

Disaster management capability of disaster risk reduction and management council in selected areas in Pangasinan: Basis for a capability enhancement program

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ABSTRACT

This descriptive study determined the disaster management capabilities of Disaster Risk Reduction and Management Council (DRRMC) in Pangasinan in which validated questionnaire was utilized as the data gathering instrument. Specifically, it determined the respondents; disaster management capabilities as to their knowledge and practices on prevention and mitigation, preparedness, response, and rehabilitation and recovery. Statistical Tools used were mean percentage score for the knowledge of the respondents, average weighted mean for the practices of the respondents, and chi-square test for the difference of the knowledge and practices when grouped as to their profiles. Findings revealed that majority of the respondents belong to early adulthood, dominated by married female who are college graduate with a length of service of more than a decade and are from Urdaneta City. The respondents are knowledgeable and always practicing the key activities on disaster management as to prevention and mitigation, preparedness, response and rehabilitation and recovery. Moreover, the profile of the respondents as to age, educational attainment, civil status and length of service established a difference on the knowledge, practice and factors affecting their disaster management. In line with these, it is recommended to provide relevant seminars and extension program to enhance the disaster management capability of the DRRMC.

Keywords:

Disaster Risk Reduction and
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Introduction

Disasters can happen to anyone at any time and any place. Earthquakes, volcanic eruptions, typhoons, and floods continue to pose an immediate danger to the [health](#), [life](#) and [property](#) of the people involved.

In fact, the United Nations (2014) defined disasters as “a serious disruption of the functioning of a community or a society causing widespread human, material, economic and environmental losses which exceed the ability of the affected community/society to cope using its own resources. A disaster is therefore an event or series of events, which give rise to casualties and/or damage or loss of property, infrastructure, essential services or means of livelihoods on a scale which is beyond the normal capacity of the affected community to cope with unaided. This event or events disrupt the normal patterns of life (or ecosystem) and extraordinary emergency interventions are required to save and preserve human lives and/or the environment.

Globally, according to the United Nations Educational, Scientific and Cultural Organization (UNESCO), the global rise of disaster risk in has more than doubled since the 1980s. This is evidenced by an annual average of 232 million people worldwide who were affected by disasters between 2001 and 2010. The organization also attested that more than 680,000 people died in earthquakes between 2000 and 2010, mainly due to poorly constructed building and annual report depicted an average of 102 million people around the world are affected by floods, 37 million people by cyclones, hurricanes and typhoons, and nearly 366,000 people by landslides.

In 2016, the World Risk Index listed Philippines in the number three spot as one of the most disaster-prone countries on earth. In fact, the Philippines have always been a hotspot of typhoons. On average, 20 typhoons are hitting the country every year leaving thousands dead and millions of properties wrecked. Its archipelagic feature and geography made Philippines a natural disaster hotspot. Three of the most devastating typhoons experienced by the Filipinos are typhoons Ondoy, Pepeng and Santi which landed in the Philippines between September and October 2009. The effects of these typhoons were readily felt by the agriculture sector. Millions of crops and livestock were destroyed and were deeply submerged in the flood. Soil erosion threatened millions of lives. All these results to declining productivity with the threat of aggravating economic conditions of the poor. Typhoon Ondoy having an international name Ketsana hit the country last September

26, 2009. According to Philippine Atmospheric Geophysical and Astronomical Services (PAGASA) as of October 2, 2009, 629,466 families or 3,084,997 persons were affected in different regions. The impact was also heavily felt by the agricultural sector particularly among northern regions. After the typhoon farms were classified as “with” or without” chance of recovery

Pangasinan has been listed as one of the most hazard prone provinces in the country. Due to its geographic circumstances, Pangasinan has an unusually high exposure to natural hazards. It is also one of the top 20 provinces nationally that is prone with combined climate- and weather-related risks (Gabat, 2014). As cited by Tingco, Sison and Pambid (2014), the Province of Pangasinan is highly susceptible to natural disaster. The project, Mapping Philippine Vulnerability to Environmental Disasters included the province in the list of top ten provinces that are risk to earthquake due to the Manila Trench. Moreover, the Department of Environment and Natural Resources Mines and Geo-Science Bureau (DENRMGB) ranked Pangasinan as third most flooded prone and landslide prone province in the Philippines as of 2011. This concurs with the declaration of Regional Disaster Risk Reduction and Coordinating Council (RDRRMC) that Pangasinan is the most flooded prone province in Region 1. Finally, in 2013 report of the World Bank entitled in “Getting a Grip of Climate Change in the Philippines”, Pangasinan was considered as one among those provinces which have very risk for typhoon winds, strong winds and heavy rainfall and consequently with very high risk flooding.

Further, according to the Provincial Disaster Risk Reduction and Management Council (2014), the top five disaster prone areas in Pangasinan are Calasiao, Dagupan City, Sta. Barbara, Urdaneta City and San Fabian. The geophysical location of these areas poses significant threats in the communities.

These and many other examples show that disasters not only lead to prolonged suffering of the health of the population but also to substantial loss of overall health resources. Thus, the vulnerability and protection of the physical infrastructure, the institutions and the personnel is one of the major challenges addressed by this strategy (Somers, 2009).

That is why, the World Health Organization, as the lead agency for addressing the health aspects of disaster preparedness and response, developed a six year strategy to help mitigate the effects of crises, coordinate the response and thus save lives and reduce suffering (Roque, 2011).

In the Philippines, the National Disaster Risk Reduction & Management Council (NDRRMC) was created as a working group of various government, non-government, civil sector and private sector organizations of the Government of the Republic of the Philippines established by Republic Act 10121 of 2009.

The Council is responsible for ensuring the protection and welfare of the people during disasters or emergencies. It utilizes the United Nation Cluster Approach in disaster management. It is the country's focal for the ASEAN Agreement on Disaster Management and Emergency Response (AADMER) and many other related international commitments.

Aside from the national council, various local governments throughout the country established Local DRRM Offices at the regional, provincial, municipal, city and barangay levels in accordance with Republic Act 10121. As functional arms of the local governments, these Offices are responsible to create a Local Disaster Risk Reduction and Management Plan according to the Framework of the NDRRMC covering 4 aspects including disaster preparedness, response, prevention and mitigation, and rehabilitation and recovery.

