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HOUSEHOLDS' ATTITUDINAL RESPONSE TO DISASTER PREPAREDNESS: IMPLICATIONS FOR PREPARING A COMMUNITY FOR A DISASTER

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ABSTRACT – Households' attitude towards disaster preparedness strategies is important in preparing the entire community for a disaster. The Philippines has experienced several extreme climatic disturbances in recent years such as massive floods, strong typhoons, and drought. Community disaster preparedness has become necessary because these disturbances both destroyed major food sources, properties, and life. A survey involving 577 households in a flood-prone area in Laguna, Philippines was conducted from May to July 2015 to determine households' attitudinal response towards disaster preparedness strategies. Disaster preparedness strategies considered were as follows: (a) ensuring home safety; (b) buying a disaster supply kit; (c) preparing an evacuation plan; (d) informing the entire family about the household's disaster preparedness plan; (e) attending disaster preparedness training; and (f) following the advice of the local authority during a disaster. Results of the study indicate a favorable attitude of the respondents towards the identified strategies. Majority (92%) of the respondents had agreed to do these strategies except for buying a disaster supply kit strategy. Local authorities should invest on this attitude to prepare, develop, and implement a strategic community-wide disaster preparedness plan while supporting the households in having disaster supply kits.

Key words: household disaster preparedness, attitudinal response, community disaster preparedness

Introduction

Disasters are becoming global and more threatening in recent years. The 2015 World Disasters Report indicated that about 317 natural disasters had occurred in 2014 in 94 countries (Singhal, et al., 2016). Interestingly, about 48% of all disasters occurred in

Asia, and over 85% of those killed and 86% of those affected globally are in Asia. Especially for developing countries in Asia, this condition calls for an effective and efficient disaster preparedness strategy that is brought down to the community or household level.

However, community disaster preparedness is a complex process. While there are several entities involved in the process, it is driven by their attitude as well. Attitude has been considered as an important factor that influences household's decision to prepare for a disaster. For instance, Ostad-Taghizadeh et al. (2012) reported that attitude is a primary determinant for taking precautionary measures against an earthquake. Motoyoshi (2006) had also reported that attitude is a key factor in carrying out disaster preparedness measures. Unless people perceive that disasters can occur, they do not carry out any disaster preparedness measure (Motoyoshi, 2006).

In a developing country, like the Philippines, a study that determines and analyzes the attitudes of households on disaster preparedness is crucial. As the country is located in the ring of fire, it is expected to be repeatedly affected and damaged by climate- and geologic-related disasters. For instance, Santos (2016) reported that the Philippines had endured about 274 natural calamities over the past two decades, making it the fourth most disaster-prone country in the world. This is critical since any damage due to a disaster would eat up a large portion of the country's economic gains. As Valencia (2017) had indicated based on a report from Asian Development Bank, the country would be losing up to US$300 billion until 2100 at the current level of mitigation and response to the occurrence of natural disasters. This amount is about 83% of the country's 2010 gross domestic product (Valencia, 2017). The economic loss of typhoon Haiyan alone in 2013 had been estimated to reach up to US$14 billion (Harress, 2013). As the economic impacts of a disaster is becoming increasingly significant, preparing the households for a disaster becomes imperative as they are at the forefront of destruction during a disaster and the first who suffer its impacts.

The study was conducted to (a) characterize the respondents according to pre-determined socio-demographic factors; (b) analyze the attitudinal response of households towards disaster preparedness strategies in one of the typhoon- and flood-prone municipalities in Laguna, Philippines; and (c) identify policy and research implications of the results.

