Risk and culture: the case of typhoon Haiyan in the Philippines

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Abstract

Purpose – The purpose of this paper is to look into the socio-cultural contexts that shaped people's evacuation decisions during typhoon Haiyan in three affected areas in the Philippines.

Design/methodology/approach – This is a multi-sited ethnography that utilized interviews, focus group discussion and participatory risk mapping among selected women and men in areas affected by typhoon Haiyan in the Philippines.

Findings – Coastal communities encounter threats from storm surges as brought about by typhoons. During such periods, disaster evacuation programs are implemented. In some instances, evacuation programs are met with resistance from community members. Such resistance has been attributed to the people's hard headedness and ignorance of the potential impacts of living in hazard prone areas. This paper argues that it is not solely for these reasons that people refused to evacuate. Results showed that hesitance may also be due to other considerations and priorities vital to people. It is also because people had faith in the knowledge and strategies that they were able to develop by engaging with hazards through time. Furthermore, previous experiences with disaster evacuation programs cast doubt on their value in saving their lives. Life in the evacuation areas can be as dangerous if not more compared with living in their coastal homes. Some of the informants believed that they were being moved from hazard zones to death zones. This paper ends with recommendations for the development of evacuation programs that build people's resilience while taking into consideration the local moral world in identified hazard zones in the Philippines.

Research limitations/implications – The study focused on three areas affected by typhoon Haiyan in the Philippines, namely, Tacloban City, Guiuan, Eastern Samar, and San Francisco, Cebu.

Originality/value – Most research on disaster mitigation looked into the engineering and technology aspects. This paper looks into the socio-cultural contexts of disaster evacuation.

Keywords Risk perception, Evacuation behaviour, Social memory, Socio-cultural contexts of disaster evacuation, Typhoon Haiyan

Paper type Research paper

1. Background

On November 8, 2013, Typhoon Haiyan, locally known as typhoon Yolanda, made landfall in the Philippines. The super typhoon carried sustained winds that exceeded 185 kph and caused storm surges that reached six to seven meters, hence, it was considered as the strongest typhoon to hit the Philippines and the deadliest disaster in Philippine modern history (Centre for Research on the Epidemiology of Disasters, 2014). As of April 2014, the National Disaster Risk Reduction and Management Council has recorded around 6,300

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deaths, 1,061 missing, and 28,689 injured persons. In addition, there were 12,000 shelters destroyed and 47,000 nearly damaged. According to Department of Social Welfare and Development, an estimated 14.8 million people were affected and 4.1 million people displaced because of the typhoon (Commission on Audit, 2014).

In light of the more recent disaster experiences in the Philippines, disaster research has become even more urgent. Disasters are better viewed as outcomes of complex interaction between potentially damaging physical events (e.g. storm surges, floods, typhoons), and the society, which encompasses the existing infrastructure, economy, and the environment (Birkmann, 2006). Understanding the social and cultural contexts of the disasters is seen to be valuable in the development of more appropriate and responsive disaster preparedness and response mechanisms. Approaches to disaster mitigation have adopted a holistic perspective which recognizes not only the need for technical solutions but socio-cultural, economic, and political interventions as well (Young, 1998). There is a need to veer away from the primary focus on hazards mitigation alone toward the addressing community vulnerabilities.

The United Nations International Strategy for Disaster Reduction provides the definition for a disaster that is commonly used in disaster research. A disaster is generally defined as "a serious disruption of the functioning of a society, causing widespread human, material, or environmental losses which exceed the ability of the affected society to cope on its own resources" (United Nations International Strategy for Disaster Reduction (UNISDR), 2009, p. 9). This definition, however, primarily focuses on the role of external individuals, organizations, and groups in recovery. The important role of the communities affected in reconstructing their own lives is mostly overlooked in disaster research (Parkes, 2011). Moreover, in the past, disaster interventions had focused on hazard mitigation. Little attention had been given to the social and cultural contexts of hazards and disasters. However, with recent experiences with tropical cyclones and the resulting disasters, the attention of disaster program planners has been drawn to how and why people respond to hazards the way they do. Hartman and Squires (2006) argued that there is no such thing as a "natural disaster." Hazards are never disastrous by themselves, but are contingent upon humans, living spaces, and relations (social, economic, political) that are happening on the ground. Disasters should not be seen as something "beyond control," for human actions can either reduce or magnify the vulnerabilities of communities to hazard events (Parkes, 2011; Gaillard, 2011). Bankoff (2001) and Wisner (1993) recognized that people have their own explanatory models of their environments. Oftentimes, such explanatory models are not taken into consideration in designing disaster prevention and management programs. Thus, studies on the nature of hazards alone are not sufficient to stem disasters (Oliver-Smith, 1996, 2002; Oliver-Smith and Hoffman, 2002). The social and cultural contexts that shape peoples' responses to disasters as well as how they adapt to these elements in their environment are equally vital.

