Disaster Resilience Level of Selected Barangays in Quezon City, Philippines

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ABSTRACT

This study explored the disaster resilience level of six barangays in Quezon City in which results can serve as baseline data in developing programs to help the community become more resilient. Descriptive cross-sectional survey design directed the data collection and analysis of resilience level of purposively selected 44 residents and Barangay officials. Results show that Barangays are resilient in terms of governance. They exhibited medium resilience in preparedness and response, risk management and vulnerability reduction, knowledge and education, and risk assessment. There is a need for a thorough evaluation of the prior programs implemented to address the weak points observed in this study. Further research may focus on large number of respondents as well as the number of barangays to be involved particularly those which have high hazards risk.

Introduction

Disasters have become common global issues and regular problems to many places all over the world (Sih, et.al., 2016). Heavily exposed low- and middle-income countries carry a large share of this consequent human and economic burden (Hoffmann & Muttarak, 2017). According to Siriwardana, et.al., (2018), major disasters such as floods, storms, droughts, earthquakes, and landslides leave devastation around the globe with significant impacts to socio-economic aspects of those affected.

The Philippines is in the 3rd spot among 15 countries which has 27.98% of high risk in disasters and 52.46 % exposure to natural hazards (Beck et.al., 2012). The country's geographical location is prone to various hydrometeorological hazards (e.g., storms & flash flood) and geological hazards (e.g., landslides) which pose risks to vulnerable groups (e.g., children, women, persons with disabilities) of the community.

The government is challenged towards minimizing the effects of disasters particularly in urban areas. In developing countries, the group of Toinpre, (2018)

argued that one crucial aspect of addressing disaster risks is through institutional efforts undertaken by public sector organizations. The risk of disasters can be less damaging if people in the community are equipped with fundamental ideas about these hazards and imbibed with experiences in building measures against these hazards. Thus, it is the responsibility of every able individual in the barangay to be part of Disaster Risk Reduction (DRR) programs. DRR is embedded throughout all relevant policy areas can make resilience everyone's business (Oldham & Astbury, 2018). Officials in the Barangay must first be immersed with these skills for them to be able to facilitate these programs. Disaster risk reduction promotes social and economic development, especially in order to ensure sustainability of development in the future (Hoffmann & Muttarak, 2017). This will be effectively achieved if the people in the community work together and maximize available resources efficiently.

Disasters Affecting the Community

Disasters are unpredictable, which makes everybody vulnerable. Vulnerability, as the primary aspect of DRR, involves a complex blending of social, economic, physical, environmental, and institutional aspects at community scale (Wisner, et.al., 2004). The country's geographical location can tell us why the country experiences high-level hazards. Floods and storms have been the most frequently occurring hazards. Every year, cyclones (typhoons), and flooding are experienced by most countries in Southeast Asia because of their proximity to oceans (Beck, et.al, 2012). Flooding, according to Mohammed (2018), is the most frequently experienced phenomenon in the Philippines due to monsoon rains and typhoon. The Philippines has the highest recorded cost of damage to property amounting to USD 421 million. In the last decade, a total of 87 tropical cyclones hit the Philippines, affecting about 67 million people in the region. A significant number of the mass movements (landslide, mudslides) are triggered by floods, storms or typhoons. The storm surge caused by super typhoon Yolanda caused an estimated 8,000 deaths and left 344,300 homeless.

In the country, the National Capital Region, which is densely populated (due to urban migration patterns), is particularly susceptible to multiple hazards. The high concentration of people, economic activities and services in a relatively small area makes a profound impact on the urban society and economy leading to better access to services and changes in lifestyle, but rapid urbanization also leads to growing number of slums and squatter settlements, social alienation and environmental pollution (Yap, 2011). Abunyewah, and colleagues, (2018) affirmed based on their study that upsurge of population density of informal settlement makes them hotspots to disaster as it directly and indirectly raises hazard vulnerability and levels of exposure. A number of these disasters have been experienced mainly in densely populated and developed areas of the country. Xiaoyan and Xiaofei, (2012) reiterated that with the growth of population and urbanization, the regional natural disaster has become a more critical problem. Environmental degradation also plays a significant role in increasing the incidence of natural disasters. Demographic growth and poor land-use planning have led to the massive depletion of natural resources and destruction of the environment (World Bank, 2002).