Methodology

The Study Site

The study was conducted in one of the second-class municipalities in Laguna, which is prone to floods due to its geographic location, i.e. as a lakeshore municipality of Laguna de Bay, the largest lake in the country (Figure 1). With Laguna de Bay bordering its northern side and rivers traversing its landscape, Bay is highly vulnerable to flooding. The lake and rivers overflow during typhoons and monsoon rains. In 2013, Bay has been placed under a state of calamity due to massive flooding caused by Tropical Storm Maringin (Takumi & Esconde, 2013). Bantayan (2015) also indicated that among the 10 low-lying barangays of the Municipality, about nine barangays are highly vulnerable to flood risks. As the Municipality's population has been projected to increase over time, household disaster preparedness has become a concern. According to PSA (2010), the

Municipality's population is estimated to increase by 62,143 in 2015 with an estimated annual growth rate of 2.11%.

Research Design and Household Sample

About 577 household respondents, who were selected purposively, participated in the survey. The respondents were distributed in eight of the 17 barangays of the Municipality. Permission to conduct the study was sought from the Municipal and Barangay officials prior to survey implementation. A courtesy call with the Local Government Unit (LGU) officials (e.g. Mayor, Administrative Officer, and Barangay Officials) was done to discuss about the research, interview protocol, and expected outputs of the study. Consent to participate was also sought from the respondents prior to survey protocol implementation. The respondents were made aware of the study and its objectives. The interview was conducted from May to July 2015. More than 50% of the 76% female respondents were housewives, while 91% of them were in the working age bracket. Interestingly only 46% were unemployed.

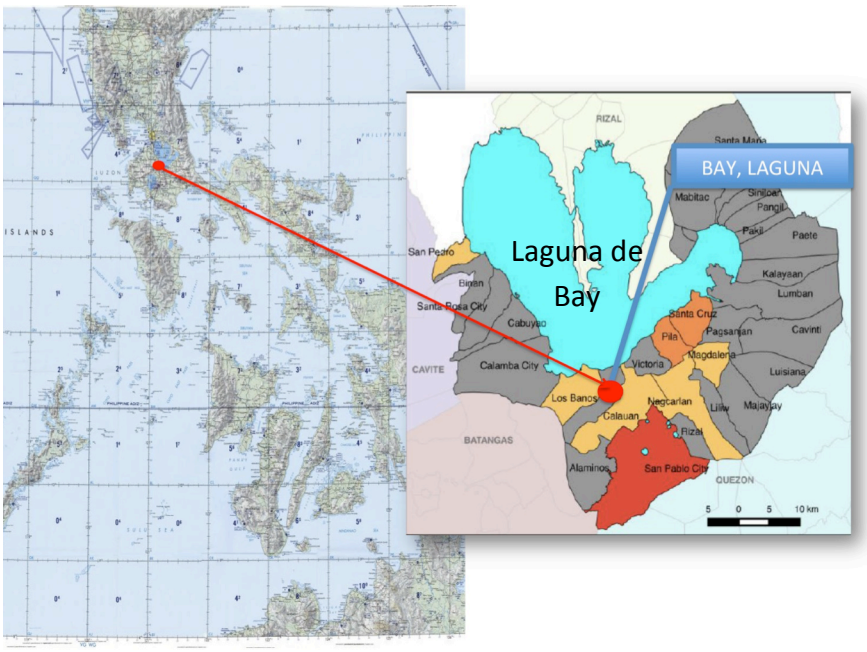

Figure 1. Study site i.e. Bay, Laguna, Philippines (source: PRDP-NPCO Geomapping and Governance Unit, Province of Laguna)

Data Collection, Processing, and Analysis

The survey modified Brunie's (2007) interview instrument for household's disaster preparedness study (Appendix A). The interview collected data on the following: (a) respondent's socio-demographic factors; and (b) respondent's attitudes towards disaster preparedness strategies. Disaster preparedness strategies considered were as follows: (a) ensuring home safety; (b) buying a disaster supply kit; (c) preparing an evacuation

plan; (d) informing the entire family about the household's disaster preparedness plan; (e) attending disaster preparedness training; and (f) following the advice of the local authority during a disaster. Responses consist of 3-scale choices, i.e. agree-undecided-disagree. Using an SPSS software, collected data were processed and analyzed. Descriptive analytical method was used to describe responses trends.