With that, there is an urgent need for training in disaster management. Disaster Management, as stipulated in Republic Act 10121 otherwise known as Philippine Disaster Risk Reduction and Management Act of 2010, is the process of assessment and planning, physical protection and response capacity development designed to convey a paradigm shift from reactive to proactive Disaster Risk Reduction Management (DRRM) wherein men and women have increased their awareness and understanding of DRRM, with the end in view of increasing people's resilience and decreasing their vulnerabilities. It includes the knowledge, skills and practices of a person during disaster occurrence.

Unfortunately, there are limited studies regarding emergency preparedness conducted in Pangasinan, even though it is one of the leading research agenda of the National Unified Health Research (NUHR), National Economic and Development Authority (NEDA), Philippine National Health Research System (PNHRS) and Philippine Council in Industry and Energy Research Development (PCIERD).

Thus, this study was conducted to determine and assess the disaster management capability of Disaster Risk Reduction and Management Council (DRRMC) in Pangasinan. The results of the study provide health information, which can serve as the eye opener to the authorities to strengthen the integration of disaster management in the Science Education. In fact, due to the

challenges posed by disasters, the Department of Education incorporated disaster management in its spiral curriculum in Science. Further, the subject is one of the core subjects for the Grade 11 students especially those students who are under the Science, Technology, Engineering and Mathematics (STEM) Track. It is clear from any review of the disaster risk landscape that progress can be made in saving lives, jobs and critical infrastructure by integrating science into both policy making and best practice for disaster management (Wahlstrom, 2013). This can be used as basis that constitutes a powerful force for undertaking necessary changes.

Further, this study determined the disaster management capability of the Disaster Risk Reduction and Management Council (DRRMC) in Pangasinan as to prevention and mitigation, preparedness, response, and rehabilitation and recovery; and the significant relationship of the demographic profile of the respondent to their extent of knowledge and practice on disaster management.

Methodology

Research Design

This study used the descriptive method to determine, correlate, and evaluate the disaster management capabilities of disaster risk reduction and management council in Pangasinan. Descriptive surveys intend to gather data on the actual present settings of a particular group of individuals, events or phenomena (Calderon et al, 2007). Calmorin and Calmorin (2007) defined the descriptive design as the study that focuses on the present condition, with the purpose of finding new truths. The data gathered shall be a basis for further action to enhance the respondents' disaster management.

Locale of the Study

In this study, respondents came from Pangasinan, specifically the top five cities and municipalities listed by the Provincial Disaster Risk Reduction and Management Council (PDRRMC) as a disaster-prone area. The study covered Calasiao, Dagupan City, Sta. Barbara, Urdaneta City and San Fabian. The locale was chosen for the following criteria set by the researcher: first, the index showed that locale have been considered by the Provincial Disaster Risk Reduction and Management Council to be the top five cities and municipalities who are disaster prone; second, these municipalities and cities are situated in a low lying geographical locations; third, their population exceeds approximately 70, 000 which is

widely distributed to each barangay; and lastly, the barangay that is served by the disaster control units were rural and far flung from the city proper.

Population and Sampling

The members of the disaster risk reduction and management council are the respondents of the study. This includes the head of the disaster risk reduction and management council with its members, the head of the Department of Interior and Local Government (DILG) with its members, and the head of the Department of Social Welfare and Development (DSWD) with its members. These people are the ones responsible during disaster management. They are selected using a non-probability sampling design, specifically, purposive sampling.

The researcher obtained the population data in coordination with the local government unit and head of the disaster risk reduction and management council. The researcher identified from those data the respondents who fit on the criteria set. With that, Majority of the respondents belong to early adulthood, dominated by married female who are college graduate with a length of service of more than a decade and are from Urdaneta City

Instrumentation and Data Collection

The researcher used a survey questionnaire as the main instrument in data gathering. This tool helped the researcher in evaluating the disaster management capabilities of disaster risk reduction and management council in Pangasinan.

The questionnaire was prepared by the researcher after intensive readings of related materials from professional journals, magazines, books, and articles from the world-wide-web related to disaster management. It also contains items patterned to the 2011-2028 Philippine National Disaster Risk Reduction and Management Plan and Republic Act No. 10121 entitled, "Philippine Disaster Risk Reduction and Management Act of 2010" which highlighted the key activities under the NDRRMC priority areas: prevention and mitigation, preparedness, response and rehabilitation and recovery.

Prior to its administration, the questionnaire underwent validity and reliability testing. To determine the validity of the instrument, the researcher sought the proficiency of experts on disaster management. Validity refers to the degree to which the instrument measures what it intended to measure (Balita, 2010). It helped confirm whether the questions asked were exactly what the researcher wanted to know and in order to answer the researcher's objectives. The experts were the head of the Provincial Disaster Risk Reduction and Management

Council, professors on disaster management and research experts. The comments and concerns of the experts were noted down for further improvement prior to the distribution of the questionnaires.

Based on the validity testing done through asking experts to evaluate the questionnaire, the computed average weighted mean is 4.47 which means that the questionnaire is highly valid.

Furthermore, a dry run of the questionnaires was done for reliability purposes. Reliability refers to the consistency of scores obtained by the same person when retested using the same instrument or one that is parallel to it (Balita, 2010). Further, this was done to determine early on the potential problems that may arise in the actual conduct of the study, and also to avoid the occurrence of these problems when the actual study was done. Pre-test respondents are members of the Disaster Risk Reduction and Management Council with similar characteristics of the actual participants but did not participate in the actual survey.

Based on the reliability testing, the computed coefficient value is 0.946 which means that the questionnaire has a high degree of consistency of its results over time; thus, are ready to be used by the respondents.

The researcher secured permission from his adviser and from the Dean of the Graduate School in the conduct of the study. Then the permission from the Governor and Municipal Mayor was secured through a letter of request to conduct the survey. The target respondents were identified prior to the administration of the instrument to facilitate a more efficient conduct of the survey. The study was conducted on August – October of 2014, academic year 2014 – 2015.