Community Disaster Resilience

Building a "disaster resilient" community is essential to minimize the impact of crises in the aftermath of disasters. Urban communities should be 'urban resilient'. Oldham and Astbury (2018) describe this trait as "the capacity of individuals, communities, institutions, businesses and systems within a city to survive, adapt and grow no matter what

kinds of chronic stresses and acute shocks they experience". Focus on resilience means putting greater emphasis on what communities can do for themselves and how to strengthen their capacities, rather than concentrating on their vulnerability to disaster or their needs in an emergency (GOAL, 2015). Prior disaster experience could lead to the adoption of precautionary measures among these individuals (Hoffmann & Muttarak, 2017). The group of Chong, (2018) even mentioned that if the community is well-informed with a high level of awareness and sound knowledge on disaster preparedness and mitigation, greater incidence of human casualties could be prevented and socio-economic loss to the community reduced.

Community participation is very important in increasing disaster resilience. The priorities for action based on the Hyogo Framework for community participation are: training and learning on Disaster Risk Reduction and reduction of underlying risk factors. Community resilience depends on participation of individuals and their functional needs. Consequently, the framework attempts to characterize the vulnerable population of the community. Individual participation is characterized by community engagement in formal organizations and processes such as religious groups and electoral processes. Three interconnected areas involving individual participation are: who participates and why; how organizations and other engagement avenues affect participation; and the effects of participation on community conditions. These explain the nature and extent of grass-roots participation in hazard mitigation and resilience efforts (Norris et al., 2008). Ensuring resilience is not delivered as a 'top-down' approach according to Oldham and Astbury (2018) but through a network of interconnected activity at various spatial levels. They argued that emerging understanding of resilience from emergency preparation and response as a component of civil contingencies could bring the community to a more holistic view of resilience.

To address the call for disaster community resilience, our country has its own mandate by means of its vision thru National Disaster Risk Reduction and Management. The organization's plan for until 2028 is "to have a safer, adaptive and disaster resilient Filipino communities towards sustainable development. Two areas are disaster preparedness and disaster response. These encourage the people to become proactive instead of reactive to increase their awareness and understanding of Disaster Risk Reduction, with the end of increasing their resilience and decreasing their vulnerabilities. Measures must be undertaken so that activities in all priority areas do not create stress on country's natural resources (NDRRM Plan 2011-2018). The community can be more prepared and resilient by having intensive knowledge-sharing within disaster preparedness groups (Sih, et.al., 2016). The results of knowledge-sharing in DRR among stakeholders in the community can serve as basis for policy makers on what measures should be adopted to make the community more resilient. Reducing the risk and impact of disaster requires various efforts to prepare and empower the community (Chong, Kamarudin, & Wahid, 2018). The community disaster preparedness, response, mitigation, and rehabilitation will remain their vital systems and functions if reached already the optimum level of resilience against disasters.

In sum, the premises based on literature reviews led this study to explore how the people in these communities prepare and recover since they are exposed to various hazards. This could be answered by determining how resilient they are being situated in urban communities. Involving the residents and participating Disaster Risk Reduction planning and program implementation is an indicator of making

them resilient against possible threats of disasters. Mohammed (2018) reiterated that disaster preparedness of the community and LGUs can minimize the possibility of disaster occurrence.

Purpose of the Research

This study aimed to explore disaster resilience of the Barangays in Quezon City, Philippines. Specifically, this study aims to: identify the hazards in the community as perceived by the participants; and determine the level of disaster resilience of the barangays. The answer to these queries may help develop and strengthen institutions, mechanisms and capacities to build resilience in disaster risk reduction in general.