Risk perception is shaped by the socio-cultural milieu (Hewitt, 2009). Hence, contextualizing risk perception in defining one's vulnerability to hazards has to be understood in the peoples' own terms; one that recognizes what people value most in their societies. People's behavior is influenced not only by objective risks, but also by their subjective perceptions of risk events. Subjective risk perceptions are important because it incorporates a myriad of factors, which includes the individual's understanding and local knowledge of the risk, and previous exposure to particular risks (Doss *et al.*, 2006). Often, people are seen as ignorant of the nature of hazards and the risks they face in their engagement with hazards. Such seeming ignorance or

disregard of hazard is viewed as what put them in harm's way resulting in massive destruction of property and loss of lives. Douglas and Wildavsky (1983) argue that people make calculated risks of their actions in facing a hazard and that their actions reflect their society's social organization and cultural values.

This study looked into the socio-cultural contexts that shaped risk perceptions of people in relation to evacuation during Haiyan in three severely affected sites in the Visayas, the Philippines. Through this study, it is hoped that a better understanding of the people's dilemmas as well as considerations and priorities that guided their responses to the typhoon may be achieved. Moreover, this study aimed to identify safe and unsafe spaces from the peoples' perspective in their attempt to take refuge from the typhoon. In the end, such understanding is expected to contribute to better planning and management of Disaster Risk Reduction and Management (DRRM) for the country.

2. Conceptual framework

This study was guided by the following conceptual model.

The conceptual model in Figure 1 is inspired by Douglas and Wildavsky's "Cultural theory of risk" (Donald Elliot, 1983). In "Risk and culture", Douglas and Wildavsky (1983) viewed risk perceptions as cultural constructions. In the study of risk and disasters, this view is seen to privilege the notion that culture determines the things of value in people's daily lives that are worthy of taking risks to attain. Hence, people will face hazards in their environments in order to protect these things of value to them. Such behavior, however, is not viewed as a total disregard of the hazards they face. Through generations of engagement with the hazards, people have developed cultural ways of addressing these hazards that reduce their risk and vulnerability.

Risk perception is shaped by political, cultural, social, economic, and psychological factors. Thus, Slovic *et al.* (1982, p. 92) contend that "attempts to characterize, compare, and regulate risks must be sensitive to the broader conception of risk that underlies peoples' concerns." Studies that delved into common understanding of risks have

