ISSN NO.2395-0692

IJAHMS International Journal of Arts, Humanities and Management Studies

Disaster Risk Reduction and Preparedness Basis for Intervention Program

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ABTRACT

This study mainly concerned to determine the level of effectiveness on disaster risk reduction preparedness of the municipality of Sindangan, province of Zamboanga del Norte, during the Calendar Year 2018.

The study involved the 44 passable barangays represented by the municipality DRRP team and LGU officials, Barangay DRRP Coordinators and Barangay Captains, School Administrators and School DRRP coordinators and the PTA Presidents as participants.

It utilized the descriptive comparative design of research to arrive at the main purpose of the study. Both descriptive and inferential statistics were used to obtain an accurate analysis and interpretation of the data gathered.

The findings disclosed that many of the participants were LGU officials, attained baccalaureate degree and attended local level of trainings related to DRRM.

Meanwhile, the types of disasters that likely to occur in the municipality of Sindangan were flood, landslide, fire, earthquake, typhoon and armed conflict.

Moreover, the level of effectiveness on Disaster Risk Reduction Preparedness in terms of Dissemination, Implementation and Resource utilization and organization and Operation was Very Effective as assessed by the LGU officials and School Officials, while the community assessed them as More Effective.

The study further revealed that there was a significant difference among the three groups of participants on the level of effectiveness on Disaster Risk Reduction Preparedness. In addition, a significant relationship existed between the profile of the participants and the level of effectiveness of Disaster Risk Reduction Preparedness.

Finally, the study recommends that the municipal disaster risk reduction management council officers may adopt the proposed flexible intervention program to improve the different aspects of disaster preparedness specifically the people in the barangay, that the LGU may allocate sufficient funding to each barangay to acquire the necessary materials as part of disaster intervention activities should be initiated in every barangay to insure a continuous improvement of disaster management strategies and policies for the people to internalize and that they can act instantly on their own initiative during emergency situations, and that further studies about disaster risk reduction management is encouraged among future researchers in order to improve and broaden disaster management knowledge and skills.

ISSN NO.2395-0692
IJAHMS International Journal of Arts, Humanities and Management Studies

KEYWORDS: *Disaster Preparedness, Risk Reduction, DRRM Program, Level of effectiveness, Philippines*

INTRODUCTION

Disaster can occur anytime and anywhere and whether manmade or natural the situation can be disastrous. Disasters have negatively affected humans since the dawn of our existence. In response, individuals and societies alike have made many attempts to decrease their expose to the consequences of the disasters, developing measures to address initial impact, regardless of the approach adopted all these efforts have the same goal (Coppola) [1]. Earthquakes, floods, drought and other natural hazards continue to cause tens of thousands of deaths, injuries and billions of dollars in economic losses each year around the world (Taabu) [2].

In the Philippines, the government has been working hard to reduce poverty among its people. It has initiated programs which can help alleviate the poor members of the society from the miserable life situation that they have. Yet, along these effort is the greatest factor that prevented the government to realize its goal, "the high frequency of natural disaster that occur in the country" which incurred damages on lives and properties of the people. In view with the above scenario, Republic Act (RA) No. 10121 otherwise known as "Philippine Disaster Risk Reduction Management Act of 2010" (PDRRM-2010) was enacted on May 27, 2010 to strengthen the Philippine disaster risk reduction system. It specifically provides for the development of policies and plans, and the implementation of actions and measures pertaining to all aspects of disaster risk reduction and early warning, building and awareness raising, reducing underlying factors, and preparedness for effective response and early recovery (Jurilla) [3].

Jurilla [3] added that with the impact of natural calamities like typhoon Frank, the earthquake in Bohol, last October 15, 2013, the flood in Ormoc City, and typhoon Yolanda (November, 2013) which had destroyed the lives and properties of the people especially in the Visayas which impede the progress of the society, it is therefore necessary for the national, regional and local government to have proper coordination in terms of disaster preparedness plans, mitigation, response and recovery programs for the victims of calamities.