Methodology

Research Design

This study adopted cross-sectional survey design to determine the disaster resilience of selected Barangays in Quezon City in terms of five areas: governance; risk assessment; knowledge and education; risk management and vulnerability reduction; and disaster preparedness and response (Twigg, 2009).

Study Context

The study was conducted in selected Barangays in Quezon City, Philippines. These Barangays are located in different districts of the city which vary in terms of geography, population, business establishments, & land area.

Participants

Purposive sampling determined 44 residents and officials from six barangays. Involved in this study were 14 adult residents, seven youth residents, seven barangay officials, and 16 members of the community-based Disaster Risk Reduction Management council. The respondents were fully informed about the purpose of the study and given the right of confidentiality and anonymity.

Instrument

This study adopted a survey questionnaire on *Measuring Community Disaster Resilience by GOAL* which is an international humanitarian agency, founded in Ireland in 1977, dedicated to alleviating the suffering of the poorest and most vulnerable communities across the developing world. The survey has two parts: *Part A: Hazards faced by the Community* (collecting data on main hazards faced by the community and their frequency of occurrence) and *Part B: Community Resilience Characteristics Assessment* (features 30 consultation questions, each relating to a particular resilience component). A five-point Likert scale was used where a rating of 5 means high resilience and a rating of 1 means minimal resilience.

To verify the answers of the participants, and for the purpose of clarification for every indicator, the proponents facilitated the focus group discussion. Focus group is particularly suited to be used when the objective is to understand better how people consider an experience, idea, or event, because the discussion in the focus group is effective in supplying information about what people think, or how they feel, or on the way they act (Freitas, et.al., 1998). The participants were able to give their explanations about their answers in every item and come up with the final rating per indicator. The answers recorded illustrated the community's resilience for each component, which are verified using specific means of verification. Barangay officials provided documents and reports as means of verification. Guiding questions

were provided to facilitate the dialogue and discussion with the participants. The participants were able to share their thoughts and ideas during the discussion. The proponents were able to stimulate the discussion with comments or subjects.

Data Collection

The proponents sought permission and endorsement from the City Mayor's Office to conduct a survey and retrieve data as means of verification for the items in the questionnaire. As scheduled, the questionnaire was administered by the proponents guided with a focus group interview protocol to assist them in answering the items. The participants allowed the proponents of this study to gather desired data after securing consent forms from them. The proponents gave a 10-minute orientation and introduction of the survey. The respondents per barangay completed the Part A which took at least 5-10 minutes where the proponents read aloud each item. Then, the participants completed Part B with the assistance of the proponents during the discussion. The respondents gave proponents the permission to take photos and videos of the focus group interview for documentation purposes only.

Data Analysis

An assessment of community disaster resilience characteristics used a 5-point scale which corresponds to the levels of resilience characteristics: 5 (High Resilience), 4 (Resilient), 3 (Medium Resilience), 2 (Low Resilience), and 1 (Minimal Resilience). Data analysis of the data from the responses of the participants to the survey questionnaire includes descriptive statistics such as frequency distribution and mean. The participants' responses (shared during the discussions) about the items were noted by the proponents. Moreover, the participants provided various means of verification to support their answers as to the level of resilience since the study is guided with the indicators and questions included in the adapted instrument. According to Grosh and Glewwe (2000), the goal of focus groups is to elicit the insights and experiences of the participants and to stimulate discussions on areas that would not come to light without the interaction of the group.

Results and Discussion

The participants identified various hazards they usually experience, which vary according to types and number of hazards. Table 1 presents the frequency distribution of hazards identified by the respondents.

