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Knowledge, Awareness, and Practice on Natural Disasters among Residents of San Juan Baño Arayat, Pampanga

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ABSTRACT

The study aimed to find out the knowledge, awareness, and practice of natural disasters among the selected residents of Barangay San Juan Baño, Arayat, Pampanga. National Integrated Climate Change Database Information and Exchange System, Climate change is the long-term change in climate (i.e., temperature, rainfall, extreme weather, etc.). Scientific studies indicate that most global warming in recent decades is due to the great concentration of greenhouse gases (GHG) in the atmosphere, which is released mainly as a result of human activities. Causing numerous natural disasters affecting many communities. This study was conducted to determine the awareness of San Juan Baño, Arayat, Pampanga to natural disasters, specifically typhoons and landslides. The study was conducted on randomly selected residents of San Juan Baño, Arayat, Pampanga. A questionnaire survey was prepared to determine residents' awareness of natural disasters. A descriptive analysis of residents' responses was used to analyze the data. Based on the analyzed data, it can be mentioned that the majority of the respondents were aware of the following natural disasters such as drought, earthquakes, landslides, floods, extreme heat, wildfires, typhoons, hurricanes, viral epidemics, pest attacks and volcanic eruptions. In terms of respondents' awareness of typhoons, the majority believe that San Juan Baño, Arayat, Pampanga are prone to typhoons. In terms of Landslides, most of the responses fall under the "Agree" section that San Juan Baño, Arayat, Pampanga is prone to landslides causing road destruction, crop damages, destroying houses, power interruption, and death of family members.

INTRODUCTION

Climate change, which is a long-term change in temperature and typical weather patterns in an area, may make weather patterns less predictable. The entire world or a single area may be impacted by climate change. Fossil fuel consumption, including the use of coal, natural gas, and oil, is a significant factor in the current climate change. Burning these substances releases greenhouse gases into the atmosphere (National Geographic Society, 2019).

It is generally known that the Philippines, which ranks third out of 173 countries in terms of disaster risk, is incredibly susceptible to natural disasters (United Nations University- Institute for Environment and Human Security, 2011). The potential for loss of life, a reduction in health and standard of living, and potential harm to resources and services as a result of an already existing natural hazard are all factors that are taken into account

when calculating disaster risk (Tyson Brown, National Geographic Society).

Among the most commonly observed media headlines globally are tragic accounts of natural calamities like drought, heat waves, storm/cyclones, floods, and landslides. Since the 1970s, the Emergency Occurrences Database (EM-DAT) of the Center for Research on the Epidemiology of Disasters (CRED) has been keeping tabs on the losses and damages caused by disaster occurrences in various nations, as well as the expenses of economic harm. According to EM-DAT data (Warner and van der Geest, 2013) severe drought and storm disasters occurred between 1900 and 2014 in the least developed and less developing countries, where the population is less equipped to cope.

Within San Juan Baño Arayat Pampanga, there are various eco-tourism spots such as Tree House, Mt. Arayat National Park, 100 steps, and the famous view of Mt. Arayat. Therefore; this study aimed to assess the knowledge, awareness, and practice of the selected residents of San Juan Baño, Arayat, Pampanga specifically on typhoons and landslides which are prone and dramatically visible within the said Barangay.

MATERIALS AND METHODS

The locale of the study was conducted in Barangay San Juan Baño, Arayat Pampanga San Juan Baño.

The research was conducted using a quota random sample method of every household in San Juan Baño, Arayat Pampanga. Quota random selection will be conducted among all households in the Barangay who are 18 years old or older. The said Barangay will be presented with a list of the households' respondents.

There are 7 purok and 1,839 total households in the Barangay, the respondents of this study are thirty percent (%) of the 553 household heads in barangay San Juan Baño, Arayat Pampanga and the barangay officials. This study used the Quota Random Sampling Method in determining the sample.

The primary data will be obtained from 553 households of Barangay San Juan Baño Arayat, Pampanga, while the secondary data will come from barangay officials. Interview questions and face-to-face surveys will be used to gather data. Every question in the survey will be analyzed and interpreted. Each response on the questionnaire will be assigned a numerical value, and the computed mean will reveal the respondents' level of knowledge, awareness, and practice.

