DISASTER RISK PREPAREDNESS AMONG PEOPLE IN ISOLATED AREAS IN THE PROVINCE OF ZAMBOANGA DEL NORTE

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Abstract

This study aimed to assess the disaster risk preparedness among people in isolated areas in Zamboanga del Norte. It utilized the descriptive method of research through the use of a questionnaire on disaster preparedness and documentary analysis. Results showed that a high percentage of the respondents are not prepared enough for the unpredictable outbreak of some disasters such as tsunami, volcanic eruption, tropical cyclone, storm surge, floods, thunderstorm, and tornado. A significant difference existed on the preparedness of the respondents for the risks of the different disasters when grouped as to monthly income and length of residency which implied that those who have a good income have more advantage compared to those who have a very low income and that the respondents' preparedness is limited to their length of residence in a particular place The result further showed that no significant difference existed when respondents were grouped according to civil status and home which means that whether the respondents are single or married their preparedness is just the same and that the respondents' preparedness are not influenced by whether owning or renting their houses. There is, therefore, a need for the provincial government to address this specific issue on disaster risk preparedness among isolated communities through creating education programs, conducting seminars, and establishing long-term monitoring procedures.

Key words: *disaster, risk, preparedness, people in isolated areas, Zamboanga del Norte*

Introduction

A disaster is a serious disruption of the functioning of society, causing widespread human, material or environmental losses which exceed the ability of affected society to cope on its own resources (UNDHA 2001).

Contributing to saving lives, disaster preparedness speeds up recovery and reduces the impact of future hazards. Specifically, it refers to activities and measures taken in advance to ensure effective response to the impact of disasters, including the issuance of timely and effective early warnings and the temporary removal of people and property from a threatened location(ISDR 2002). It is proof that people are far from helpless when facing hazards with the appropriate local knowledge, practice and response mechanisms (http://ec.europa.eu).

The National Governor's Association designed a phase of disaster model to help emergency managers prepare for and respond to a disaster, also known as the 'life cycle' of comprehensive emergency management. The model helps frame issues related to disaster preparedness as well as economic and business recovery after a disaster. Each phase has particular needs, requires distinct tools, strategies, and resources and faces

different challenges. The four phases of disaster are: 1) mitigation which involves steps to reduce vulnerability to disaster impacts such as injuries and loss of life and property. This might involve changes in local building codes to fortify buildings; revised zoning and land use management; strengthening of public infrastructure; and other efforts to make the community more resilient to a catastrophic event; 2) preparedness which focuses on understanding how a disaster might impact the community and how education, outreach and training can build capacity to respond to and recover from a disaster. This may include engaging the business community, pre-disaster strategic planning, and other logistical readiness activities. The disaster preparedness activities guide provides more information on how to better prepare an organization and the business community for a disaster; 3) response which addresses immediate threats presented by the disaster, including saving lives, meeting humanitarian needs (food, shelter, clothing, public health and safety), clean-up, damage assessment, and the start of resource distribution. As the response period progresses, focus shifts from dealing with immediate emergency issues to conducting repairs, restoring utilities, establishing operations for public services (including permitting), and finishing the clean-up process; 4) recovery which is the fourth phase of disaster and is the restoration of all aspects of the disaster's impact on a community and the return of the local economy to some sense of normalcy. By this time, the impacted region has achieved a degree of physical, environmental, economic and social stability (restoreyoureconomy.org).

Ultimately, disaster management aims to reduce the impact of disasters. The ways of achieving this have varied and evolved over time. The earliest and still predominate approach is for agencies to provide relief to those affected once a disaster has happened. Rescue assistance, medical support, food and water supply are vital for saving lives which prevent further harm. However, responding to a disaster can only do so much, and a level of loss is almost inevitable before a rescue operation can even arrive. As well as wasting precious time, relying on external support is not desirable for communities at risk of a disaster, particularly as they often have a capacity to deal with a disaster already.

An alternative viewpoint, informed by a considerable volume of research, emphasizes the importance of communities and local organizations in disaster risk management. The rationale for community-based disaster risk management that it responds to local problems and needs, capitalizes on local knowledge and expertise, is cost-effective, improves the likelihood of sustainability through genuine 'ownership' of projects, strengthens community technical and organizational capacities, and empowers people by enabling them to tackle these and other challenges. Local people and organizations are the main actors in risk reduction and disaster response in any case (http://en.wikipedia.org).Community participation has been recognized as the additional element in disaster management necessary to reverse the worldwide trend of increasing frequency and loss from disasters, build a culture of safety and disaster resilient communities, and ensure sustainable development for all (Lorna P. Victoria, 2003).