Tools for Data Analysis

Descriptive statistics, including percentages for all nominal and ordinal data were used. Mean Score Percentage, Average Weighted Mean and Chi-square Test of Independence was used as statistical tools. All statistical calculations were based on 95% confidence levels.

Mean Percentage Score. It was used to gather the mean percentage score value of knowledge on disaster management among respondents. Their knowledge was determined by counting the number of correct responses on the knowledge section of the questionnaire. The score were interpreted using the Transmutation Table of Valentin (2009) which is as follows:

Percentage	Descriptive Equivalence	Interpretation
70% - 100%	Highly Knowledgeable (HK)	The respondent at this level has developed the fundamental knowledge and skills and core understandings and can transfer these understandings automatically and flexibly through authentic performance tasks
50% - 69%	Knowledgeable (K)	The respondent at this level has developed the fundamental knowledge and skills and core understandings and with little guidance from the supervisor and can transfer these understandings through authentic performance tasks
30% - 49%	Moderately Knowledgeable (MK)	The respondent at this level possesses the minimum knowledge and skills and core understandings, but needs help throughout the performance of authentic tasks
1% - 29%	Slightly Knowledgeable (SK)	The respondent at this level struggles with his/her understanding; prerequisite and fundamental knowledge and/or skills have not been acquired or developed adequately to aid understanding

Average Weighted Mean. It was used to gather the average value of their practices and factors affecting their disaster management. Their average weighted mean on practices was determined were interpreted using the following rating scale:

Numerical Rating	Statistical Rating	Descriptive Equivalence	Interpretation
3	2.36 – 3.00	Always (A)	An indicator that the disaster management is completely practiced
2	1.68 – 2.35	Sometimes (S)	An indicator that the disaster management is partly practiced
1	1.00 – 1.67	Never (N)	An indicator that the disaster management is not practiced

Their average weighted mean on the factors affecting their disaster management was determined using the following rating scale:

Numerical Rating	Statistical Rating	Descriptive Equivalence	Interpretation
3	2.36 – 3.00	Greatly Affects (GA)	An indicator that the factor completely influence their disaster management
2	1.68 – 2.35	Affects (A)	An indicator that the factor partly influence their disaster management
1	1.00 – 1.67	Do Not Affect (DNA)	An indicator that the factor do not influence their disaster management

Chi Square Test of Independence. It was used to determine the significant difference on the knowledge, practices and factors affecting disaster management among disaster risk reduction and management council in Pangasinan.

All statistical analyses were automatically calculated using a statistical software. Decisions to reject or to accept the null hypotheses were determined by comparing the level of significance set at 0.05 with the significance (p) value, where rejection is implied when $p < \alpha$.

Results and Discussions

Disaster Management Capability among Disaster Risk Reduction and Management Council

Results revealed that the respondents are knowledgeable on disaster management with a percentage of 66.9 %. Further, findings also suggest that the respondents always practice the key activities on disaster management as to disaster prevention and mitigation, preparedness, response, rehabilitation and recovery. Overall, the results show that the respondents are capable on disaster management based on their knowledge and practices.

Disaster management is the managerial function charged with creating the framework within which communities reduce vulnerability to hazards and cope with disasters. This means that the respondents of the study are capable on ensuring the protection and welfare of the people during disasters or emergencies. It utilizes the United Nation Cluster Approach in disaster management.

Table 1. Disaster Management Capability among Disaster Risk Reduction and Management Council

Knowledge	Percentage	Practices	Weighted Mean	Capability
Knowledgeable	66.9 %	Always	2.46	Capable

Knowledge of the Respondents on Disaster Risk Reduction Management

Respondents are knowledgeable on the different key areas of Disaster Risk Reduction and Management with an overall weighted mean of 26.76 with a corresponding percentage of 66.9%.

Arranged from highest to lowest, the DMRRC members are highly knowledgeable on the key areas of disaster rehabilitation and recovery with a total mean score of 7.74 or 77.4%. However, they are knowledgeable on the key areas of disaster response, prevention and mitigation, and preparedness with a total mean score of 6.78 (67.8%), 6.18 (61.8%), and 6.06 (60.6%) respectively.

Table 2. Knowledge of the Respondents on Disaster Risk Reduction Management

Knowledge	No. of Items	Total Mean Score	%	DI	Rank
Prevention and Mitigation	10	6.18	61.8%	K	3
Preparedness	10	6.06	60.6%	K	4
Response	10	6.78	67.8%	K	2
Rehabilitation and Recovery	10	7.74	77.4%	HK	1
Overall Weighted Mean		26.76	66.9%	Knowledgeable	

Legend: 1 – 29 % Slightly Knowledgeable (SK); 30 % - 49 % Moderately Knowledgeable (MK); 50 % - 69 % Knowledgeable (K); 70 % - 100 % Highly Knowledgeable (HK); Descriptive Equivalent (DI)

Knowledge as to Disaster Prevention and Mitigation

Findings revealed that the respondents are knowledgeable with an overall mean score of 6.18 which is equivalent to 61.8% of the total correct item response.

Further, it revealed that below 50% of the respondents got the correct response on items which states “safety checklist and self-monitoring tools are only done by the disaster control unit to assess and identify risk vulnerability” with 57 (44.5%); “DRRM as part of the Millennium Development Goals (MDGs) adopts an all environmental action and cooperation to increase the number and effects of natural and man-made disasters” with 56 (43.6%); and “urban communities surrounded by highly unstable buildings are identified by DRRM team by conducting vulnerability and risk assessment to reduce disaster resiliency of infrastructure systems” with 52 (40.6%).

Under Section 3 of Republic Act 10121, disaster prevention and disaster mitigation are defined as: Disaster

Prevention is the outright avoidance of adverse impacts of hazards and related disasters. It expresses the concept and intention to completely avoid potential adverse impacts through action taken in advance such as construction or dams or embankments that eliminate flood risks, land-use regulations that do not permit any settlement in high-risk zones and seismic engineering designs that ensure the survival and function of a critical building in any likely earthquake and Disaster Mitigation is the lessening or limitation of the adverse impacts of hazards and related disasters. Mitigation measures encompass engineering techniques and hazard resilient construction as well as improved environmental policies and public awareness.