It can be gleaned that respondents in Barangay C identified 10 hazards which they usually experience. Earthquake is distinct because the identified Barangay is situated near the west valley fault. Large storms and tropical cyclones can also pose risks to the residents. The respondents also encounter fire spread which may be due to the built of houses. Since the area is composed of residents who belong to the average economic status, their houses are made of light materials and lack firewalls. Illegal electrical connections and faulty wirings are some of the reasons for fire spread. The community also suffers from the effects of flooding and erosion along rivers. Mohammed (2018) confirms that Barangays are affected by heavy flooding during heavy rains since the residents are situated in low-lying areas near San Mateo River. Cases of landslides are due to weak elevated areas. Diseases such as dengue and leptospirosis were also encountered by the participants. This will continue to pose risks if not addressed. Finally, the Barangay also shared violence and poor security as hazards. Human-induced hazard is due to riots among minors. Getting into fights among adolescents is one of the common behavioral problems that they encountered (Magpantay, et.al., 2014). To reduce the incidents, Barangay officials

Table 1

Frequency Distribution of Hazards Identified by the Respondents

Barangay	Hazards Identified	Frequency	%
A		8	66.67
B		9	75.00
C		5	41.67
D		5	41.67
E		4	33.33

Legend:

Earthquake | *Fire Spread* | *Dengue*

Large Storm | *Flood* | *Leptospirosis*

Tropical Cyclone | *Erosion along rivers or land* | *Insecurity/Violence*

Landslide | *Storm Surge* | *Industrial contamination*

have to implement constant monitoring through their community security personnel locally known as *'tanods'*. Barangay council plays the principal role of carrying and mobilizing certain individual or groups of Barangay *'tanods'* in maintaining peace and order (Laru-an, et.al., 2015).

The respondents in Barangay B situated near the west valley fault and posed high risk of damage identified nine hazards. Large storms and tropical cyclones (e.g. typhoon Ondoy) were identified by the respondents. There were also cases of minor to major fire spread especially in some areas where houses are made of light materials. The fire brigade finds it difficult to access residences in the area because some streets are too narrow for the fire brigade to maneuver. Moreover, obstruction of car vehicles and illegal constructions contribute to this problem. The Barangay is also susceptible to flood where areas are situated near low-lying areas. Aside from the flood due to heavy rains, there were also cases of erosion along rivers. The flat area associated with a lower slope is usually prone to flood occurrence and water infiltration is one of the key factors in flood prone areas (Abunyewah, et.al., 2018). Community officials are considering the relocation of residents from rivers and elevated areas to reduce risks due to erosion and landslide. In addition, various industries are present in the community which can pose risks of possible contamination if not properly monitored. Finally, storm surge also poses hazards to the residents.

The respondents in Barangay A, also situated near the west valley fault, identified eight hazards. Large storms and tropical cyclones (e.g. Ondoy) were also experienced by the residents. There were also hazards resulting to fire spread due to houses made up of light and combustible materials.

Himoto, et.al. (2008) pointed out that fire starting in a densely-built urban area is due to older, less robust wooden houses that easily burn. The amount and types of combustibles are some of the several uncertain factors which may need further consideration and must be included in risk analysis. Putting up of firewalls is not a priority of the residents unlike in subdivisions where houses are made of concrete. There are also low-lying areas. Flooding is eminent. This scenario is the same with the settlement of residents near rivers. Erosion also poses risks. Furthermore, there were cases of dengue outbreak. Residents do not usually participate when it comes to community anti-dengue program.

The respondents in Barangay D, which is also situated near the west valley fault, identified five hazards. Fewer hazards were identified wherein dengue is one of the issues. Damaged creeks and improper garbage disposal were identified by the residents as reasons which contributed to cases of dengue recorded by the committee on Disaster Risk Reduction, barangay health center, and environmental management bureau. Poor sanitation of urban habitat has been the cause of the increasing number of dengue fever (Sih, et.al., 2016). Fire spread is also encountered by the participants who responded that their houses are made up of light materials. Overloading and illegal electrical connections are rampant. Residents have resorted to illegal mode of electricity connections within their neighbourhood by hooking wires to electricity poles to connect electricity to their dwellings. This illegal means of connection has heightened the risk of fire in these communities (Sarpong, 2013).