In connection with the disasters that the Philippines, which shares with several Asian countries the unwelcome distinction of being one of the world's most disaster-prone countries (Lorna P. Victoria, 2003) due to its geographical and meteorological conditions (Asian Disaster Reduction Center), has experienced in the past few months, there is a

need to assess whether the people in the province of Zamboanga del Norte, particularly the people who live in remote places, are well prepared for any outbreak of disasters.

Hence, this study was conducted to look into the disaster risk preparedness among the people in isolated areas in the Province of Zamboanga del Norte. The result of the study would provide Jose Rizal Memorial State University information that would serve as a basis whether to conduct extension programs that would encourage disaster risk preparedness among people in isolated areas. Moreover, the outcome of the study would provide the provincial, municipal and local governments insights about the needs of those people particularly on disaster risk preparedness and to collaborate in order to provide those people education, outreach and training to build capacity to respond to and recover from a disaster and, therefore, to ensure sustainable social and economic development.

Methods and Materials

The study utilized the descriptive-survey method of research through the use of a questionnaire on disaster preparedness and documentary analysis. The questionnaire consisted of items on the natural and human-induced disasters and on the profile of the respondents. A total of 397 respondents, in which 167 were from the Municipality of Siayan, 185 from the Municipality of Sindangan, and 45 from the Municipality of were interviewed in the study. Frequency count and percentage were used to summarize the respondents' profile and preparedness on the risk of natural and human-induced disasters. The Chi-square test was used to determine whether the profile of the respondents had a bearing to their preparedness for the risk of natural and human-induced disasters.

Results

Profile of the Respondents. Table 1 summarizes the profile of the respondents. A number of the respondents were 20 years old and below (35.5%). As to gender, there was only a very slight difference on the number of male respondents (50.4 %) and female respondents (49.6). The highest educational attainment of the majority of the respondents was elementary level (50.4 %). On the other hand, 28.0 % of the respondents were employed while 72.0% were unemployed. All of the respondents had a gross monthly income of less than P 10,000. Moreover, 49.6 % were single and 50.4 % were married. Furthermore, most of the respondents live in their locality for more than 20 years and 94 % of them own their houses.

Table 1 Profile of the Respondents

Variables		Frequency	Percent
Age	20 years old & below	141	35.5
	21 – 40	173	43.6
	41 – 60	57	14.4
	61-80	16	4.0
	81 and above	10	2.5
	Total	**397**	**100.0**
Gender	Male	200	50.4
	Female	197	49.6

Variables		Frequency	Percent
	Total	**397**	**100.0**
Educational Level	No Education	44	11.1
	Elementary	206	51.9
	High School	142	35.8
	College	5	1.3
	Total	**397**	**100.0**
Occupation	Employed	111	28.0
	Unemployed	286	72.0
	Total	**397**	**100.0**
Monthly Family Income	Less than P10,000	397	100.0
	Total	**397**	**100.0**
Civil Status	Single	197	49.6
	Married	200	50.4
	Total	**397**	**100.0**
Residency	Less than one year	5	1.3
	1 – 5 years	23	5.8
	6 – 9 years	14	3.5
	10 – 19 years	115	29.0
	20 years or more	240	60.5
	Total	**397**	**100.0**
Home	Own	373	94.0
	Rent	9	2.3
	Adopted	15	3.8
	Total	**397**	**100.0**

Disaster Risk Preparedness Among People on Isolated Areas in Zamboanga del Norte. Table 2shows the disaster risk preparedness of people in isolated areas in Zamboanga del Norte. Earthquake, landslide, tropical cyclone, floods, thunderstorm, and extreme climatic variability are common natural disasters experienced by people in Zamboanga del Norte except tsunami and volcanic eruption. Fortunately, tsunami has never been experienced by the residence just like as volcanic eruptions since there is no active volcano in Zamboanga del Norte. However, the knowledge on these common natural disasters did not reach the indigenous people who are considered as vulnerable. Table 1 reflected that there is a high percentage of respondents who are not prepared enough for the unpredictable outbreak of some disasters (tsunami – 98.5%, volcanic eruption- 81.4%, tropical cyclone – 92.4%, storm surge – 84.6%, floods – 81.4%, thunderstorm – 95.0%, tornado, 94.2%). Among the identified natural disasters, they are only more prepared on extreme climatic variability (218 or 54.91%), landslide (191 or 48.1%), and earthquake (146 or 36.8%). Looking closely at the table, it shows that extremely climatic variability received the highest percentage of preparedness which is 54.9%, while tsunami got the lowest percentage which is 1.5%.Changes in the climate of the Province such as extreme heat and rain as well as undetermined wet and dry seasons have been experienced in the past years. They were also knowledgeable in terms of human-induced hazards (246 or 61.96%).