Bayangos [4] emphasized that the implementation of DRRM in basic education is guided by DepEd's three major outcomes-Access, Quality and Governance. As a member of the National DRRM in basic education within the following thematic areas: Prevention and Mitigation; Preparedness; Response; and Recovery and Rehabilitation. With the issuance of DO #37, s 2015, The Department of Education is expected to guide schools in assessing, planning and implementing their specific prevention and mitigation, preparedness, response and recovery and rehabilitation intervention as expressed.

The enactment of R.A. 10121, otherwise known as the Philippines Disaster Act of 2010, has laid the foundation for disaster-preparedness and resilient communities able to sustain inclusive economic growth and the capacity to shield progress from natural and manmade calamities.

ISSN NO.2395-0692
IJAHMS International Journal of Arts, Humanities and Management Studies

Recently, the Municipal Government of Sindangan has focused its attention to poverty reduction as its poverty incidence is 73%. Meaning, out of every ten (10) persons in Sindangan, roughly seven (7) persons are living below poverty line.

These marginalized persons are the most vulnerable to calamities. They build their rickety houses on high risk areas on the banks of the rivers, on flood-prone areas, near the seashores, on hillsides likely to give way to landslides, close to national highways, and times between fault lines.

Disaster risk reduction and management and climate change adaption should therefore rooted and anchored on these poor vulnerable sectors of the society. In accordance with the disaster preparedness plan of the Municipality of Sindangan, a sound goal of the management is built which is "the Establishment of Sindangan of Disaster-Ready and Resilient Communities Adaptive to climate change.

With these conditions, the researcher was motivated to conduct a study on the effectiveness of the disaster risk reduction preparedness of the municipality of Sindangan, Province of Zamboanga del Norte with a focus on its effectiveness in terms of dissemination, implementation, and resource utilization and operation, in which comprehensive intervention program was proposed which may contribute to the effort of the municipal government of Sindangan, Zamboanga del Norte, Philippines in making DRRMC efficient and reliable at all times.

STATEMENT OF THE PROBLEM

This study aimed to determine the effectiveness of the disaster risk reduction preparedness of the municipality of Sindangan, province of Zamboanga del Norte, Region 9, Philippines.

METHODS

The study involved the 44 passable barangays represented by the municipality DRRP team and LGU officials, Barangay DRRP Coordinators and Barangay Captains, School Administrators and School DRRP coordinators and the PTA Presidents as participants.

It utilized the descriptive comparative design of research to arrive at the main purpose of the study. Both descriptive and inferential statistics were used to obtain an accurate analysis and interpretation of the data gathered.

RESULTS AND DISCUSSIONS

As reflected, flood ranked 1 with 86 incidences in the last 10 years; followed by landslide, 71 incidences; and fire with 65 incidences. These indicate that Sindangan is a disaster prone municipality.

Based on the Local Disaster Risk and Reduction management Plan 2012-2016, the identified hazards of the Municipality were: the four major rivers in the municipality namely PIAO, Sindangan, of 32 barangays; Ingin and Talinga Rivers that put at risk the residents of 32 barangays; Four Minor river tributaries that would effect residents of 10 barangays; the Mindanao fault running across two barangays of Sindangan had placed Sindangan at risk of earthquake occurrences; and the presence of the Sulu Trench facing Sindangan endangers the residents of twenty-two (22) coastal barangay from tidal waves or tsunami.

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Table 1. *Common Disaster that Occurred in the Municipality of Sindangan*

Common Disasters	F	Rank
Armed Conflict	4	6
Earthquake	38	4
fire	65	3
Flood	86	1
Landslide	71	2
Tsunami	0	7
Typhoon	11	5

Table 2 displays the assessment of the 3 groups of participants on the level of effectiveness of disaster risk reduction management program in terms of dissemination of information, implementation and resource utilization and operation.