Table 3. Knowledge of the Respondents on Disaster Management as to Prevention and Mitigation

Prevention and Mitigation	f	%
1. The Prevention and Mitigation provides key strategic actions that give importance to activities including hazards evaluation and mitigation, identification and analyses of vulnerable areas, and mainstreaming Disaster Risk Reduction and Management (DRRM) into development plans.	93	72.7
2. DRRM is integrated into the national, regional and local development policies, plans, programs and budget to reduce capability of reducing risk and hazard exposure.	74	57.8
3. DRRM as part of the Millennium Development Goals (MDGs) adopts an all environmental action and cooperation to increase the number and effects of natural and man-made disasters.	56	43.8
4. Integrating DRRM in the different environment-related policies and plans, including land and air use and natural resource management is an important aspect to reduce hazard vulnerability.	90	70.3
5. Urban communities surrounded by highly unstable buildings are identified by DRRM team by conducting vulnerability and risk assessment to reduce disaster resiliency of infrastructure systems.	52	40.6
6. Effective guide in national and local planning is established with the use of a community-based and scientific DRRM hazard and risk assessment, analysis, mapping and monitoring.	95	74.2
7. Community-based awareness on the DRRM prevention and mitigation is enhanced using Information Dissemination through partnership with various media.	89	69.5
8. Safety checklist and self-monitoring tools are only done by the disaster control unit to assess and identify risk vulnerability.	57	44.5
9. Disaster risk financing of Local Government Units (LGUs) can contribute to the prevention and mitigation of disasters, especially at the community level.	90	70.3
10. To be effective, early warning systems (EWS) need to actively involve the communities at risk, facilitate and disseminate public education, awareness and risk warnings, and ensure there is constant state of preparedness.	95	74.2

Knowledge as to Disaster Preparedness

Results revealed that the respondents are knowledgeable with an overall mean score of 6.06 which is equivalent to 60.6% of the total correct item response. Further, it highlighted that below 50% of the respondents got a correct response on the items: “in an earthquake simulated-scenario, standing in a doorway and running outside are considered safe and are recommended” with 74 (57.8%); and “the term Flood/Flash Flood Warning is used when flooding or flash flooding is already occurring in your area” with 68 (53.1%); “Drop, Hold On, and Cover is simulated -based response to an Earthquake drill” and “specialized trainings and simulation exercises are only given to specific groups (i.e., decision makers, responders, public/private sector employees, etc.) to help them prepare for any disasters” with 47 (36.7%) and 41 (32%) correct responses respectively.

In most cases, people and communities are vulnerable to disasters because of lack of information about the

hazards; how to prepare for them; and how to reduce the risks of the hazards affecting their lives and livelihoods. When their level of awareness and understanding are increased, people are more prepared (Department of Interior and Local Government).

Table 4. Knowledge of the Respondents on Disaster Management as to Preparedness

Preparedness	f	%
1. Disaster Risk Reduction and Management information, education, communication (IEC) and advocacy enhance the level of awareness and capacity of the community to the threats and impacts of all hazards.	95	74.2
2. Comprehensive DRRM policies, plans, and systems through scenario-based drills and response activities will equip the community with necessary skills to cope with the negative impacts of a disaster.	95	74.2
3. Specialized trainings and simulation exercises are only given to specific groups (i.e., decision makers, responders, public/private sector employees, etc.) to help them prepare for any disasters.	41	32
4. A Public Storm Signal warning tells the general public what they should expect and provides an advisory of necessary precautions during typhoons.	89	69.5
5. The term Flood/Flash Flood Warning is used when flooding or flash flooding is already occurring in your area.	68	53.1
6. Drop, Hold On, and Cover is simulated -based response to an Earthquake drill.	47	36.7
7. In an earthquake simulated-scenario, standing in a doorway and running outside are considered safe and are recommended.	74	57.8
8. Rescue, Alert, Contain, Extinguish is a simulated -based response to Fire Hazard drill.	86	67.2
9. When utilizing a fire extinguisher, the acronym P.A.S.S which stands for Pull, Aim, Sweep, and Squeeze is performed.	89	69.5
10. An evacuation center must have physical amenities and space required for health promotion and disease prevention for the wellness of evacuees.	92	71.9

Knowledge as to Disaster Response

As to Disaster Response, the respondents are highly knowledgeable with an overall mean percentage of 6.78 which is equivalent to 67.8% of the total correct item response. Results show that below 50% of the respondents got a correct response on the item: “standard-based evacuation sites must be identified and considered only during and after a disaster happen” with 52 (40.6%) respectively.

Republic Act 10121 defines Response as the provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected. Disaster response is predominantly focused on immediate and short-term needs and is sometimes called “disaster relief.” This aspect will likewise include Early Recovery which means, under IRR Rule 2 Section 1, the multidimensional process of recovery that begins in a humanitarian setting. It is guided by development principles that seek to build on humanitarian programmes and catalyze sustainable development opportunities. It aims to generate self-sustaining, nationally-owned, resilient processes for post-crisis recovery. It encompasses the restoration of basic services, livelihoods, governance, security and rule of law, environment and social dimensions, including reintegration of displaced populations.