The respondents in barangay E also identified five hazards which can pose risks to vulnerable residents. The barangay is also situated near the west valley fault which poses high risk to them. Flood is triggered by heavy rainfall brought by large storms and tropical cyclones. Fire spread is also encountered as one of the hazards; however, this does not concern them the most. Constant programs implemented along with monitoring of the officials through a series of fire inspections can minimize the impacts.

Barangay F has experienced the lowest number of hazards. The participants identified four hazards. Like other barangays, it is also situated near the west valley fault. The residents are expecting high damage and casualties when 'the big one' happens. They also identified large storm and tropical cyclones which pose risks to them. Big trees fell due to heavy rainfall brought by these two hazards were recorded. Fire spread is also encountered but controllable because majorities are concrete houses and have fire walls.

Table 2 depicts the level of community disaster resilience of the Barangays. Out of five areas, governance is in resilient category. All depicts that all barangays are resilient in terms of governance having an average mean of 3.36, which implies that there are coherence and integration of good governance that exists in Barangays. Interventions are extensive, covering all main aspects of the problem, and they are linked to a coherent long-term strategy. Barangays have high resilience in community leadership, rights awareness, and advocacy components having mean scores of 4.33 and 4.50 respectively. One of the key indicators of successful community-based Disaster Risk Reduction management is having proactive community leaders who can help reduce the possibility of disaster within their barangays (Mohammed, 2018). The Barangays are resilient in the integration of development and advocacy, and women's participation having mean scores of 3.17. Finally, Barangays have medium resilience in terms of access to funding and partnerships, and the inclusion of vulnerable groups having mean scores of 2.83 and 2.17 respectively.

The Barangays have medium resilience in the other four thematic areas: risk

Table 2

Weighted Mean, Percentage, and Category of Level of Community Disaster Resilience Characteristics

Governance	**Mean 3.36**	**Category R**
1. Rights awareness and advocacy	4.50	HR
2. Community Leadership	4.33	HR
3. Women's participation	3.17	R
4. Integration with development planning	3.17	R
5. Access to funding and partnerships	2.83	MR
6. Inclusion of vulnerable groups	2.17	MR
Risk Assessment	**Mean 2.83**	**Category MR**
7. Hazard Assessment	3.00	MR
8. Vulnerability/Capacity Assessment	3.00	MR
9. Local & Scientific Methods for Risk Awareness	2.50	MR
Knowledge and Education	**Mean 2.94**	**Category MR**
10. Cultural Attitudes and Values	3.50	R
11. Public Awareness & Knowledge	2.67	MR
12. Dissemination of DRR knowledge	2.67	MR
Risk Management & Vulnerability Reduction	**Mean 3.01**	**Category MR**
13. Health Access and Awareness in Normal Times	4.17	HR
14. Operation of Education Services in Emergencies	4.17	HR
15. Land Use Planning	3.83	R
16. Food and Water Supplies	3.67	R
17. Access to Healthcare in Emergencies	3.50	R
18. Protection of Infrastructure and Basic Services	3.00	MR
19. Sustainable Environmental Management	2.67	MR
20. Access to Market	2.67	MR
21. Hazard-Resistant Livelihood Practices	2.33	MR
22. Social Protection	2.33	MR
23. Access to Financial Services	2.17	MR
24. Income and Asset Protection	1.67	LR
Preparedness and Response	**Mean 3.03**	**Category MR**
25. Capacities in Preparedness and Response	**3.67**	**R**
26. Emergency Infrastructure	**3.33**	**R**
27. Volunteerism and Accountability	**2.67**	**MR**
28. Early Warning System	**2.83**	**MR**

29. Contingency Planning	**2.83**	**MR**
30. Emergency Response and Recovery	**2.83**	**MR**

Legend: High Resilience (HR); Resilient (R); Medium Resilience (MR); Low Resilience (LR); Minimal Resilience (MR)

assessment (2.83), knowledge and education (2.94), risk management and vulnerability reduction (3.01), and preparedness and response (3.03). This level implies that the Barangays are expected to have development and implementation of solutions for the given items or criteria. This also means that the Barangays have the capacity to improve their long term interventions.