The LGU officials and School officials assessed the DRRM program of the municipality as Very Effective in the three aspects namely; the Dissemination of information, Implementation and Resource Utilization and Operation as evidently supported by the grand mean of 4.59 and 4.25 respectively. These signify that the overall program completely achieved its goal.

As the frontline of disaster preparedness, LGU officials must be fully equipped in all aspects in relation to disaster risk reduction to drive their constituents to a safer community. This was in line with their duties and responsibilities as stipulated in RA 7160 or the Local; Government Code of 1991 that LGUs have the responsibility to undertake rescue operations, provide immediate relief assistance, and set-up and manage evacuation centers at the first instance of disaster occurrence.

Meanwhile, the municipality was lucky enough that on the education sector the DRRM program was very effective. This was parallel to the five pillars of the Comprehensive DRRM in Basic Education Framework of DepEd which are: 1) Safe Learning Facilities; 2) School Disaster Management; 3) DRR in Education. The ongoing implementation of these pillars was aligned with DepEd's commitment to the four thematic areas of the Philippine DRRM Act 2010, otherwise known as RA 10121. These areas are Prevention and Mitigation, Preparedness, Response, Recovery and rehabilitation.

On the other hand, the Community assessed the DRRM program as more effective in terms of Dissemination and Information, Implementation and Resource Utilization and Operation with a grand mean of 3.85 which signifies that as a whole, the Program essentially achieved its goals.

Nazli, et al. [5] mentioned that community-based preparedness and planning allow everyone to manage the potential hazards following a disaster event. Individuals can prepare their homes and families to get through those critical times. Communities can also plan to work together to reduce injury, death and property damage. Community Preparedness will improve the ability of individuals and groups to reduce the effect of the hazard impact and manage their resources until assistance is available. They also emphasized that Effective response needs comprehensive planning and coordination of all who will be involved, which includes the private sector, schools, volunteer groups and community organizations. Training and information can prepare individuals and groups

ISSN NO.2395-0692
IJAHMS International Journal of Arts, Humanities and Management Studies

to be crucial resources in their community, capable of performing many emergency functions needed during the immediate post-disaster period.

Table 2. *Level of Effectiveness of Disaster Risk Reduction Management Program*

Statements	LGU Officials		School Officials		Community	
	WAM	AE	WAM	AE	WAM	AE
A. Dissemination of Information						
1.Written natural disaster preparedness plan	4.58	VE	4.29	VE	3.75	ME
2.Warning for alarming Situations (floods, typhoons, earthquakes, etc.)	4.44	VE	4.35	VE	4.05	ME
3.Disaster preparedness Responsibility checklist	4.72	VE	4.32	VE	3.63	ME
4.Disaster Risk Reduction Management Council (DRRMC)	4.60	VE	4.35	VE	3.88	ME
5.Members who will supervise the evacuation	4.49	VE	4.05	VE	3.93	ME
6.Evacuation Plan	4.75	VE	4.25	ME	4.03	ME
7.Evacuation routes and location	4.68	VE	4.22	VE	4.08	ME
8.Evacuation procedures	4.55	VE	4.18	VE	3.85	ME
9.Location of medical response team in cases of emergency	4.59	VE	4.23	ME	3.90	ME
10.Distribution and delivery schedule and procedures of calamity aid/help	4.69	VE	4.21	VE	3.70	ME
11.Availability of disaster aid/help from different agencies	4.49	VE	4.37	VE	3.73	ME
Overall Mean	4.60	VE	4.26	VE	3.86	ME
B. Implementation						
1.Written disaster preparedness	4.69	VE	4.28	VE	3.93	ME
2.Disaster preparedness responsibility checklist	4.63	VE	4.46	VE	3.75	ME
3.Written Evacuation plan	4.41	VE	4.34	VE	4.25	VE
4.posted evacuation routes	4.74	VE	4.24	VE	3.83	ME
5.Safety, health and sanitation	4.78	VE	4.35	VE	4.03	VE
6.Evacuation procedures	4.73	VE	4.22	VE	3.70	ME
7.Dissemination/notification procedures	4.32	VE	4.23	VE	3.80	ME
8.Distribution and delivery policy of calamity aid to the victims	4.53	VE	4.15	ME	3.75	ME
9.Responsibilities of supervisory personnel for evacuation	4.65	VE	4.19	ME	3.70	ME
10.Constant inspection of emergency lighting	4.32	VE	4.16	ME	3.53	ME
11.Medical emergency response procedures	4.69	VE	4.17	ME	3.65	ME
12.Regular meetings of persons involved in the program	4.38	VE	4.15	ME	3.58	ME
13.Mock evacuation drills	4.33	VE	4.23	VE	3.98	ME
Overall Mean	4.56	VE	4.24	VE	3.80	ME