Table 5. Knowledge of the Respondents on Disaster Management as to Response

Response	f	%
1. The key to effective disaster response operations is the recognition of the importance of a seamless flow of information and establishment of coordination system.	97	75.8
2. Food, shelter, water and sanitation, and health preservation are the basic requirements addressed when an emergency disaster strikes.	96	75
3. DRRM team sort sick and injured on the basis of frequency and type of condition present called “Triage”.	95	74.2
4. Victims of disaster categorized in “black code” are considered the first, immediate, and high priority under Triage.	68	53.1
5. DRRM team must ensure that no person gets stranded; all those who want/need evacuation must be attended orderly, safely and effectively.	95	74.2
6. Standard-based evacuation sites must be identified and considered only during and after a disaster happen.	52	40.6
7. Basic social services such as medical consultation and nutritional assessment are provided to affected population to ensure that the health status of affected communities is maintained.	93	72.7
8. Traumatic and/or psychological stress debriefings is provided in order to address the physiological needs of affected population especially the elderly, person with disabilities, women and children.	90	70.3
9. Search, Rescue and Retrieval (SRR) system is implemented to address services for the missing only to ensure that the missing found.	92	71.8
10. The success of functional, integrated, and coordinated system to assist victims all the way through their early recovery is dependent on both the local and national governments’ level of political commitment.	90	70.3

Knowledge as to Disaster Rehabilitation and Recovery

As to Disaster Rehabilitation and Recovery, the respondents are highly knowledgeable with an overall mean percentage of 7.74 which is equivalent to 77.4% of the total correct item response. Findings revealed that below 50% of the respondents got a correct response on the item “rehabilitation or repair of damaged infrastructure, implementing building code and promoting green technology are important short term goals” with 52 (40.6%).

The Rehabilitation and Recovery aspect of DRRM cover areas like employment and livelihoods, infrastructure and lifeline facilities, housing and

Table 6. Knowledge of the Respondents on Disaster Management as to Rehabilitation and Recovery

Rehabilitation and Recovery	f	%
1. Rehabilitation and recovery focuses on rebuilding the affected communities, restoring livelihoods, effectively preventing the recurrence of disasters and harnessing conditions for future development.	120	93.8
2. Managing recovery efforts require building local capacities, restoring coping mechanisms, empowering communities and determining root causes and vulnerabilities which make the communities disaster-free.	108	84.4
3. Post-Disaster Needs Assessment (PDNA) is conducted before the occurrence of a disaster to assess, analyze and prioritize damages, losses and needs of the victims.	68	53.1
4. DRRM authorities coordinate the formulation of the Strategic Action Plan for disaster-affected areas in both local and national level.	116	90.6
5. DRRM are mainstreamed in human settlement and safety for people displaced by natural and human-induced disaster of those living in disaster free areas.	95	74.2
6. Rehabilitation or repair of damaged infrastructure, implementing building code and promoting green technology are important short term goals.	52	40.6
7. Funding sources for the recovery of the victims of disasters is generated from LGUs, NGUs, concerned agencies and other private sector organizations.	122	95.3
8. The ability of people to recover easily from disasters lies heavily on the restoration of their sources of income and livelihood opportunities.	95	74.2
9. Along with relief, rehabilitation and care of physical health and injuries, psychosocial and mental health issues are also important and they need to be addressed.	120	93.8
10. A psychologically sound, safe and secured citizenry that is protected from the effects of disasters are able to restore to subnormal functioning after each disaster.	95	74.2

resettlement, among others. These are recovery efforts done when people are already outside of the evacuation centers.

Practice of the Respondents on Disaster Risk Reduction Management

Respondents always practice the different key areas of Disaster Risk Reduction and Management with an overall weighted mean of 2.46.

Arranged from highest to lowest, the DMRRRC members always practice the key areas on disaster response with an average weighted mean of 2.50. This is directly followed by disaster rehabilitation and recovery, disaster preparedness and disaster prevention and mitigation with an average weighted mean of 2.46, 2.48 and 2.42 respectively.

Table 7. Practices of the Respondents on Disaster Risk Reduction Management

Practices	No. of Items	AWM	DI	Rank
Prevention and Mitigation	10	2.42	A	4
Preparedness	10	2.48	A	3
Response	10	2.50	A	1
Rehabilitation and Recovery	10	2.46	A	2
Overall Weighted Mean		2.46	Always	

Legend: 1.00 – 1.67 Never (N); 1.68 – 2.35 Sometimes (S); 2.36 – 3.00 Always (A); Average Weighted Mean (AWM); Descriptive Equivalent (DI)

Practice as to Disaster Prevention and Mitigation

As shown on the Table 8, Disaster Risk Reduction and Management Council respondents always practice the key activities in disaster prevention and mitigation with an overall weighted mean of 2.43.

It revealed that DRRMC member sometimes practice activities such as develop advocacy and risk communication plan to encourage communities to avail risk financing options (AWM = 2.35); conduct of

Table 8. Practices of the Respondents on Disaster Management as to Prevention and Mitigation

Prevention and Mitigation	1	2	3	AWM	DI	Rank
1. Mainstreaming and integration of Disaster Risk Reduction and Management (DRRM) into national, sectoral, regional and local development policies, plans, programs and budget	1	49	78	2.60	A	1
2. Utilization of the local DRRM funds	5	58	65	2.47	A	5
3. Conduct of inventory, vulnerability and risk assessments of critical facilities	2	64	62	2.47	A	5
4. Develop guidelines on the redesign, retrofitting or operational modifications of infrastructure	1	66	61	2.47	A	5
5. Integration of the building code and use of green technology	16	64	48	2.25	S	9
6. Conduct of studies on disaster risk prevention interventions for armed conflict situation and climate change effects	14	72	42	2.22	S	10
7. Information dissemination DRRM through partnerships with various media	3	52	73	2.55	A	2
8. Conduct of research and develop new modalities for risk financing schemes	5	75	48	2.33	S	8
9. Develop advocacy and risk communication plan to encourage communities to avail risk financing options	3	76	49	2.35	S	7
10. Develop community-based and local early warning systems for various hazards	4	53	71	2.52	A	3
Overall Weighted Mean				2.42	Always	

Legend: 1.00 – 1.67 Never (N); 1.68 – 2.35 Sometimes (S); 2.36 – 3.00 Always (A); Average Weighted Mean (AWM); Descriptive Equivalent (DI)

research and develop new modalities for risk financing schemes (AWM = 2.33); integration of the building code and use of green technology (AWM = 2.25); and conduct of studies on disaster risk prevention interventions for armed conflict situation and climate change effects (AWM = 2.22).