The Barangays have medium resilience in hazard and vulnerability assessment, and local and scientific methods in risk awareness. These indicators must be improved because Chong, et.al., (2018) argued that monitoring of community performance against disturbances would assist community in planning and taking actions in developing community resilience. Barangays are looking forward to the inclusion of local and scientific methods in risk assessment as their agenda in connection to their Community Disaster Risk Reduction management because reducing hazard-related loss and damage relies heavily on scientific inputs and academic researches on disaster risks could help generate theoretical attention and promote realistic participatory strategies for policymakers and practitioners (Dilley, et.al., 2016; Mercado, 2016). Moreover, risk assessments, as reiterated by Abunyewah, et.al. (2018), provide strong basis to commence the process of reducing the negative consequences posed by natural hazards and identify risk impacts.

The Barangays are resilient in the component of cultural attitudes and values while having medium resilience on public awareness and knowledge, and dissemination of Disaster Risk Reduction knowledge. A study conducted by Hoffman & Muttarak (2017) revealed that education can substitute disaster experience in promoting the take-up of precautionary measures as well as increases preparedness actions. This implies that proper awareness by means of education to the public about disaster risk reduction can help them be more resilient. Barangays have conducted a series of seminars and trainings for their residents and Disaster Risk Response team members and officers. Those activities would provide awareness to the people. Sih, et.al., (2016) reiterated that equal knowledge among stakeholders (officials, residents, business sectors, etc.) is one of the key factors that influence the effectiveness of Disaster Risk Reduction activities in the community. Educational institutions have the capacity to educate, research, and bring stakeholders together to share experiences, increase the knowledge base and facilitate improved decision-making in order to minimize the disaster effects and loss of lives (Mohammed, 2018).

The Barangays have high resilience in health access and awareness in normal times and operation of education services in emergencies. This result conforms with the study of Ilumin & Oreta (2018) that educational function focuses on "continuous learning" and consists of continuous conduct of classes, preservation of school records and documents for future use, and availability of basic resources and access to basic facilities. Data revealed that barangays are resilient in terms of access to healthcare emergencies, food and water supplies, and land use planning. On the other hand, six barangays have medium resilience in sustainable environmental management, hazard-resistant livelihood practices, social protection, access to financial services, and protection of infrastructure & basic

services components. In terms of access to financial services, Siriwardana, et.al., (2018) reiterated that when the community work on their post-disaster management processes, rehabilitation and reconstruction works were carried out slowly due to the delay in resource allocation. In the area of protection of infrastructure, Macaskill & Guthrie (2018) argued that it is important to recognize that there was some insurance cover for horizontal infrastructure assets as this cover can influence the decision making of local authorities with respect to investing in measures to reduce disaster risk. Barangays have low resilience when it comes to income and asset protection. Participants shared that they do not have means of protecting their assets. Barangay officials are trying to address problems concerning to source of livelihood for the residents.

The Barangays are resilient in terms of capacities in preparedness and response, and emergency infrastructure. The capacities in preparedness and response of the barangays according to Siriwardana, et.al., (2018) employing multi – stakeholder approach was visible where both government officials as well as NGOs provided their full support during the post-disaster management processes. These stakeholders usually provide relief items and assist in rescue operations. Establishing and strengthening the capacities of communities to anticipate, cope with, and recover from the negative impacts of disaster could be the long term goal of the community Disaster Risk Reduction Management (Mohammed, 2018). The Barangays have medium resilience in the areas of early warning system, contingency planning, emergency response & recovery, and volunteerism & accountability. The findings in this present study with regards to contingency planning, and emergency response and recovery conforms with the study of Sih, et.al., (2016) that community stakeholders focus only on pre-disaster phase which shows the low experience in preparedness and response because they do not fulfill all of disaster management components in DRR management guidelines. Recovery efforts should aim to create a better balance between economic, cultural, environmentally sustainable and diversity motivations (Morten & de Sylva, 2018).