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IJAHMS International Journal of Arts, Humanities and Management Studies

C. Resource Utilization and Operation						
1.Designation of venues to be used as evacuation centers (schools, gyms, chapels, etc.)	4.62	VE	4.34	VE	4.05	ME
2.Distribution of relief good to the evacuees	4.68	VE	4.17	ME	4.03	ME
3.Involment of Policemen and Barangay Officials and other volunteer groups	4.36	VE	4.40	VE	4.05	ME
4.Utilization of calamity funds and other resources for the victims of calamity	4.67	VE	4.23	VE	3.83	ME
5.Mobilization of patrol cars, ambulance and other utility vehicles to be used during calamity occurrences	4.61	VE	4.25	VE	3.78	ME
6.Communication System to be used during emergencies (cellphones, radio, etc.)	4.70	VE	4.14	ME	4.13	ME
7.Fair and equal distribution of resources	4.68	VE	4.20	VE	3.80	ME
8.Timeless in the distribution of resources/aid to the recipients. Evaluation of Medical equipment	4.50	VE	4.19	ME	3.73	ME
9.Available equipment for first aid (air splints, oxygen, stretcher etc.	4.80	VE	4.28	VE	3.73	ME
Overall Mean	4.62	VE	4.24	VE	3.90	ME
Grand Mean	4.59	VE	4.25	VE	3.85	ME

Legend:

5	4.20-5.00	Very Effective (VE)	DRRPP has completely achieved its goals.
4	3.40-4.19	More Effective (ME)	DRRPP has essentially achieved its goals.
3	2.60-3.39	Effective (E)	DRRPP has fairly achieved its goals.
2	1.80-2.59	Less Effective	DRRPP has achieved only a few of its goals.
1	1.00-1.79	Not Effective	DRRPP has achieved only very few of its goals.

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Table 3. *Significance of the Difference Among the Recourses of the Three Groups of Participants on the Level of Effectiveness of Disaster Risk Reduction Preparedness*

	SS	dF	MS	F	F Critical Value	P Value
Between Group	0.8224	2	0.4112			
Within Group	0.0072	6	0.0012	342.70	5.1432	6.54
Total	0.8296					

Table 3 disclosed the significance of the difference on the level of effectiveness of disaster risk reduction management among the three groups of participants. As shown, the computed f-value of 342.70 is greater than the critical value of 5.1432. thus, there is sufficient proof to reject the null hypothesis.

The result implied that the disaster preparedness between the officials, school officials and the community differ significantly. The finding indicated that the DRRM program of the municipality needs to be enhanced and strengthen to create a unified acts and beliefs of the people that when it comes to disasters, fears due to death and casualties are impossible to happen.

According to Hyogo Framework for Action (HFA) 2005-2015, [6] states vary gently in their political, socio-economic, cultural, environment, and hazard circumstances. Measures that succeed in reducing risk in one setting may not work in others.

