Earthquake preparedness of UM Digos College: An assessment

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ABSTRACT

The study aims to assess the earthquake preparedness of the University of Mindanao, Digos College (UMDC) with regards to (1). Preparedness strategy, policy, and plan; (2). Warning capabilities; (3). Readiness to response; and (4). Emergency services and stand-by arrangements. It employed a descriptive research design conducted at the University of Mindanao, Digos College with a standardized questionnaire adapted from the City Government of Digos – City Disaster Risk Reduction and Management Council (CDRRMC) Earthquake Drill Evaluation Form.Findings reveal that crouch and tuck head method was always practiced by the respondents and further consider it as an essential part of an earthquake preparedness drill; the university has high priority with the alarm system although evacuation routes are further provided; readiness to response occur almost every time; andEmergency services and stand-by arrangements had provided various teams.

Keywords: *earthquake, preparedness, UM Digos, assessment*

INTRODUCTION

Surviving an earthquake and reducing its health impact requires thorough preparation, careful planning skills, and applicable good practices. Earthquake has been often associated with deaths, harms, disasters, and even accidents. Earthquake-related deaths are often associated with the collapse of structures. In 1909 in southern Italy, more than 100,000 people died in an earthquake. Moreover, in the region of Messina, almost half of the people living were killed because of structures that dominated the villages were easily collapsible.

Zebrowski (2007) noted that in San Francisco, earthquake had killed 700 people due to different building construction practices. The survival rate was about 98%, while in Messina earthquake was between 33% and 45%. It has been implied that building practices make big differences during earthquake. An earthquake is often referred to an unexpected, swift, quick trembling of the earth caused by breaking and changing of the rocks beneath the earth's surface. Earthquakes can occur at any time of the year, whether in the day or in the night. In the United States, 45 states and territories are moderately high risk of earthquakes ("Earthquake preparedness", 2016).

Likewise, earthquakes may result in widespread damage to communities that may include the disintegrated schools, destroyed homes, collapsed bridges, fallen dams, cracked highways, and even disoriented tall buildings. In the Philippines, inexhaustible calamities are being suffered like of deadly typhoons, destructible earthquakes, eruptions of volcanoes and other similar disasters due to its location along the Pacific Ring of Fire. In Bohol alone, it was disrupted by the deadliest earthquake which lasted for 34 seconds and had a magnitude sized of 7.2 (Wingard and Brandlin, 2013). The impact of the Bohol earthquake had touched the entire Central Visayas region and Mindanao. National Disaster Risk Reduction and Management Council cited that 222 people died. There were 976 people being injured and damaged or destroyed houses had reached to more than 73,000. Further, it was estimated that the quake energy being released was somehow equaled to 32 Hiroshima bombs. Government agencies, schools, and private establishments are now preparing for any possible harm that may attributed for earthquake. It is for this reason that researchers assessed the earthquake preparedness of the University of Mindanao Digos College (UMDC) for the year 2015-2016.

METHOD

The study employed a descriptive research design. Descriptive research design, according to Key (1997; cited Pickard, 2012) obtained information on the current status of the phenomena, describing what exists with respect to variables. It involved range from the survey which would describe status quo, and correlation study to investigate relationship between variables. The college students were the subject of the study conducted at the University of Mindanao, Digos College (UMDC), evaluated by City Disaster Risk Reduction and Management Control (CDRRMC) personnel.

A standardized questionnaire was utilized. It was adapted from the City Government of Digos – City Disaster Risk Reduction and Management Council (CDRRMC) Earthquake Drill Evaluation Form. The first part of the questionnaire pertained to the general evaluation and it is composed of eleven questions. The 11 questions indicated the four identified factors on earthquake preparedness. Question items #2, #4, #7, and #9 indicated the preparedness strategy, policy, and plan. Moreover, question items #1, and #6 indicated the warning capabilities. Similarly, question item #3, and #5 indicated the readiness to response. Furthermore, question items #8, #10 and #11 indicated the emergency services and stand-by arrangements.

RESULTS AND DISCUSSION

Assessment of the UMDC's Earthquake Preparedness

Forecasting earthquakes and other natural calamities are quite difficult. It is a task that is inexact since nobody can actually predict when, where and how natural calamities occur, but one thing is certain: human's response to natural calamities can be trained, practiced and prepared well. It is with this that an evaluation on Earthquake Preparedness is to be done.