Table 2 The Disaster Risk Preparedness Among People on Isolated Areas in Zamboanga del Norte

Factors	Yes	Percent	No	Percent
Earthquake	146	36.8	251	63.2
Landslide	191	48.1	206	51.9
Tsunami	6	1.5	391	98.5
Volcanic Eruption	74	18.6	323	81.4
Tropical Cyclone	30	7.6	367	92.4
Storm Surge	61	15.4	336	84.6
Floods	74	18.6	323	81.4
Thunderstorm	20	5.0	377	95.0
Tornado	23	5.8	374	94.2
Extremely Climatic Variability	218	54.9	179	45.1
Human-Induced Hazards	114	28.7	283	71.3
Overall	**18**	**4.5**	**379**	**95.5**

Test of Difference of the Disaster Risk Preparedness Among People on Isolated Areas in Zamboanga del Norte in terms of Age and Gender. Table 3 shows the data on the test of difference on the disaster risk preparedness among people in isolated areas in Zamboanga del Norte when grouped by age and gender. As shown in the table, age is not a predictor of preparedness of the respondents for the risks of disasters. However, they differ as to their preparedness for earthquake, landslide, storm surge, thunderstorm, and extreme climate variability and human-induced disasters. The respondents are not knowledgeable enough on these disasters but the knowledge of those belonging within the age bracket of 20 years old and below and 21 – 40 years differed significantly. Their knowledge on tsunami, volcanic eruption, cyclones, floods, and tornado does not differ significantly since these disasters have not occurred in their locality. Floods, as well, are not common for them since they mostly lived on mountains or highlands.

Table 3 Test of Difference of the Disaster Risk Preparedness Among People in Isolated Areas in Zamboanga del Norte in Terms of Age and Gender

Factors	Age (X^2)	p-value	Interpretation	Gender (X^2)	p-value	Interpretation
Earthquake	15.499	0.004	Significant	0.009	0.926	Not Significant
Landslide	13.720	0.008	Significant	0.128	0.721	Not Significant
Tsunami	1.691	0.792	Not Significant	0.011	0.985	Not Significant
Volcanic Eruption	2.088	0.719	Not Significant	0.005	0.943	Not Significant
Tropical Cyclone	5.380	0.251	Not Significant	1.202	0.273	Not Significant
Storm Surge	10.483	0.033	Significant	5.299	0.021	Significant
Floods	5.088	0.278	Not Significant	3.960	0.041	Significant
Thunderstorm	15.330	0.004	Significant	1.801	0.180	Not Significant
Tornado	3.186	0.527	Not Significant	2.151	0.153	Not Significant
Extremely Climatic Variability	12.534	0.014	Significant	1.895	0.169	Not Significant
Human-Induced Hazards	27.125	0.000	Significant	0.325	0.569	Not Significant
Overall	**5.931**	**0.204**	**Not Significant**	0.202	0.653	**Not Significant**

Test of Difference of the Disaster Risk Preparedness Among People in Isolated Areas in Zamboanga del Norte in Terms of Education Level and Occupation. Table 4 presents the test of significant difference on the respondents' preparedness on natural and human-induced hazards in terms of their educational attainment and occupation.

It is clearly seen that although a significant difference does not exist on the respondents' preparedness on some natural disasters when they were grouped according to their educational level, still there is significant difference on their preparedness particularly on tsunami, cyclone, storm surge, and extreme climate variability. It reveals that the preparedness of an elementary education graduate differs from those who graduated in secondary education. This means that the preparedness of a person depends on the knowledge they have on these disasters which they obtained through education. As an individual go on to the higher level of education, his knowledge increases as well. Since disasters are threat to human lives, orientation of the students about the awareness and preparedness for their unpredictable occurrence becomes a part of the school program.

Moreover, a significant difference existed on the preparedness of the respondents when they were grouped as to their occupation on some disasters like earthquake, landslide, floods, and human-induced hazards. However, the result generally shows that occupation does not predict a difference on the disaster risk preparedness of the respondents.