Based on the National Disaster Risk Reduction and Management Plan for 2011 to 2028, the priority area on Disaster Prevention and Mitigation provides key strategic actions that give importance to activities revolving around hazards evaluation and mitigation, vulnerability analyses, identification of hazard-prone areas and mainstreaming DRRM into development plans. It is based on sound and scientific analysis of the different underlying factors which contribute to the vulnerability of the people and eventually, their risks and exposure to hazards and disasters. Further, prevention and mitigation embrace measures taken to reduce both the effect of the hazard and the vulnerable conditions to it to reduce the scale of a future disaster. Therefore, mitigation activities can be focused on the hazard itself or the elements exposed to the threat. Examples of prevention and mitigation measures which are hazard specific include water management in drought prone areas, relocating people away from the hazard prone areas and by strengthening structures to reduce damage when a hazard occurs. In addition to these physical measures, prevention and mitigation should also aim at reducing the economic and social vulnerabilities of potential disasters (Department of Interior and Local Government).

Practice as to Disaster Preparedness

As shown on the Table 9, Disaster Risk Reduction and Management Council respondents always practice the key activities in disaster preparedness with an overall weighted mean of 2.48. Results also revealed that they

Table 9. Practices of the Respondents on Disaster Management as to Preparedness

Preparedness	1	2	3	AWM	DI	Rank
1. Develop DRRM information, education, communication (IEC) and advocacy plans	0	52	76	2.59	A	3.5
2. Development of standard DRRM training modules	3	56	75	2.56	A	6
3. Conduct of trainings and simulation exercises	0	48	80	2.63	A	1
4. Selection and accreditation of NGO representatives	7	76	45	2.30	S	9
5. Development of the local DRRM and contingency plan	0	51	77	2.60	A	2
6. Managing resources of the Local DRRM Councils and Offices	1	52	75	2.58	A	5
7. Develop and/or enhance guidelines for emergency response and simulated scenario-based preparedness	2	48	78	2.59	A	3.5
8. Develop and/or enhance ICS coordination and communication systems	9	64	55	2.35	A	7
9. Develop and/or enhance a manual of operations for Disaster Operations Centers	7	76	45	2.29	S	10
10. Develop and/or enhance protocols for information gathering and reporting	8	70	50	2.32	S	8
	Overall Weighted Mean			2.48	Always	

Legend: 1.00 – 1.67 Never (N); 1.68 – 2.35 Sometimes (S); 2.36 – 3.00 Always (A); Average Weighted Mean (AWM); Descriptive Equivalent (DI)

sometimes practice the following key activities: develop and/or enhance protocols for information gathering and reporting (AWM = 2.32); selection and accreditation of NGO representatives (AWM = 2.30); and develop and/or enhance a manual of operations for Disaster Operations Centers (AWM = 2.29).

In line with National Disaster Risk Reduction and Management Plan for 2011 to 2028, Disaster Preparedness provides for the key strategic actions that give importance to activities revolving around community awareness and understanding; contingency planning; conduct of local drills and the development of a national disaster response plan. Risk-related information coming from the prevention and mitigation aspect is necessary in order for the preparedness activities to be responsive to the needs of the people and situation on the ground. Also, the policies, budget and institutional mechanisms established under the prevention and mitigation priority area will be further enhanced through capacity building activities, development of coordination mechanisms. Through these, coordination, complementation and interoperability of work in DRRM operations and essential services will be ensured. Behavioral change created by the preparedness aspect is eventually measured by how well people responded to the disasters. At the frontlines of preparedness are the local government units, local chief executives and communities. This protective process embraces measures which enable governments, communities and individuals to respond rapidly to disaster situations to cope with them effectively (DILG).

Practice as to Disaster Response

As shown on the Table 10, Disaster Risk Reduction and Management Council respondents always practice

Table 10. Practices of the Respondents on Disaster Management as to Response

Response	1	2	3	AWM	DI	Rank
1. Activation of the Incident Command Systems (ICS), advisories and the cluster approach at the national and local levels	0	36	92	2.72	A	2
2. Establishment of coordination systems for effective and efficient relief and response operations	1	29	98	2.76	A	1
3. Activation of assessment teams at all levels	2	41	85	2.64	A	6
4. Conduct assessment using the latest DANA tool and use of the information by the appropriate DRRM council	19	50	59	2.30	S	7.5
5. Develop and implement systems for SRR	2	41	85	2.65	A	4.5
6. Identification of standard-based relief shelters and sites	5	35	88	2.65	A	4.5
7. Conduct of medical consultation and nutritional assessment, traumatic and/or psychological stress debriefings	24	62	42	2.14	S	10
8. Conduct of post-DANA	19	51	58	2.30	S	7.5
9. Develop partnership mechanisms with utility providers and key stakeholders	21	62	45	2.18	S	9
10. Design and implement temporary livelihood and/or income generating activities (i.e., cash/ food for work; micro and small enterprise recovery)	4	33	91	2.68	A	3
	Overall Weighted Mean			2.50	Always	

Legend: 1.00 – 1.67 Never (N); 1.68 – 2.35 Sometimes (S); 2.36 – 3.00 Always (A); Average Weighted Mean (AWM); Descriptive Equivalent (DI)

the key activities in disaster response with an overall weighted mean of 2.65. Findings revealed that the respondents sometimes practice the following key activities: conduct assessment using the latest DANA tool and use of the information by the appropriate DRRM council and conduct of post-DANA (AWM = 2.30); develop partnership mechanisms with utility providers and key stakeholders (AWM = 2.18); and conduct of medical consultation and nutritional assessment, traumatic and/or psychological stress debriefings (AWM = 2.14).

Based on the National Disaster Risk Reduction and Management Plan for 2011 to 2028, Disaster Response gives importance to activities during the actual disaster response operations from needs assessment to search and rescue to relief operations to early recovery activities are emphasized. The success and realization of this priority area rely heavily on the completion of the activities under both the prevention and mitigation and preparedness aspects, including among others the coordination and communication mechanisms to be developed. On-the-ground partnerships and the vertical and horizontal coordination work between and among key stakeholders will contribute to successful disaster response operations and its smooth transition towards early and long-term recovery work (DILG).