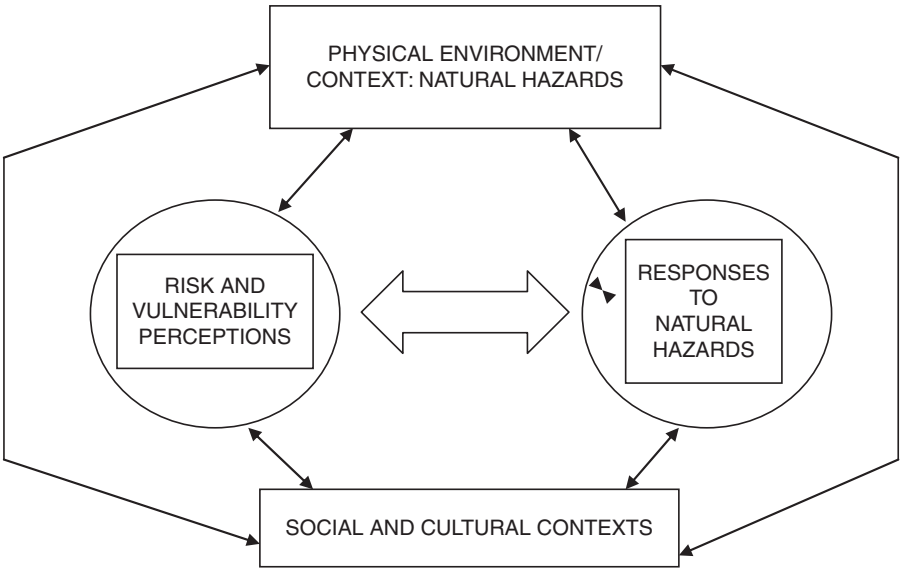

Figure 1.
Conceptual model for the study on culturally constructed perceptions of risk and evacuation responses to natural hazards

increased since the 1950s (Joffe, 2003). Bankoff (2004) argued that disasters "are not simply geophysical or meteorological occurrences, but are psychological matters as well" (p. 111). Kates (1971) identified several factors which could explained the variation of perceptions of hazards. These included the way in which characteristics of the hazards are perceived, the nature of personal encounters with the hazard, and individual personality traits. The characteristics of natural hazards that are considered in one's perception of disasters are magnitude, duration, frequency, and temporal spacing. The personal experiences of people with disasters are affected by timing, frequency, and intensity of the experience. Hence, the historical sequence of encounters with hazards are viewed as powerful shapers of risk perception with the more recent ones being remembered better and having greater influence. The conceptual model developed by the authors is further elaborated below.

The physical environment/context included a description of the landscape and weather in the study sites. Local concepts of the environment are vital aspects that this study covered through local knowledge about typhoons and storm surges. Perceptions of risk covered people's knowledge and awareness of the potential threats and dangers of natural hazards, with focus on Haiyan and the consequent storm surge. Disaster responses referred to how they had acted or reacted to Haiyan and in the follow up field work, to typhoon Ruby. Social and cultural contexts covered various elements within the social and cultural milieu of the informants that had shaped their perceptions of risk as well as their responses to natural hazards. Such elements were valuable to them that they were willing to face threats from natural hazards in order to maintain these. The cultural elements encompassed covered by the study included social structures, social relationships, cultural values, and the social memory of disasters. In relation to risk, culture has also been defined to "[…] consist(s) of beliefs, attitudes, values and their associated behaviors that are shaped by a significant number of people in hazard-affected places. Culture in relation to risk refers to ways in which people interpret and live with risk, and how their perception, attitudes and behaviors influence their vulnerability to hazards" (International Federation of Red Cross and Red Crescent Societies, 2014, p. 14). Culture is also seen as an adaptation to risks from hazards, normally, those that are repetitive in nature, allow forewarning and likely to inflict significant damage to both human and material resources in a particular cultural milieu (Bankoff *et al.*, 2015).

The above model shows that society and nature comprise one world and therefore, are implicated in one worldview. Societies are founded and formed in nature just as nature is culturally constructed and physically altered by society. Both perceptions of risk and vulnerability as well as people's responses to natural hazards are part of their notions of how to successfully engage with both their physical and socio-cultural worlds.

3. Methodology

This is a multi-sited ethnography that made use of data collection methods including focus group discussions as well as episodic interviews as described by Flick (1997) and in-depth interviews among women and men residing in one barangay each in Tacloban City, and San Francisco, Cebu and two barangays in Guiuan, Eastern Samar. Purposive sampling was used in identifying the 90 informants in the three sites. Criteria in the identification of informants included being residents of the study sites, having experienced Haiyan in the study sites, and, willingness to participate in the study. To cover various perspectives, interviews were done among those who had evacuated and those who had not. Key informants from government

agencies and private organizations who worked with the Haiyan affected communities were also interviewed. Participatory risk mapping as described by Cadag and Gaillard (2012) wherein people's perspective on what constitutes safe and unsafe spaces in the communities was also done.