RESULTS AND DISCUSSION

General Knowledge and Awareness of Natural Disasters

In average (Table 1), the results of the study showed that 66.23 % of the total respondents are aware and knowledgeable on different disasters such as: Drought; earthquakes, landslides, floods, typhoons, pest attacks and etc. This means that the majority of respondents are knowledgeable of the above-mentioned natural disasters within the environment. The majority of people relate to disasters through personal experience, knowledge, the balance of benefits and costs, and trust in other societal elements, according to Aekerlof et al. (2006).

This holds true for Ahmad et al. (2017) study, which demonstrates disaster awareness among the pupils in the Ganderbal region based on an analysis of the data gathered, and shows that every student included in the sample has some understanding of catastrophes.

People are seriously at risk from disasters like floods, earthquakes, and fires, among others. One strategy for minimizing the effects of disasters is disaster education, which includes instruction on preparedness, mitigation, and risk management measures (Smith, 1993); (Mulyasari et al, 2011) a greater comprehension of disaster knowledge and awareness would promote advancements in disaster management planning.

For individuals to be able to handle the negative effects of natural and man-made disasters, it is essential to raise their awareness of and attitude toward such events. We must acquire knowledge, skills, and values at all levels if we are to be properly informed about disasters and prepared for them. The goal of disaster education, according to the 2005-2015 Hyogo Framework for Action (Basabe, 2013), is "to establish a culture of safety and resilience at all levels," in order to lessen the negative social and economic effects of hazards.

Table 1: General Knowledge and Awareness of Natural Disasters

Awareness	Yes (%)	No (%)	I Don't Know (%)
Drought	85.53	9.04	5.42
Earthquake	78.3	13.92	7.78
Landslide	70.52	20.07	9.4
Flood	75.95	15.01	9.04
Extreme Heat	65.1	24.41	10.49
Wildfire	50.27	22.42	27.31
Typhoon	75.59	16.46	7.96
Hurricane	53.16	20.43	26.4
Viral epidemic	50.81	27.31	21.88
Pest attacks	53.89	28.21	17.9
Volcanic eruption	69.44	19.17	11.39
Average	66.23%	19.68%	14.09%

Knowledge and Awareness of Typhoon

Respondents from Brgy. San Juan. Bano Arayat agrees that their Barangay, the Pampanga, and the Philippines are prone to Typhoon (Table 2). They are also aware that typhoons can cause landslides, damage crops, destroy houses, spread illness, diseases, power interruption, and possibly death. With an average of 95.49% awareness of typhoon causes.

Effective risk communication methods must take into account the public's awareness of dangers from natural disasters like typhoons. Recent studies have emphasized more and more how important it is for people to understand natural disasters and how risky they are. According to Chinese studies, people who live in typhoon-prone areas are more conscious of the risk of a disaster than the general population. Residents' risk awareness and preparedness knowledge were also favorably correlated with their coping strategies. People with prior experience in southern Thailand have high risk perceptions, which are manifested as a heightened fear of typhoons and a propensity to take impending disasters seriously, according to a study.

Typhoons are considered to be extremely devastating natural hazards worldwide. There are seven to eight typhoons on average landing in the Philippines each year, which makes the Philippines one of the countries that were hit most frequently by typhoons.

Studies have reported that the impact of a typhoon disaster depends on the intensity and strength of the typhoon, which is also linked with the precautionary concerns and knowledge of local residents. Lack of attention to disaster warnings might lead to significant damage and bring risks of typhoon-related injuries even facing a low-risk typhoon, which suggests a need to pay attention to typhoon disaster prevention, regardless of the intensity of storms.

Additionally, data on disaster awareness reveals that 93.3% of respondents give typhoon disaster avoidance a lot of thought. And among the respondents, 89.7% believed that training on preventing typhoon disasters was important, with 18.1% indicating a considerable need for it; 83.2% said they would participate in a formal program (Torani et al. 2019).

Knowledge and Awareness of Landslides

The Philippines,Pampanga, and Brgy San Juan Bano were also prone to Landslides as evidenced by the respondent's awareness of Landslides garnering 90.47%. It was also shown in Table 3 that landslides can cause road destruction, and community and houses damages, which may also cause the death of a family member.