Results and Discussions

A. Socio-demographic characteristics of the respondents

Most of the respondents (91%) belong to the working age (i.e. 20 to 65 years old) in the Philippines (Table 1). Though the Philippine Labor Code allows children between 15 and 18 years old to work on certain conditions, minimum employable age in the country remains at 18 years old (IPEC-ILO, 1998) while 65 years old is the compulsory retiring age. Mean age of the respondents was computed to be 44 years old.

In addition, more females (76%) had participated in the survey than male respondents (24%) indicating a more domestic-based role of women in disaster preparedness as far as the study site is concerned. Ashraf and Azad (2015) reported similar observations in their study on gender issues in disaster. They observed that women are primarily responsible for their domestic roles in disaster preparedness and risk management. Such pattern highlights the importance of contextualizing disaster preparedness capacity building strategies towards women if it has to be brought down to the household level. This is necessary as women have high vulnerability to disaster. In a post-tsunami study in Aceh, Indonesia, Ariyabandu (2009) reported that most of those who died were women. As indicated in the report, women had to cling to their children and save them when the waves hit, leaving them little power to save themselves.

Only 18% of the respondents had finished a higher education resulting in their low employability. To cite, only 46% of the respondents was employed at the time of the survey. This could probably explain the low estimated mean household income of the respondents. As indicated in Table 1, mean household income is only PhP5,542.26 (or US$118.00), which is far below than the estimated poverty threshold of PhP19,137 (or US$407.00) for the region (PSA, 2012). Such pattern has high implication on the vulnerability of women to disasters in the study site. As cited above, more women than men were left at home and consequently, would be left to perform their domestic role when a disaster strikes. Unfortunately, housing infrastructure of poor households is weak and could seldom withstand against disaster shocks (Lacson, 2015), and therefore, increases the overall vulnerability of women to disasters. In a 1993 study of the effects of an earthquake in India for instance, it was observed that more women died during the disaster because they were inside their homes and consequently crushed by falling debris, while men were working in the fields (Lacson, 2015).

The impacts of low mean household income on disaster preparedness could be further complicated with relatively big household size of the respondents. Mean household size was computed at 5 but with few respondents (31%) having a household size that is greater than 5. The lack of income and big household size could greatly reduce the household's capacity to prepare for a disaster, or at least, make their dwellings resilient to the impacts of disasters (Davis et al., 2010).

The mean length of residence was computed to be 32 years though some of the respondents have lived in the study site for more than 32 years.

Table 1. Socio-demographic profile of respondents (n=577)

Variable	Frequency	Percentage
Age	**20**	**4**
13-19	17	3
20-30	100	17
31-40	126	22
41-50	140	24
51-65	162	28
66 and above	32	6
Mean = 44		
Sex		
Male	141	24
Female	436	76
Education		
None	7	1
Elementary	167	29
High School	295	51
College	106	18
Graduate	2	0
Occupation		
None	309	54
Student	8	1
Self-employed	92	16
Employed	34	6
Others (*part-time laundry, selling goods in a sari-sari store, 'pakyaw' worker during harvest time of a ricefield, etc.*)	134	23
Household's Average Monthly Income	**83**	**14**
0-5500	404	70
5501-10000	137	24
10001-20000	26	5
20001-40000	7	1
40001 and above	3	1
Mean = 5,542.46		
Household Size	**162**	**28**
0-5	397	69

9-10	169	29
11 and above	11	2
Mean = 5		
Years of Residency	**5**	**1**
0-10	84	15
11-20	92	16
21-30	114	20
31-40	85	15
41 and above	202	35
Mean = 32		

B. Attitudinal Response to Disaster Preparedness Strategies and Implications

Some respondents were not keen enough to agree that buying a disaster supply kit is important in disaster preparedness. Of the disaster strategies presented, buying a disaster supply kit received the lowest number (79%) of respondents who agreed to the importance of such strategy relative to other strategies. Households' lack of income may probably explain this pattern (Davise, et al., 2010).