Assessment, often equated with the terminology "Evaluation", entails the making process of intelligent judgment and decisions. It is the process undertaken by experts and ordinary people to decide based on acquired indicators such as the knowledge level, skills and attitudes, as well as beliefs and opinions. Table 3 presents the general evaluation results of the University of Mindanao Digos

Table 1. *General Evaluation Results on Earthquake Preparedness - Preparedness Strategy, Policy, and Plan*

Questions	Mean	Verbal description
2. The drill participants executed the "duck, cover and hold" technique during the Alarm Phase or while the alarm system is being sounded.	4.00	Almost Every time
4. The drill participants executed the "buddy-buddy" system during the evacuation phase.	4.00	Almost Every time
7. The drill participants performed the "crouch and tuck head" technique when the second alarm system sounded.	5.00	Every time
9. A headcount was conducted while in the evacuation area.	4.00	Almost Every time
Overall	**4.25**	**Almost Every Time**

College (UMDC) on Earthquake Preparedness in terms of preparedness strategy, policy, and plan revealed in item questions #2, #4, #7, and #9.

Based on Table 1 on the general evaluation of UMDC by the CDRRMC in earthquake preparedness, particularly in terms of preparedness strategy, policy, and plan, it has an overall mean of 4.25, Almost Every time, or Respondents consider it as high priority. CDRRMC personnel observed that the drill participants performed the "crouch and tuck head" technique when the second alarm system sounded (Question #7 with a score of 5). This mean that the crouch and tuck head method was always practiced by the respondents and further consider it as an essential part of an earthquake preparedness drill.

Moreover, the CDRRMC also provided a score of 4 or Almost Every time for question items #2, #4, and #9. It has been observed that the drill participants executed the "duck, cover and hold" technique during the Alarm Phase or while the alarm system is being sounded (Q#2), executed the "buddy-buddy" system during the evacuation phase (Q#4), and headcount was conducted while in the evacuation area (Q#9). Unlike with the crouch and tuck method that is considered vital, the duck, cover and hold, buddy-buddy system, and head count strategies suggested high priorities and should never be forgotten.

It has been suggested by the official rescue teams from the United States, and other countries who have searched for trapped people in collapsed structures around the world, as well as emergency managers, researchers, and school safety advocates that "Drop, Cover, and Hold On" is the appropriate action to reduce injury and death during earthquakes. Methods like standing in a doorway, running outside, and "triangle of life" method are considered dangerous and are not recommended (Southern California Earthquake Center, 2016).

Earthquakes occur without any warning and may be so violent that one cannot run or crawl. With this method, one may secure its safetiness and one would not be knocked on the ground. "Drop, Cover, and Hold On" gives the best overall chance of quickly protecting oneself during an earthquake even during quakes that cause furniture to move about rooms, and even in buildings that might ultimately collapse.

The buddy-buddy system is cooperative arrangements whereby individuals are paired or teamed up and assume responsibility for one another's instruction, productivity, welfare, or safety. It is in this system that one look for each other's welfare.

Similarly, when it comes to the earthquake preparedness in terms of warning capabilities, warning materials and devices are always been a top priority as this would inform and let the public be aware on it. Table 4 presents the general evaluation of the CDRRMC on UMDCs earthquake preparedness with regards to warning capabilities.

Based on Table 2 on the general evaluation of UMDC by the CDRRMC in earthquake preparedness particularly in terms of warning capabilities, it has an overall mean of 3.50, Almost Every time, or respondents consider it as high priority. CDRRMC personnel observed that the drill participants followed their evacuation routes to the Evacuation area/s (Question #6 with a score of 4) and the alarm system used was loud enough to be heard by all the drill participants (Question #2 with a score of 3). This mean that the university has high priority with the alarm system although evacuation routes are further provided.

When it comes to the readiness to respond, question items #3, and #5 indicated an average score of 4.00 which means that their readiness occur Almost Every time. The participants waited for the alarm system to stop before evacuating (Q#3) and

Table 2. *General Evaluation Results on Earthquake Preparedness –Warning Capabilities*

Questions	Mean	Verbal description
1. The alarm system used was loud enough to be heard by all the drill participants.	3.00	Sometimes
6. The drill participants followed their evacuation routes to the Evacuation area/s.	4.00	Almost Every time
Overall	**3.50**	**Almost Every time**

walked faster than normal during the evacuation phase (Q#5). Table 3 is shown on the next page of the paper.