The study sites were all within the direct path of Haiyan. One was an urban site (Tacloban City) and two were rural areas (Guiuan, Eastern Samar, and San Francisco Cebu). It was expected that rural and urban areas would have varying social and cultural contexts that would shape risk perceptions in relation to disaster evacuation. Tacloban City had been more densely populated compared with the other two sites. The study areas represented sites where evacuation prior to the typhoon had not been readily done by the many residents (Tacloban City and Guiuan) as well as a site where evacuation prior to the typhoon had been almost a 100 per cent (San Francisco, Cebu). Such considerations in site selection were deemed to be extremely vital to the attainment of the project objectives.

Figure 2 shows the path of the eye of typhoon Haiyan with the study sites in red.

All the communities covered were coastal with one in Cebu being an islet. Many of the residents are living on the coastlines with fishing as their main source of livelihood. Living on the coasts provides them with easy access to their livelihood activities. However, it also puts them in the way of hazards such as those they encountered during Haiyan. Moreover, houses in these areas were mostly made of light materials that easily get damaged by even the low-intensity typhoons.

Majority of the informants in the three sites happened to be in the 36-45 age range. Majority were married. Most of the informants in the Tacloban City were in the service sector. In Guiuan, most of the men were employed in industries while most of the women were in the service sector. In San Francisco, the men were mostly fishers and/or farmers while the women stayed home to take care of their families. Self-declared monthly income was highest in Tacloban City with most of the informants saying that they earned between 10,000 and 15,000 pesos (US$213-320) per month among the men.

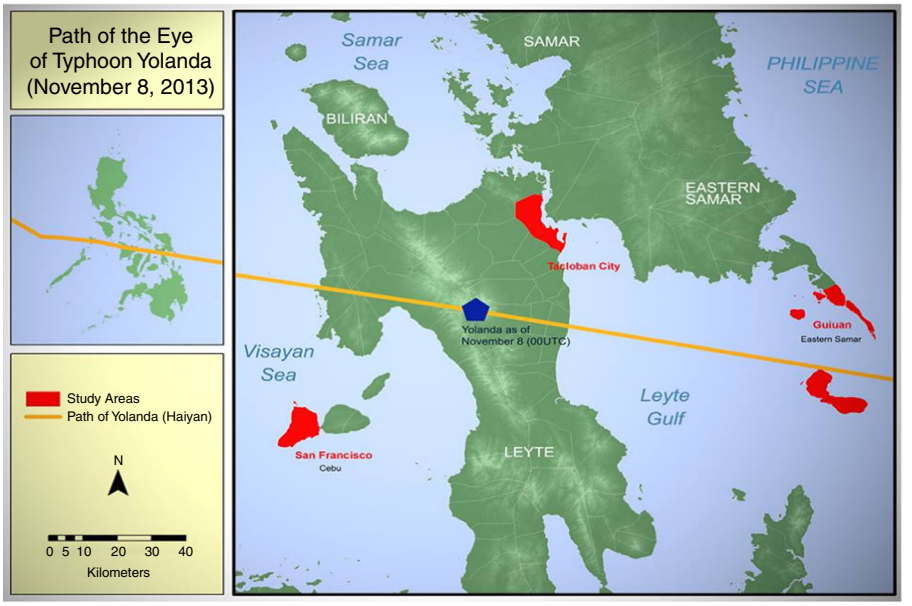

Figure 2.
Path of the eye of typhoon Haiyan and study sites

Women's income in Tacloban City was the same as both the men and women in San Francisco and Guiuan. Majority of the informants in all three sites either graduated from or finished some years on the tertiary level of schooling.

4. Social and cultural contexts of risk

Understanding people's notions of risk in relation to hazards particularly, how such notions define their evacuation decisions entails an understanding of the social and cultural contexts that shape such decisions. These contexts frame the way people perceive risk and the decisions they make. This study particularly focused on evacuation decisions during Haiyan – whether to evacuate or not to evacuate and where to evacuate. In many instances people who refused to evacuate are often seen as hard headed or ignorant of the risks they would face. Data from this study suggest that this is not exactly the case. People had considerations and priorities that shaped their risk perceptions and these could be gleaned from the social and cultural contexts in communities. Such contexts are keys to understanding the interplay of physical (i.e. hazard) and societal (i.e. people) factors that contribute to people's vulnerabilities in the face of hazards.