Table 2. Respondents' attitude towards disaster preparedness (n = 577)

Attitude	**Frequency (%)**		
	Agree (1)	**Undecided (2)**	**Disagree (3)**
Ensuring home safety	532 (92)	24 (4)	21 (4)
Buying a disaster supply kit	459 (79)	68 (12)	50 (9)
Preparing an evacuation plan	540 (94)	20 (3)	17 (3)
Informing the entire family about the household's disaster preparedness plan	552 (96)	10 (2)	15 (2)
Attending a disaster preparedness training	541 (94)	29 (5)	7 (1)
Following the advice of the local authority during a disaster	558 (97)	16 (2.95)	3 (0.05)

It can be recalled that household respondents have income below the poverty threshold for the region, and that, they have relatively more members to support with their meager income. Poor households usually prioritized food, housing, and household facilities in their income allocation. Halim, Wahyudi, and Prasetyo (2015) had indicated that poor households tend to allocate their income in categories of consumption related to housing and household facilities, various goods and services, clothes, and rice. Fothergill and Peek (2004) made a similar observation where they reported that "poor people are less likely to prepare for disasters though they have proportionally higher material losses and face more obstacles during the phases of response, recovery and reconstruction."

Vaughan (1995) however explained that people living in poverty are less likely to perform necessary disaster preparedness actions because of a lack of sense of personal control over potential outcomes aside from expenditure prioritization. Since the strategy requires them to cash out some money, some of them might have seen it as unnecessary if they have options to increase their preparedness such as following the advice of the local authority during a disaster or informing the entire family about their plan in case of a disaster. Both strategies have received the highest number of respondents who agreed to do them (Table 2).

Interestingly, about 94% of the respondents showed a positive attitude towards attending disaster preparedness trainings (Table 2). Only 7 of the 577 respondents or 6% had indicated a negative response on this item. The LGU in the study site should invest on this attitude and come up with disaster preparedness trainings and/or awareness raising activities to enhance the culture of preparedness among the households (Seneviratne et al., 2011). This is necessary to help the households reduce or avoid their potential losses during a disaster (Warfield, 2004). As Fothergill and Peek (2004) had indicated, poor people suffer the greatest disaster losses and have the most limited access to public and private recovery assets.

In addition, most of the respondents (97%) have agreed to follow the advice of the local authority during a disaster. This strategy had the most number of respondents who indicated that they would do it, and the least number of respondents who gave a negative response (Table 2). Again, this could help the LGU develop a program for capacity building for disaster preparedness among the household sector in the study site. As Motoyoshi (2006) had indicated, not all people are tolerant of flood risk in the areas where they live. As the poor households are most vulnerable to such risk, it is important that they should be trained on preparedness. In fact, Motoyoshi (2006) suggested that local prevention efforts should be made on a daily basis in order to perform early relief activities quickly in the event of a disaster.

It could also be noted that more household respondents (96%) had indicated sharing their disaster preparedness plan to all members of the family. Such attitude could help every member of the household prepare for a disaster. Preparing for emergencies needs the participation of every family member including the young children and teens to ensure their own safety and sense of empowerment (Kirschenbaum, 2006). So when a disaster strikes, every family member would know what to do. How well a household manages the impacts of a disaster depends greatly on the level of preparedness and coordination of the family members (Kirschenbaum, 2006).

Creating and communicating the family disaster preparedness plan is necessary because children and families have unique needs during emergencies that are often unaccounted for in emergency plans (Kirschenbaum, 2006). Hence, making disaster preparedness as an important family matter could enhance further the preparedness of the household for a disaster.

