty: Two interrelated social problems impacting rural development in Tsholotsho district of Matabeleland North province in Zimbabwe. Jàmbá: Journal of Disaster Risk Studies, 10(1). https://doi.org/10.4102/jamba.v10i1.455*

18. *Eadie, P., Atienza, M. E., & Tan-Mullins, M. (2020). Livelihood and vulnerability in the wake of Typhoon Yolanda: lessons of community and resilience. Natural Hazards. https://doi.org/10.1007/s11069-020-03984-z*
19. *Flood risk and flood risk management | Local Government Association. (n.d.). Www.local.gov.uk. Retrieved June 26, 2022, from https://www.local.gov.uk/topics/severe-weather/flooding/flood-and-coastal-erosion-risk-management/flood-risk-and-flood-risk?fbclid=IwAR1uT5KCTlgucK2bww0aPHTlHqtjohkJCNYW9lEkb2oYCq6T8DtMVQ8W7Eo*
20. *Gabrysch, S., Waid, J. L., Wendt, A. S., Müller, A. A., Kader, A., & Gosh, U. (2018). Nutritional effects of flooding due to unseasonably early monsoon rainfall in Bangladesh: a cross-sectional study in an ongoing cluster-randomised trial. The Lancet Planetary Health, 2, S3. https://doi.org/10.1016/S2542-5196(18)30088-3*
21. *Germelina, C., & Lacorte, G. (2022, April 8). 12,000 residents displaced by floods in Davao region. INQUIRER.net. https://newsinfo.inquirer.net/1579994/12000-residents-displaced-by-floods-in-davao-region*
22. *Gonzales, C. (2020, November 8). IN PHOTOS: Looking back at Super Typhoon Yolanda's onslaught in 2013. INQUIRER.net. https://newsinfo.inquirer.net/1357898/in-photos-looking-back-at-super-typhoon-yolandas-onslaught-in-2013*
23. *Hara, Y., Ohsugi, T., Tsuchiya, K., Murakami, A., & Palijon, A. M. (2018). Post-disaster recovery linked with pre-disaster land development and damage density of Typhoon Yolanda: Toward better land-use planning in Tacloban City, the Philippines. Journal of Environmental Information Science, 2017(2), 1–12. https://doi.org/10.11492/ceispapersen.2017.2_1*
24. *Hemmati, M., Ellingwood, B., & Mahmoud, H. (2020, March 10). The Role of Urban Growth in Resilience of Communities Under Flood Risk. Advancing Earth and Space Science. https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2019EF001382?fbclid=IwAR3kD*
25. *Horiguchi, H., & Nakazawa, M. (2020). Long-Lasting Effects of the 2013 Yolanda Typhoon on Overall Health of Mothers and Children. Disaster Medicine and Public Health Preparedness, 1–8. https://doi.org/10.1017/dmp.2020.40*
26. *Koliou, M., van de Lindt, J. W., McAllister, T. P., Ellingwood, B. R., Dillard, M., & Cutler, H. (2018). State of the research in community resilience: progress and challenges. Sustainable and Resilient Infrastructure, 5(3), 131–151. https://doi.org/10.1080/23789689.2017.1418547*
27. *Kousky, C. (2016). Impacts of Natural Disasters on Children. The Future of Children, 26(1), 73–92. https://doi.org/10.1353/foc.2016.0004*
28. *https://kidshealth.org/en/parents/natural-disaster.html*
29. *Lai, B., & Greca, A. (2020). Understanding the Impacts of Natural Disasters on Children | Society for Research in Child Development SRCD. Www.srcd.org. https://www.srcd.org/research/understanding-impacts-natural-disasters-children?fbclid=IwAR3K9w6Xr_sSGAnn2KbDycSBwjjqgxc2wWhEVP7zCtfprxE8nYA2t6CWsl0*