Table 4 Test of Difference of the Disaster Risk Preparedness Among People in Isolated Areas in Zamboanga del Norte in Terms of Education Level and Occupation

Factors	Education Level (X^2)	p-value	Interpretation	Occupation (X^2)	p-value	Interpretation
Earthquake	4.349	0.226	Not Significant	7.978	0.005	Significant
Landslide	3.039	0.386	Not Significant	10.674	0.001	Significant
Tsunami	9.427	0.024	Significant	2.364	0.124	Not Significant
Volcanic Eruption	1.457	0.692	Not Significant	0.008	0.929	Not Significant
Tropical Cyclone	7.883	0.048	Significant	1.221	0.269	Not Significant
Storm Surge	11.802	0.008	Significant	0.898	0.343	Not Significant
Floods	3.682	0.298	Not Significant	4.406	0.036	Significant
Thunderstorm	3.301	0.348	Not Significant	3.373	0.066	Not Significant
Tornado	5.793	0.122	Not Significant	0.469	0.493	Not Significant
Extremely Climatic Variability	14.542	0.002	Significant	0.212	0.645	Not Significant
Human-Induced Hazards	5.025	0.170	Not Significant	4.034	0.045	Significant
Overall	2.688	0.442	**Not Significant**	2.657	0.103	**Not Significant**

Test of Difference of the Disaster Risk Preparedness Among People in Isolated Areas in Zamboanga del Norte in Terms of Monthly Family Income and Civil Status. Table 5 shows the test of difference on the preparedness of the respondents for the risks of the different disasters when grouped as to monthly income and civil status.

The table reflects that monthly family income, in general, is a predictor of difference on the respondents' preparedness. Among the disasters, only the respondent's preparedness for the disaster risk of landslide does not differ in terms of monthly family income. This is because they commonly experience landslides in their locality since the places they live in are prone to this disaster due to its geographical location.

On the other hand, the civil status of the respondents is not a predictor of difference on their preparedness for the disaster risks. This means that whether the respondents are single or married their preparedness is just the same.

Table 5 Test of Difference of the Disaster Risk Preparedness Among People in Isolated Areas in Zamboanga del Norte in Terms of Monthly Family Income and Civil Status

Factors	Monthly Fam Income (X^2)	p-value	Interpre-tation	Civil Status (X^2)	p-value	Interpre-tation
Earthquake	27.771	0.000	Significant	7.838	0.005	Significant
Landslide	0.567	0.452	Not Significant	3.859	0.049	Significant
Tsunami	373.36	0.000	Significant	6.185	0.013	Significant
Volcanic Eruption	156.17	0.000	Significant	0.920	0.338	Not Significant
Tropical Cyclone	286.07	0.000	Significant	3.771	0.052	Not Significant
Storm Surge	190.49	0.000	Significant	3.510	0.061	Not Significant
Floods	156.17	0.000	Significant	0.492	0.483	Not Significant
Thunderstorm	321.03	0.000	Significant	0.244	0.622	Not Significant
Tornado	310.33	0.000	Significant	10.627	0.001	Significant
Extremely Climatic Variability	3.831	0.050	Significant	12.007	0.001	Significant
Human-Induced Hazards	71.942	0.000	Significant	10.449	0.001	Significant
Overall	**328.26**	**0.000**	**Significant**	0.996	0.318	**Not Significant**

Test of Difference of the Disaster Risk Preparedness Among People in Isolated Areas in Zamboanga del Norte in Terms of Residency and Home. The length of residency of an individual in a certain place would give him enough knowledge about its nature. Table 6 shows the test of difference one the preparedness of the respondents in terms of length residency and home. The table reflects that a significant difference

existed on the preparedness of the respondents when grouped as to the length of residency. The place which frequently experiences floods would give the person the knowledge on the nature, characteristics, and causes as well as what to do in case such disaster may occur. Majority of the respondents have lived in the places which are prone to floods and landslides, for 20 years or more which showed that their experiences give them enough knowledge about these disasters, so they are more prepared whenever these disasters occur. Although Zamboanga del Norte did not experience volcanic eruption, but the respondents are knowledgeable about this hazard so they already are prepared for this disaster. The respondents' preparedness differed significantly as to the length of their residency. The respondents' knowledge on the disaster particular in their place for a period of his residence is different compared to those living in areas which do not experience the same. Their residence would also limit their experiences on disasters like flood, tsunami, storm surge, and tornado for those living on mountains while those living near the seashore or river would seldom experience landslide. On the other hand, their preparedness does not differ significantly when they were grouped according to ownership of their homes (owned, rented, adopted). This means that a person's awareness and preparedness are not influenced by the type of house they live in.