Conclusion and Recommendations

A survey involving 577 household respondents in Bay, Laguna, Philippines was conducted to understand households' attitudinal responses towards disaster preparedness strategies. Results showed that respondents have positive attitudes towards the

strategies presented to them though buying disaster supply kit appeared to have the lowest number of respondents who agreed to do it. Having a positive attitude towards such disaster preparedness strategies as following the advice of a local authority during a disaster, attending in trainings on disaster preparedness, and communicating disaster preparedness plan to family members could help the local government unit develop and implement community disaster preparedness capacity building projects and programs. The LGU may find it easier to engage the household sector in its preparedness programs if it has a positive outlook towards disaster preparedness.

However, there is a need to enhance the data collection of the study as it was only able to get the views of households belonging to the lower income class. As income has been observed to be a factor affecting households' decision-making for disaster preparedness, increasing the number of respondents from the higher income classes could provide a clearer perspective on how households respond to preparedness strategies. Likewise, it is recommended that factors influencing the respondents' attitudes towards the preparedness strategies used in the study should be determined and analyzed. There is a need to conduct a study to identify these factors in order to find ways on how to engage the community in disaster-prevention activities.

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APPENDIX A
QUESTIONNAIRE USED IN THE STUDY[1]

Dear Respondent:

We would like to request your consent to participate in this survey on the household disaster preparedness, which we are conducting in your locality. The survey is intended to analyze the household's preparedness to natural disaster to have an empirical basis for the formulation of any measures that could help improve the preparedness plan of your community. The data that this survey would generate would be used solely for academic purposes, and will remain confidential. Confidentiality will be maintained by reporting the data as aggregates, averages, and percentages. No identity or anything that would point to a particular personality or individual would be reflected in the report.

Your invaluable support and cooperation in this research would highly be appreciated and recognized. We would be indebted to you the success of this study.

For inquiries about this study, please do not hesitate to contact the sender through the information below. Thank you very much.

Sincerely,

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Phone: (+6249) 536-6001 local 100

[1] Modified from Brunie, A. (2007). Household disaster preparedness: assessing the importance of relational and community social capital. A dissertation submitted to the faculty of the University of North Carolina at Chapel Hill in partial fulfilment of the requirements for the degree of Doctor of Philosophy in the Department of City and Regional Planning. Retrieved from https://cdr.lib.unc.edu/indexablecontent/uuid:08d3c39b-eea2-4f8c-ae36-adf0c919be19

Respondent No:_____

I. RESPONDENT'S PROFILE

1. Position in the family
    1. head
    2. Wife/spouse
    3. Son/daughter
    4. son-in-law/daughter-in-law
    5. Grandson/granddaughter
    6. Father/Mother
    7. Others _____

2. Barangay:_____

3. Age:_____

4. Sex:
    1. Male
    2. Female

5. Educational Attainment:
    0. None
    1. Elementary Level
    2. Elementary Graduate
    3. High School Level
    4. High School Graduate
    5. College Level
    6. College Graduate
    7. Post Graduate
    8. Others _____

6. Occupational Status
    0. None
    1. Student
    2. Self- employed
    3. Government Employed
    4. Private Employed
    5. Others: _____

7. Estimated Household Average Monthly Income: _____

8. Number of years of residence in the barangay: _____

9. Household size: _____

II. ATTITUDE TOWARDS A NATURAL DISASTER PREPAREDNESS

In the following statements, please indicate whether you agree, undecided, or disagree. You can check your answer besides the statement. (**1- Agree; 2 – Undecided; 3 – Disagree**)

STATEMENT	Agree	Undecided	Disagree
01. I will always ensure that my family and home are safe from a natural disaster.			
02. As long as I have all the necessary supplies for an emergency kit somewhere in my house, I am prepared for an emergency.			
03. It is important to prepare for steps needed to take in case me and my household need to evacuate our home.			
04. As long as one person in my family knows what our emergency plan is I will think that our family is prepared and there's no need to have further training for it.			
05. I am willing to attend any preparedness training in our community.			
06. I will follow the advice of local responders to ensure my safety and theirs.			

Thank you for your participation in this survey! We are grateful for your responses. Surely, they would help us achieve our objectives in this study.