30. *Learning from Typhoon Yolanda. (n.d.). https://ndrrmc.gov.ph/attachments/article/2926/Y_It_Happened.pdf*
31. *Llemit, R. L. (2022, April 1). 4 areas in Davao Region now under Alert Level 1. SUNSTAR. https://www.sunstar.com.ph/article/1925355/davao/local-news/4-areas-in-davao-region-now-under-alert-level-1*
32. *Mendoza, J. N. <1988>. (2020). MENDOZA, JIMLEA NADEZHDA Local Ecological Knowledge of fishermen as a basis for sustainable fisheries management: case study of Mabato-Asufre Pangil, Laguna Philippines. 157.138.7.91. http://157.138.7.91/handle/10579/17591*
33. *Mensah, H., & Ahadzie, D. K. (2020). Causes, impacts and coping strategies of*
34. *floods in Ghana: a systematic review. SN Applied Sciences, 2(5). https://doi.org/10.1007/s42452-020-2548-z*
35. *Najafi, M., Ardalan, A., Akbani, A. B., & Noorbala, A. A. (2017, September). The Theory of Planned Behavior and Disaster Preparedness. ResearchGate. https://www.researchgate.net/publication/320387199_The_Theory_of_Planned_Behavior_and_Disaster_Preparedness*
36. *Natural Disasters: How Families Can Help (for Parents) - Nemours KidsHealth.*
37. *(n.d.). Kidshealth.org. Stephenson, E. and DeLongis, A. (2020). Coping Strategies. In The Wiley*
38. *Encyclopedia of Health Psychology (eds K. Sweeny, M.L. Robbins and L.M. Cohen). https://doi.org/10.1002/9781119057840.ch50*
39. *Park, J., & Hong, I. (2020). Innovative Solutions for Climate-Resilient Flood Management in the Poorer and Vulnerable Province of Leyte, The Philippines. Advances in Hydroinformatics, 593–605. https://doi.org/10.1007/978-981-15-5436-0_46*
40. *Paterson, D., Wright, H., & Harris, P. (2018). Health Risks of Flood Disasters. Clinical Infectious Diseases, 67(9), 1450–1454. https://doi.org/10.1093/cid/ciy227*
41. *Philip, V., & Miano, M. (2020, November). A SUSTAINABLE MITIGATION DESIGN RECOMMENDATION FOR FLOOD PRONE AREAS IN NHA BANGKAL, DAVAO CITY. ResearchGate. https://www.researchgate.net/publication/346463011_A_SUSTAINABLE_MITIGATION_DESIGN_RECOMMENDATION_FOR_FLOOD_PRONE_AREAS_IN_NHA_BANGKAL_DAVAO_CITY?fbclid=IwAR2JBNHcbJw7bSse_IbCuTg5g5NNFo2oM19z-h1dEZi06N49nhR9i9o4r2E*
42. *Philippines | ReliefWeb. (n.d.). Reliefweb.int. Retrieved June 26, 2022, from https://reliefweb.int/country/phl*
43. *Philippines: Typhoon Vamco (Ulysses) Snapshot (As of 12 November 2020) - Philippines. (2020, November 12). ReliefWeb. https://reliefweb.int/report/philippines/philippines-typhoon-vamco-ulysses-snapshot-12-november-2020*

44. *Protecting people and communities from the risk of floods in Metro Manila. (2021, June 18). Www.preventionweb.net. https://www.preventionweb.net/news/protecting-people-and-communities-risk-floods-metro-manila?fbclid=IwAR3UT3dpqMjiVM61WdqmMJS5QPv7Aaa-RW5YFfTYkBzZyTgYimrmv_mdKhM*
45. *Puzyreva, K., Henning, Z., Schelwald, R., Rassman, H., Borgnino, E., de Beus, P., Casartelli, S., & Leon, D. (2022). Professionalization of community engagement in flood risk management: Insights from four European countries. International Journal of Disaster Risk Reduction, 71, 102811. https://doi.org/10.1016/j.ijdrr.2022.102811*