Table 2: Knowledge and Awareness of Typhoon

Typhoon knowledge and awareness	AGREE (%)	DISAGREE (%)
Philippines is prone to typhoons.	96.75	3.25
Pampanga is prone to typhoons.	94.39	5.61
Our Barangay is prone to typhoons	94.75	5.25
I am aware of the weather forecast symbols/terms used by PAGASA for appropriate response.	95.11	4.89
Typhoons can cause landslides.	96.38	3.62
Typhoons can damage crops.	95.3	4.7
A typhoon can destroy houses and buildings.	96.02	3.98
A typhoon can spread disease and illness.	95.12	4.88
A typhoon can result in the death of a family member.	94.04	5.96
Typhoons can cause power interruption/ outrages.	95.47	4.52
Climate change causes an increasing number of typhoons.	96.39	3.61
PAGASA and NDRRMC disseminate Typhoon Public Information via radio, social media, television and SMS blasts	96.2	3.8
Average	95.49%	4.51%

Source of Information on Natural Disasters

Shown in Table 4 is how respondents get information about an approaching typhoon and the danger of a landslide in their barangay. Out of the five hundred fifty-three (553) respondents, 5% answered Newspaper, 37.97% answered Television, 15.55% answered Barangay announcements, 7.05% answered Radio, 5.42% answered Cellphone, 17.54% answered social media, 7.05% answered Friends and 4.52% answered others. The majority of the respondents were under Television with a total of 210 counts. Based on Leelawat et al., 2013, study found that the most preferred method for officials to announce disaster warnings was TV for any period of time.

Table 3: Knowledge and Awareness of Landslides

Landslides knowledge and awareness	AGREE (%)	DISAGREE (%)
The Philippines is prone to landslides.	95.66	4.34
Pampanga is prone to landslides.	87.53	12.47
Our Barangay is prone to landslides.	86.26	13.74
Landslides are one of the causes of Typhoons.	91.14	8.86
Landslides are caused by earthquakes.	88.24	11.76
Landslides can cause damage to communities.	91.32	8.68
Landslides can cause damage to roads.	91.32	8.68
Landslides can destroy houses and buildings.	92.05	7.95
A landslide can result in the death of a family member.	88.42	11.57
Landslide can cause power interruption/ outrages.	89.69	10.31
PAGASA, PHIVOLCS and NDRRMC disseminate Landslide Public Information via radio, social media, television and SMS blasts.	93.49	6.51
Average	90.47%	9.53%

Preparedness in Case of an Emergency

A total of 45.99% of the respondent only prepared emergency activities such as Disaster supply kits, stored food and water, flashlights and batteries, medical supplies, and other essential emergency kits. And about 29.73% are planning to and are in the process of preparing these materials as shown in Table 5.

Preparedness of a Barangay in an event of a disaster

A total of 90.47% believed that the barangay should have evacuation centers, Health centers, trained personnel on first aid, Disaster plans, and licensed medical professionals.

Table 4: Source of Information on Natural Disasters

Source of information	Percentage (%)
Newspaper	5.00
Television	37.97
Barangay Announcements/Seminar	15.55
Radio	7.05
Telephone	5.42
Social media	17.54
Friends	7.05
Others	4.52

Table 5: Preparedness in case of an Emergency

Have you prepared the following in case of an emergency or disaster?	YES (%)	NO (%)	ON PROCESS (%)
Safe escape plan	49.73	13.38	36.89
Designated meeting place after Disaster occurrences	48.46	26.94	24.59
Disaster supply kit	47.2	21.7	31.1
Stored food and water	45.75	24.77	29.48
Stored batteries and flashlights	39.78	28.03	32.19
Stored medical supplies	43.94	27.12	28.93
Stocked up on essential hygiene and sanitation supplies	44.67	29.48	25.86
Money	55.33	19.35	25.32
Emergency Hotlines	46.65	27.31	26.04
Plan for Evacuation	38.34	24.77	36.89
Average	45.99	24.29	29.73

Preparedness of a Barangay in an event of a disaster

In terms of willingness, a total of 42.72% of the respondents are willing to participate as volunteers with the LGU, Red Cross, and Neighboring groups in case of emergencies. 35.17% are partially and are in the process of volunteering.