The extracted data in this study could be the basis of an evaluation by the communities and local government to somehow reform and revisit some of their Disaster Risk Reduction programs. They can focus on the four thematic areas (risk assessment, knowledge and education, risk management and vulnerability reduction, and preparedness and response) in the implementation of programs to help the Barangays attain a disaster resilient community. The full cooperation and active participation of the communities in the program could sustain their efforts towards achievement of their targets.

Conclusions

This study aims to determine the level of disaster resilience of the Barangays that participated in the study. This study wants to explore how these urban communities deal with various hazards with respect to the given indicators in promoting urban disaster resilience. This study underscores baseline data on the disaster resilience level of Barangays in developing future programs in helping the community to become more resilient. Moreover, the local government units with the participation of local communities could evaluate the impacts of existing implemented projects or ongoing programs to ensure quality outcomes.

The participants encountered various hazards with respect to their locations and exposure to risks. Majority of the hazards encountered by the participants are hydrometeorological, geological and human-induced. The level of hazards exposure is due to the location of the Barangays and

exposure to risks which triggered disasters causing damage to properties and even casualties. There are hazards which are largely encountered by the participants in particular Barangays. From the given twelve hazards, participants in Barangay C identified ten while Barangay F identified only four. It implies that the location of the Barangays and human activities contributed to the distribution of exposure to hazards.

Participants are confident with the leadership and governance of their Barangay officials in ensuring resilience against disasters. This means that residents are very much aware of the advocacies of their leaders in promoting community-based disaster risk reduction management. All Barangays are mandated to create the Barangay Disaster Risk Reduction Management Council. Seminars and trainings conducted helped the participants to become proactive in dealing with these hazards to reduce the impacts of disasters.

The Barangays have concerns regarding the other thematic areas: risk assessment; knowledge and education; risk management and vulnerability reduction; and disaster preparedness and response. The Barangays have strong and weak points in some components. They also vary in disaster resilience. Some barangays do not have complete reports when it comes to proper recording of the DRR management. With the absence of documents that describe the city baseline activities on disaster management, there will be no guidelines at all in achieving some better outputs, outcomes and impacts pertaining to DRR activities (Sih, et.al., 2016).

Recommendations

The Barangays only deal with addressing disasters which the participants thought most common to experience because of their locations. Like many others which rely on cross-sectional survey, this study has limitations. First, this study was not able to scrutinize the mere reasons about the differences on the level of community disaster resilience. A case study design is required to obtain a deep understanding with regards to this situation. Second, since the data were derived from survey, this study was not able to provide links between the given indicators to show relationship between indicators. Longitudinal and causal-comparative data can contribute towards the determination of the links between indicators to provide more information about the existing resilience indicators among the barangays. Third, the Barangays varied in terms of approaches in developing community disaster resilience. Another study which involves other barangays which have similar characteristics with the barangays participated in the present study to verify the findings in the present study. Updated and accurate reports from the barangays as means of verification are necessary to support the indicators in the survey. Though this study is cross-sectional in nature, proponents were able to show some insights. First, some Barangays could serve as models for other barangays when it comes to dealing with preparations and response to disasters since these potential Barangays have an existing practices and well-trained members in Disaster Risk Reduction. Second, the Barangays can provide trainings and seminars for their personnel and need to be active and cooperative in attending this program to strengthen awareness to disasters. The formation of community-based responders is evidence that the City Government is extending its support to the barangay level by training local officials on how to respond in times of disaster (Mohammed, 2018). Third, Barangay officials could consider activities to be implemented in the community which could help the residents to be disaster-ready. Fourth, Barangays could be partners in implementing trainings, workshops, and simulations/drills as part of disaster

readiness and operation. The aforementioned insights need the support of the local government unit. LGUs should continue their plan to mitigate and reduce damage and casualty through serious, well-planned, and intensive programs for the barangay disaster risk reduction (BDRR). Finally, there is a need to empower every single person in the community to become resilient.

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