46. *Results in Resilience: Mainstreaming Disaster Resilience in Vietnam | GFDRR. (2018, April 2). Www.gfdrr.org. https://www.gfdrr.org/en/publication/results-resilience-mainstreaming-disaster-resilience-vietnam*
47. *Save the Children Philippines calls for stronger disaster preparedness for kids - Philippines | ReliefWeb. (2019, July 19). Reliefweb.int.https://reliefweb.int/report/philippines/save-children-philippines-calls-stronger-disaster-preparedness-kids?fbclid=IwAR3UT3dpqMjiVM61WdqmMJS5QPv7Aaa-RW5YFfTYkBzZyTgYimrmv_mdKhM*
48. *Sharma, R. (2021). Community Based Flood Risk Management: Local Knowledge and Actor's Involvement Approach from Lower Karnali River Basin of Nepal. Journal of Geoscience and Environment Protection, 09(06), 35–65. https://doi.org/10.4236/gep.2021.96003*
49. *Slavíková, L., Hartmann, T., & Thaler, T. (2020). Financial schemes for resilient flood recovery. Environmental Hazards, 19(3), 223–227. https://doi.org/10.1080/17477891.2019.1703624*
50. *Substance Abuse and Mental Health Services Administration. (2018). SAMHSA https://www.samhsa.gov/sites/default/files/srb-childrenyouth-8-22-18.pdf*
51. *Tellman, B., Sullivan, J. A., Kuhn, C., Kettner, A. J., Doyle, C. S., Brakenridge, G. R., Erickson, T. A., & Slayback, D. A. (2021). Satellite imaging reveals increased proportion of population exposed to floods. Nature, 596(7870), 80–86. https://doi.org/10.1038/s41586-021-03695-w b6Qbtbuje_EeiTHfFsCeCUQ9BVQCTnGsxyFTNbV7tf0MeDHXxAMTEo*
52. *The Theory of Planned Behavior. (n.d.). Sphweb.bumc.bu.edu. Retrieved July 10, 2022, from https://sphweb.bumc.bu.edu/otlt/mph-modules/sb/behavioralchangetheories/BehavioralChangeTheories3.html?fbclid=IwAR1OuYbnuwLR6w1whfhcEjew0LVx7t1KncdBXGAroQMPMloYfBYrJcpyd7g*
53. *Tripathi, R. (2018, March 22). Community-based Approaches to Flood Management in Thailand and Lao People's Democratic Republic. Public.wmo.int. https://public.wmo.int/en/resources/bulletin/community-based-approaches-flood-management-thailand-and-lao-peoples-democratic?fbclid=IwAR3yubfoR89L-BOl_Khj6Bg5-9fVwhXn5smiYeWJ3clSm4plHL1fjwLy_O4*
54. *Tripathy, S. S., Bhatia, U., Mohanty, M., Karmakar, S., & Ghosh, S. (2021). Flood evacuation during pandemic: a multi-objective framework to handle compound hazard. Environmental Research Letters, 16(3), 034034. https://doi.org/10.1088/1748-9326/abda70*
55. *Trogrlic, R., Wright, G., Adeloye, A., Duncan, M., & Mwale, F. (2017, May 18). Taking stock of community-based flood risk management in Malawi: different stakeholders, different perspectives. Www.tandfonline.com.https://www.tandfonline.com/doi/abs/10.1080/17477891.2017.1381582?fbclid=IwAR0ynF2u-YOTeYnR92Qzfrl1_9MWDL5y5cEE6pFjlV2ZaNSbU6FzoqmMAJE*
56. *Zhong, S., Yang, L., Toloo, S., Wang, Z., Tong, S., Sun, X., Crompton, D., FitzGerald, G., & Huang, C. (2018). The long-term physical and psychological health impacts of flooding: A systematic mapping. Science of the Total Environment, 626, 165–194. https://doi.org/10.1016/j.scitotenv.2018.01.041*