Practice as to Disaster Rehabilitation and Recovery

As shown on the table 11, Disaster Risk Reduction and Management Council respondents always practice the key activities in disaster Rehabilitation and Recovery with an overall weighted mean of 2.46. Results show that they sometimes practice the following key activities: develop systems of support and communication among key stakeholders (AWM = 2.30); conduct Post-Disaster Needs Assessment (PDNA) one month after the occurrence of a disaster, with the OCD taking the lead and using as basis the preliminary data gathered from the field by OCD regional offices. (AWM = 2.26); undertake the necessary rehabilitation or repair of damaged infrastructure (AWM = 2.23); coordinate the formulation of the Strategic Action Plan for disaster-affected areas (AWM = 2.17). and build capacities of psychosocial care providers (AMW = 2.16).

As stated on the National Disaster Risk Reduction and Management Plan for 2011 to 2028, the Disaster Rehabilitation and Recovery priority area cover areas like employment and livelihoods, infrastructure and lifeline facilities, housing and resettlement, among others. These are recovery efforts done when people are already outside of the evacuation centers. Rehabilitation and Recovery intends to restore people’s means of livelihood and continuity of economic activities and business, to restore shelter and other buildings/installation, to reconstruct infrastructure and other public utilities; and to assist in the physical and psychological rehabilitation of persons who suffered from the effects of disaster (DILG).

Table 11. Practices of the Respondents on Disaster Management as to Rehabilitation and Recovery

Rehabilitation and Recovery	1	2	3	AWM	DI	Rank
1. Conduct Post-Disaster Needs Assessment (PDNA) one month after the occurrence of a disaster, with the OCD taking the lead and using as basis the preliminary data gathered from the field by OCD regional offices.	35	46	54	2.26	S	7
2. Coordinate the formulation of the Strategic Action Plan for disaster-affected areas	28	50	50	2.17	S	9
3. Identify and mobilize funding sources	0	39	89	2.70	A	2.5
4. Identify and provide suitable relocation sites for affected population	1	39	88	2.68	A	4
5. Conduct trainings for social preparation of host communities and those who will be relocated to reduce conflict	1	32	95	2.73	A	1
6. Undertake the necessary rehabilitation or repair of damaged infrastructure	25	48	55	2.23	S	8
7. Develop systems for appropriate risk protection measures	1	40	87	2.67	A	5
8. Conduct of post-disaster/conflict needs analyses with affected communities	1	37	90	2.70	A	2.5
9. Develop systems of support and communication among key stakeholders	21	47	60	2.30	S	6
10. Build capacities of psychosocial care providers	29	49	50	2.16	S	10
Overall Weighted Mean				2.46		Always

Legend: 1.00 – 1.67 Never (N); 1.68 – 2.35 Sometimes (S); 2.36 – 3.00 Always (A); Average Weighted Mean (AWM); Descriptive Equivalent (DI)

Comparative Analysis between Profile and Their Knowledge on Disaster Management

Table 12 shows the Chi-square value, the degree of freedom and associated significance values as regards to

the knowledge of the respondents on disaster management based on the their profile.

Results shows that the computed value as to age ($X^2=244.911$), educational attainment ($X^2=146.900$), length of service ($X^2=146.900$) and location ($X^2=152.605$) has a p -value lesser than the level of significance set at 0.05 which denotes that there is a significant difference on the knowledge of the respondents on disaster management when grouped as to age, educational attainment, length of service and location.

However, the computed chi-square value for sex ($X^2=31.972$), civil status($X^2=54.686$) and trainings ($X^2=103.115$) has a p -value greater than the level of significance set at 0.05 which implies that there is no significant difference on the on the factors affecting the respondents during disaster management when grouped as to sex, civil status and trainings. This further denotes that the knowledge of the respondents are the alike across the aforementioned profile of the respondents.

Table 12. Comparative Analyses Between the Profile of the Respondents and their Knowledge on Disaster Management

Profile	Chi-Square	Degree of Freedom	p-value	Decision
Age	244.911	138	.000	Significant
Sex	31.972	23	.101	Not Significant
Educational Attainment	146.900	115	.024	Significant
Civil Status	54.686	46	.178	Not Significant
Length of Service	92.424	69	.031	Significant
Trainings	103.115	84	.077	Not Significant
Location	152.605	92	.000	Significant

Legend: All p -value of <0.05 are significant

Comparative Analysis between Profile and Their Practices on Disaster Management

Table 13 shows the Chi-square value, the degree of freedom and associated significance values as regards to the practices of the respondents on disaster management based on the their profile.

Results shows that the computed value as to age ($X^2=264.162$) and location ($X^2=210.628$) has a p -value lesser than the level of significance set at 0.05 which denotes that there is a significant difference on the practice of the respondents on disaster management when grouped as to age and location.

However, the computed chi-square value for sex ($X^2=40.965$), educational attainment ($X^2=147.353$), civil status($X^2=48.754$), length of service($X^2=111.042$) and trainings ($X^2=92.424$) has a p -value greater than the level of significance set at 0.05 which implies that there is no significant difference on the on the practice of the

respondents on disaster management when grouped as to sex, educational attainment, civil status, length of service and trainings. This further denotes that the practice of the respondents are the same when grouped based on the aforementioned profile of the respondents.

Results revealed that practice on disaster management differs when grouped as to age, and location. According to Lindell (2000), to swiftly carry out relief activities in local communities at the initial stages after the occurrence of disasters, it is necessary to carry out community-based disaster preparedness activities on a habitual basis prior to a disaster. In addition, it is necessary for residents in local communities to participate in disaster preparedness activities, and for residents to cooperate with administrative bodies.

In conclusion, ambiguity in emergency responsibilities is the most important factor undermining the preparedness competency of DRRMC. The findings of this study and cause analysis provided much needed evidence to better prepare its DRRMC to meet the challenges brought by frequent public health emergencies.

Table 13. Comparative Analyses between the Profile of the Respondents and their Practices on Disaster Management

Profile	Chi-Square	Degree of Freedom	p-value	Decision
Age	264.162	204	.003	Significant
Sex	40.965	34	.191	Not Significant
Educational Attainment	147.353	170	.894	Not Significant
Civil Status	48.754	68	.962	Not Significant
Length of Service	111.042	102	.254	Not Significant
Trainings	92.424	69	.031	Not Significant
Location	210.628	136	.000	Significant

Legend: All p-value of <0.05 are significant

Comparative Analysis between Profile and the Factors Affecting Disaster Management

Table 14 shows the Chi-square value, the degree of freedom and associated significance values as regards to the factors affecting the respondents during disaster management based on the their profile.