Table 6 Test of Difference of the Disaster Risk Preparedness Among People in Isolated Areas in Zamboanga del Norte in Terms of Residency and Home

Factors	Residency (X^2)	p-value	Interpretation	Home (X^2)	p-value	Interpretation
Earthquake	19.801	0.001	Significant	9.162	0.010	Significant
Landslide	9.136	0.058	Not Significant	15.479	0.000	Significant
Tsunami	25.454	0.000	Significant	0.392	0.822	Not Significant
Volcanic Eruption	6.112	0.191	Not Significant	5.852	0.054	Not Significant
Tropical Cyclone	16.207	0.003	Significant	2.088	0.352	Not Significant
Storm Surge	11.660	0.020	Significant	4.967	0.083	Not Significant
Floods	9.040	0.060	Not Significant	4.756	0.093	Not Significant
Thunderstorm	12.155	0.016	Significant	1.355	0.508	Not Significant
Tornado	23.129	0.000	Significant	1.571	0.456	Not Significant
Extremely Climatic Variability	23.196	0.000	Significant	31.110	0.000	Significant
Human-Induced Hazards	22.327	0.000	Significant	10.290	0.006	Significant
Overall	**13.571**	**0.009**	**Significant**	1.213	0.545	**Not Significant**

Discussion

The results of the study showed that majority of the respondents were 20 years old and below which comprised 50.4% of males and 49.6 % of females. The majority of the respondents reached the elementary level only which might be the cause of a very low employment status where 72% were unemployed. Further, all of the respondents had a gross monthly income of less than P 10,000 which means that they could not easily acquire sources of information particularly on disaster risk preparedness

Results showed that there is a high percentage of people in isolated areas in Zamboanga del Norte who are not prepared for the risks of the unpredictable outbreak of some disasters (tsunami – 98.5%, volcanic eruption- 81.4%, tropical cyclone – 92.4%, storm surge – 84.6%, floods – 81.4%, thunderstorm – 95.0%, tornado, 94.2%). Among the identified natural disasters, they are only more prepared on extreme climatic variability (218 or 54.91%), landslide (191 or 48.1%), and earthquake (146 or 36.8%). The study further showed that extreme climatic variability received the highest percentage of preparedness which is 54.9%, while tsunami got the lowest percentage which is 1.5%. Changes of the climate in the province of Zamboanga del Norte such as extreme heat and rain as well as undetermined wet and dry seasons had been experienced in the past years. Such experience might have given the respondents knowledge on this particular natural hazard and made them more aware and prepared for its possible occurrence. On the other hand, tsunami has ever been experience in Zamboang del Norte. This might be the reason why the respondents are least prepared for the occurrence of this natural disaster. They were also knowledgeable in terms of human-induced hazards which meant that they already have ideas on how to handle the risks of these disasters.

The result generally showed that age and gender are not predictors of the respondents' preparedness for disaster risk however the respondents differ as to their preparedness for some disasters. This means that although the older ones have a wider experience making them more knowledgeable compared to the younger ones, nowadays, the younger ones have more access to current trends and updated information. As to gender men were expected to be more aware and prepared since in our culture as the head of the family, the family members depend on them.

Educational attainment did not predict a difference on the preparedness of the respondents for disaster risk. However, there are some disasters on which they differ as to educational level and it reveals that the preparedness of an elementary graduate differs from those of a high school graduate. Likewise, occupation in general does not predict a difference on the disaster risk preparedness of the respondents.

A significant difference existed on the preparedness of the respondents for the risks of the different disasters when grouped as to monthly income. This means that those who have a good income have more advantage compared to those who have a very low income. People with a very low income could not easily buy sources of information to make them well prepared. On the other hand, no significant difference existed when respondents were grouped according to civil status which mean that whether the respondents are single or married their preparedness is just the same.

A significant difference existed on the preparedness of the respondents when grouped as to the length of residency. This means that the respondents' preparedness is limited to their length of residence in a particular place. Those who have been staying in their communities for a long time have more knowledge based on their experiences and therefore are more prepared compared to those who are new residents. On the other hand, their preparedness does not differ significantly when they were grouped according to ownership of theirhouses which means that a people's preparedness are not influenced by whether owning or renting their houses.

Therefore, people in isolated areas in Zamboanga del Norte should be encouraged to attain a higher level of education to increase their employability. Having a good monthly income would make them easily acquire different media as sources of information. Moreover, attaining a higher level of education would also mean increasing the knowledge, understanding, and awareness of the individuals in the society.

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