Implications

The knowledge, awareness and practice of natural disasters among the selected residents of barangay San Juan Baño Arayat Pampanga about typhoons and landslides. In conclusion, the respondents were knowledgeable and aware of natural disasters. Results

show that Barangay San Juan Baño is involved in actions that specifically contribute to practices and preparedness for natural disasters. Therefore, strict implementation of rules and regulations is highly required, and cooperation and participation in every seminar conducted in the barangay about natural disaster preparedness programs with the collaboration of the LGU. It also shows the value of researching local knowledge, practices, and understanding of natural disasters. Similar findings were also found in Govindasamy's study on residents' knowledge of landslides Habibah and Vijaya, 2012. An investigation of residents' knowledge of landslide disaster issues revealed that they gave their knowledge an average score of 63% out of 100%, which is a reasonable result for locals.

Table 6: Preparedness of a Barangay in the event of a disaster

Barangay Preparedness in the Event of a Disaster	AGREE (%)	DISAGREE (%)
There is a designated Evacuation center for public safety in the barangay	99.10	0.9
Health center is available for medical purposes.	99.46	0.54
Barangay Hall and covered courts are available as an	96.39	3.61
There are trained personnel about the basics of first aid.	94.03	5.97
Disaster plans are well-designated, properly coordinated and disseminated.	94.21	5.79
There are trained and licensed medical personnel to treat illness/injuries.	95.3	4.7
Average	90.47	9.53

It matters a lot how households react to natural calamities. According to Kapucu (2008), if people aren't ready, then no one is. Sutton and Tierney (2016), provided an overview of the critical level of preparation in a home. These metrics include risk awareness, written and informal agreements, and reaction plans. They also include medical resources, life safety and property protection, and the start of the healing process. In addition, Levac et al. (2012) evaluated the literature on disaster preparedness and found that people and families are motivated to make emergency plans based on their socioeconomic and demographic characteristics.

Table 7: Willingness of the Household in case of an Emergencies

Our household would be willing to:	YES (%)	NO (%)	ON PROCESS (%)
Volunteer during a disaster event	57.69	20.43	21.88
Volunteer with the LGU	30.02	22.78	47.2
Volunteer with Red Cross	26.4	22.06	51.54
Volunteer with a neighborhood group	56.78	23.15	20.07
Average	**42.72**	**22.11**	**35.17**

Furthermore, it can be concluded that the residents in Barangay San Juan Baño, Arayat, Pampanga are highly prepared in case a disaster occurs particularly a typhoon & landslide. Preparedness is the level of readiness based on undergone planning, training, and exercises to respond to an emergency (Col, 2007). A well-prepared home may significantly lessen the effects of disasters (Leelawat, et al, 2013). It is believed that strengthening local preparation is an essential part of an effective reaction and recovery (Levac J, et al., 2012). Investigating a household's preparedness for dealing with natural disasters is vital. When a crisis happens, families must be accountable for own needs as well as those of their neighbors (Basabe, 2013).

It can be inferred that the respondents are ready to help in the event of a crisis, particularly in the LGU. The government is crucial in aiding the community's preparedness for some calamities. The fundamental duties of the local government in assisting the community during a disaster were articulated by Kusumasari, et al. (2010). On the other hand, people' desire to assist government agencies with disaster prevention, self-rescue and mutual rescue activities, and involvement in neighborhood catastrophe reduction efforts. The public's willingness to help the government after a disaster is generally positive, and participants are generally willing to provide disaster aid.

Recommendations

The study recommends providing seminars and alert systems especially on natural disasters for the entirety of the residents of barangay San Juan Baño Arayat Pampanga as their target audience for the community to gain more knowledge about natural disasters.

Due to the results obtained from the study, the researcher recommends to do the following suggestion:

- Conducting and providing seminars on alert systems checking and monitoring of Mount Arayat through the collaboration of the MDRRMO and PENRO.
- Preparedness to establish safe areas in barangay for different types of emergencies.
- Show each family member how and where to shut off utilities (water, gas, electricity).
- Learn about the signs and warning systems in the community (sirens, text messages, symbols/terms used in weather forecasts).

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