Results shows that the computed value as to age ($X^2=207.732$) and location ($X^2=197.439$) has a *p*-value lesser than the level of significance set at 0.05 which denotes that there is a significant difference on the factors affecting the respondents during disaster management when grouped as to age and location.

However, the computed chi-square value for sex ($X^2=23.739$), educational attainment ($X^2=128.226$), civil status($X^2=52.482$), length of service($X^2=103.115$) and trainings ($X^2=11.042$) has a *p*-value greater than the level

of significance set at 0.05 which implies that there is no significant difference on the on the factors affecting the respondents during disaster management when grouped as to sex, educational attainment, civil status, length of service and trainings. This further denotes that the factors affecting the respondents are the same across the mentioned profile of the respondents.

Table 14. Comparative Analyses between the Profile of the Respondents and the Factors that Affects their Disaster Management

Profile	Chi-Square	Degree of Freedom	p-value	Decision
Age	207.732	168	.020	Significant
Sex	23.739	28	.695	Not Significant
Educational Attainment	128.226	140	.753	Not Significant
Civil Status	52.482	56	.609	Not Significant
Length of Service	103.115	84	.077	Not Significant
Trainings	111.042	102	.254	Not Significant
Location	197.439	112	.000	Significant

Legend: All p-value of <0.05 are significant

Conclusions

Based on the thorough review and analyses, the following are therefore concluded:

1. The respondents are capable on disaster management.
2. The respondents are knowledgeable on disaster management as to prevention and mitigation, preparedness, response and rehabilitation and recovery.
3. The respondents are always practice the key activities on disaster management as to prevention and mitigation, preparedness, response and rehabilitation and recovery.
4. The respondents’ disaster management capability differs when grouped according to age, educational attainment, civil status and length of service.

Recommendations

In the light of the conclusions, the following recommendations are hereby advanced:

1. To the Local Government Unit involved in the disaster and emergency preparedness to carefully plan out the nature and content of approaches to properly influence the success of its personnel in an emergency or disaster.

2. Further analysis and improvement of the instrument developed and utilized by the researcher be employed in future researches regarding the same subject matter.
3. Other fields of studies regarding disaster management may be explore more for future use through utilization of various methodologies on health researches.
4. Conduct a study related to this thesis focused on determining at profound perspective the disaster management capability of the community.
5. Utilize the proposed capability enhancement program to enhance their knowledge and practices on disaster management.
6. Finally, provide relevant seminars and extension program is proposed to enhance the disaster management capability of the disaster risk reduction and management council in Pangasinan.

References

- Armas, Teddylyn et al (2010). "Emergency Preparedness and Capability of the Community Units in San Carlos City, Pangasinan: Basis for a Plan of Action". Virgen Milagrosa University Foundation
- Becker, Nicole. "Raising preparedness by risk analysis of post-disaster homelessness and improvement of emergency shelters". *Disaster Prevention and Management: An International Journal*. Volume 18, Number 1, pp. 49-54(6), Emerald Group Publishing Limited., 2009.
- Braun, Barbara I. "Integrating Hospitals into Community Emergency Preparedness Planning". *An International Journal*. June 2010, p. 799-811.
- Centers for Disease Control and Prevention (2011). *Public Health Preparedness Capabilities: National Standards for State and Local Planning*.
- Chaput, Christine, Deluhery, Matthew, et. al. "Disaster Training for Prehospital Providers". 2011
- Edgerton, Ryan. "How to Handle an Emergency Situation". *An International Journal*. 2009
- Eriksson, Kerstin. "Knowledge transfer between preparedness and emergency response: a case study". [Disaster Prevention and Management: An International Journal](#), Volume 18, Number 2, pp. 162-169(8)., [Emerald Group Publishing Limited.](#), 2009.
- Gabat, Miriam Lee S. (2014), "Extent of Implementation of Disaster Risk Reduction and Management in Central Pangasinan". Saint Louis University
- Guevarra, Jonathan (2008). *Assessment of Disaster Preparedness in Selected Public High Schools in Luzon, Philippines*". University of the Philippines
- Moghadas, Seyed M., et. Al. "Managing public health crises: the role of models in pandemic preparedness". *Influenza and Other Respiratory Viruses*, Volume 3, Number 2, pp. 75-79(5), Blackwell Publishing, March 2010.
- National Disaster Risk Reduction Management Council (NDRRMC) (2011). *The National Disaster Risk Reduction Management Plan 2011-2028*. Philippines. Retrieved October 28, 2013 from http://www.dilg.gov.ph/PDF_File/resources/DILG-Resources-2012116-420ac59e31.pdf
- Patillo, Marilyn. "Mass Casualty Disaster Nursing Course". *Nurse Educator*, p.271.2010
- Roque, Pamela et al (2010). "Emergency Preparedness and Capability of the Community Folks in Barangay Supo, San Carlos City, Pangasinan". Virgen Milagrosa University Foundation
- Preparedness Training Critical for Emergency Health Workers: Personal, Professional Readiness an Asset. By Kim Krisberg. Published: 06/19/2. Available at: [www.medscape.com/viewarticle / 558106?rss](http://www.medscape.com/viewarticle/558106?rss)
- Public Health Nursing. *The Role of Public Health Nurses in Emergency Preparedness and Response: A Position Paper of the Association of State and Territorial Directors of Nursing*, Volume 25, Number 4, pp. 353-361(9)., Blackwell Publishing., July/August 2010. Available at: http://www.ingentaconnect.com/search/article?title=emergency+preparedness&title_type=tka&year_from=1998&year_to=2009&database=1&pageSize=20&index=81
- Sinha, Abhinav; Pal, D.K., et. Al. "Knowledge, attitude and practice of disaster preparedness and mitigation among medical students". *Disaster Prevention and Management: An International Journal*, Volume 17, Number 4, pp. 503-507(5)., Emerald Group Publishing Limited., 2009.