Table 4. *Tests for Significant Relationship Between the Profile of Participants and Perceived Effectiveness of Disaster Risk Reduction Preparedness*

Variables	x^2 value	df	cv	Decision
• Organization and Effectiveness of Disaster Risk Reduction Preparedness	19.29	2	5.99	Significant
• Educational Attainment and Effectiveness of Disaster Risk Reduction Preparedness	20.38	3	7.81	Significant
• Trainings Attended and Effectiveness of Disaster Risk Reduction Preparedness	34.03	2	5.99	Significant

The finding shows that the chi-square value of 19.29 is greater than the critical value of 5.99 at the 0.05 probability level with two degrees of freedom. This implies that the null hypothesis is rejected. The participants' organization and the level of effectiveness of disaster risk reduction preparedness is associated. The results aligned with the activities and projects stipulated in Municipal DRRM Plan that were funded and implemented by the LGUs. The following are some of the implemented and funded activities and projects under the Disaster Preparedness programs in which all members of the community are well represented: DRRP trainings, Tsunami and Earthquake drill, Basic Life Support-Cardio Pulmonary Resuscitation (BLS-CPR) System, Community First Responder (CFR), Creation of two Sindangan DRRMC Rescue Team, and Creation of Barangay Fire Brigade Volunteers participated by 532 barangay officials and Tanods, 100 OSY youth members, 100 Public and Private School teachers in all year level, 200 students and

60 health nurses (Municipality of Sindangan Assessment Results and Consolidated Data Analysis, n.d.).

In the same table, it evidently shows that the chi-square value of 20.38 is greater than the computed value of 7.81 with three degrees of freedom at the 0.05 probability level which implies that the null hypothesis is rejected. It can be deemed that the participants' educational and the level of effectiveness of disaster risk reduction preparedness is related.

In contrast with the data analysis on the study of Najafi, et al [7] on Theory of Planned Behavior and Disaster Preparedness showed that disaster preparedness was not affected by gender, educational level, number of household members, home type, home ownership and being the head of household.

In the same table, it is shown that the computed chi-square value of 34.03 exceeds the critical value of 5.99 at the 0.05 probability level with two degrees of freedom. This signifies that the null hypothesis is rejected. Therefore, the participants' level of trainings attended and the level of effectiveness of disaster risk reduction preparedness is associated.

According to Mathews and Eden as cited by Haji [8], disaster training should aim to raise the awareness of all members of the community regarding everyday safety and security issues and the steps they can take to reduce the likelihood of a disaster occurring and prepare them on what to do in the event of a disaster. Training should be given to all and a clear idea of what they can expect to find in various disasters, scenarios, such as fires and floods, and make them fully aware of their roles and responsibilities.

CONCLUSIONS AND RECOMMENDATIONS

The municipality of Sindangan is a disaster-prone municipality. The Disaster Risk Reduction Preparedness Program in the municipality of Sindangan is very effective as assessed by the LGU and school officials and more effective as assessed by the Community. The level of effectiveness of Disaster Risk Reduction Management among the three groups of participants significantly differ. A significant relationship exists between the participants' organization, educational attainment and trainings attended and the level of effectiveness of disaster risk reduction preparedness.

That the municipal disaster risk reduction management council officers and members may review the Disaster Risk Reduction Preparedness Program and enhance it by adopting the proposed flexible intervention program to improve the different aspects of disaster preparedness specifically the people in the barangay. That the LGU may allocate sufficient funding to each barangay to acquire the necessary materials as part of disaster preparedness. That year-round sustainable disaster intervention activities should be initiated in every barangay to ensure a continuous improvement of disaster management strategies and policies for the people to internalize and that they can act instantly on their own initiative during emergency situations. That the municipal disaster risk reduction management council are encouraged to acquire partnership with NGOs in order to increase support for disaster victims. That the DepEd and CHED supervised schools may extend help to educate the members of the community on the importance of well-prepared individuals in relation to disaster occurrence. That further studies about disaster risk reduction

management is encouraged among future researchers in order to improve and broaden disaster management knowledge and skills.

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