Table 3. *General Evaluation Results on Earthquake Preparedness –Readiness to Response*

Questions	Score	Verbal description
3. The drill participants waited for the alarm system to stop before evacuating.	4.00	Almost Every time
5. The participants walked faster than normal during the evacuation phase.	4.00	Almost Every time
Overall	**4.00**	**Almost Every time**

Further, when it comes to the Emergency services and stand-by arrangements of the UMDC as evaluated by the CDRRMC, Table 4 is illustrated below.

Based on Table 5 on the general evaluation of UMDC by the CDRRMC in earthquake preparedness particularly in terms of Emergency services and stand-by arrangements, it has an overall mean score of 3.67, Almost Every time, or rrespondents consider it as high priority. CDRRMC personnel observed that participants stayed on the evacuation area until the drill was terminated. (Question #10 with a score of 5), participants checked for any sustained injury in the evacuation/assembly area/s (Question #8 with a score of 3), and DAT Emergency Response Team existed (Question #11 with a score of 3). This means that the university has high priority for Emergency services and stand-by arrangements. With this, various teams were provided and created First Aid Team, Search and Rescue Team, Site Security Team, Fire Safety Team, Evacuation Team and the like.

Table 4. *General Evaluation Results on Earthquake Preparedness –Emergency Services and Stand-by Arrangements*

Questions	Mean	Verbal description
8. The participants checked for any sustained injury in the evacuation/assembly area/s.	3.00	Sometimes
10. The participants stayed on the evacuation area until the drill was terminated.	5.00	Every time
11. The DAT Emergency Response Team such as a. Incident Commander b. First Aid Team c. Search and Rescue Team d. Site Security Team e. Fire Safety Team f. Evacuation Team g. Maintenance Team (Damage and Salvage Team) h. Communication Team	3.00	Sometimes
Overall	**3.67**	**Almost Every time**

Table 5. *Overall General Evaluation Results on Earthquake Preparedness*

Earthquake Preparedness Indicators	Score	Mean	Verbal description
Preparedness Strategy, Policy, and Plan	17.00	4.25	Almost Every time
Warning Capabilities	7.00	3.50	Almost Every time
Readiness to Response	8.00	4.00	Almost Every time
Emergency services and stand-by arrangements	11.00	3.67	Almost Every time
Overall	**43.00**	**3.90**	**Almost Every time**

Formulated Recommendations to Improve UMDC Earthquake Preparedness

The following are the formulated recommendations offered to improve the UMDC Earthquake Preparedness, to wit:

1. Engage in a whole community dialogue and build upon public-private partnerships;
2. Form an interdisciplinary panel to review causes of disaster deaths and indicators of what factors reduced the loss of lives, and to share research that informs interventions (i.e., education and awareness) and builds upon successful strategies;
3. Develop and implement a program to capture best practices and lessons learned from actions taken by all sectors of society that maximizes and amplifies initiatives with measurable impact on reducing costs, injuries, and loss of life;
4. Develop data and accountability channels for effective information sharing (data sharing agreements) with local governments and with the private sector; and
5. Capitalize on science and technology innovations to support communities in their efforts to become disaster resilient.

CONCLUSION AND RECOMMENDATIONS

In the light of the objectives of the study and findings of the study, the following conclusion are drawn: Crouch and tuck head method was always practiced by the respondents and further considered it as an essential part of an earthquake preparedness drill. Moreover, the university has high priority with the alarm system although evacuation routes are further provided; Then there shall be readiness to response occur almost every time. Lastly, emergency services and stand-by arrangements had provided various teams.

Thus, it is recommended that the UMDC must engage in a whole community dialogue and build upon public-private partnerships. Secondly, the UMDC must form an interdisciplinary panel to review causes of disaster deaths and indicators of what factors reduced the loss of lives, and to share research that informs interventions (i.e., education and awareness) and builds upon successful strategies. Thirdly, the UMDC must develop and implement a program to capture best practices and lessons learned from actions taken by all sectors of society that maximizes and amplifies initiatives with measurable impact on reducing costs, injuries, and loss of life. Then, UMDC must develop data and accountability channels for effective information sharing (data sharing agreements) with local governments and with the private sector. Lastly, the UMDC must capitalize on science and technology innovations to support communities in their efforts to become disaster resilient.

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