4.1 Sanay na kami dyan (We are used to it)

In any given year, 20 or more typhoons pass through the Philippine area of responsibility. Hence, according to our informants, *sanay na kami dyan* (we are used to it). Such attitude toward typhoons largely shaped the informants' responses to hazards. The informants felt confident enough to face any typhoon with the knowledge and experience they have accumulated through the years. Having survived all the typhoons of great intensity in the past, they felt that they would survive Haiyan as well. They mentioned, however, that while previous typhoons caused some damage to their properties, none brought with them the *dagat* (sea) or *dulok* (storm surge). Peoples' memories of past typhoons formed frames of reference for action and shaped risk perception.

Many of the people in Guiuan and Tacloban City prepared for Haiyan like they did with the typhoons they encountered in the past. They were *sanay na* and therefore, they thought that it would be relatively easy to "weather the storm." What they had not prepared for was the storm surge. Based on the interviews and the FGD with the respondents, they were not familiar with the storm surge, and most of them thought that Haiyan is just like any storm that they have encountered, only stronger.

San Francisco, on the other hand, had a DRRM system implemented by the local government unit even prior to Haiyan. Under this system people participated in annual disaster drills so they knew what to do and where to go in case there was a need for evacuation. Hence, *sanay na kami*, had also been articulated by the people in San Francisco but in the context of evacuation. When the orders to evacuate came, they readily moved to the usual evacuation sites. None of the other study sites had an evacuation drill program in place the way San Francisco had. It is also important to note that the municipality of San Francisco, Cebu won the United Nations Sasakawa Award for Disaster Risk Reduction in 2011, given by the United Nations Office for Disaster Risk Reduction (Department of Foreign Affairs, 2011).

4.2 Safe and unsafe spaces

The informants identified what they perceived to be safe and unsafe spaces within their communities. Such perceptions appear to have been determined largely by previous experiences with hazards. The identified safe spaces had been their refuge in past storms.

Quite interestingly, the evacuation centers designated by the local government had not been deemed to be safe by some of the informants in both Tacloban City and Guiuan.

In all of the sites, it was generally believed that safe areas were those that were far from the sea and structures that were made of concrete and at least three floors high. Caves were named as safe areas in both Guiuan and San Francisco. In San Francisco, caves were deemed to be safe. Accessibility was also identified as an important characteristic of a safe area. In the case of Guiuan, the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) weather station tower or colloquially termed as the Radar was seen as structurally safe but because it was situated on a hill, it was inaccessible especially to the elderly and people with disability. Moreover, the cramped conditions in evacuation centers led to the easy spread of infectious diseases. In Tacloban, some of the evacuees, especially the children suffered from chikungunya.

4.3 The ties that bind

One's family is considered as a vital resource in crisis situations. Evacuation to homes of family members was generally preferred by informants from the three sites compared with government designated evacuation centers. Because evacuation centers in the three sites were not large enough to accommodate all the evacuees they had to contend with cramped conditions that put them in close proximity with strangers they were not sure they could trust. It was usual for families and neighbors to find space close to each other in the evacuation centers. It seems that the emotional ties of families provided the necessary stability for individuals to cope with the stress and uncertainty of evacuation. In the company of relatives and friends, evacuees tended to have a better assessment of their condition in evacuation centers compared with those who stayed with strangers. Evacuation decisions were done as a family and members encouraged each other to evacuate or not to evacuate.

Furthermore, family members were the first responders after the typhoon. Before the government was able to send assistance to people affected by Haiyan, the relatives were already extending *tabang* (assistance) to their kin. Assistance in the form of cash and goods came even from relatives who lived far from them.

Tacloban City was composed mostly of migrants from other parts of the country. These people were not *tuminongnong* (born and raised in the place) and most of their relatives were living outside of the barangay far from them, either in other municipalities or provinces. Thus, assistance from relatives had been slow. The typhoon had rendered roads impassable the first few days after the typhoon. In an urban setting, like Tacloban City, relatives may not be able to provide the assistance in the same way that relatives in rural settings can. Hence, in Tacloban City, a community composed mostly of migrants, reliance on relatives had not been as efficient as was the case in rural settings like Guiuan and San Francisco.

4.4 Local knowledge

Local knowledge about the environment was articulated by several of the informants. Mercer *et al.* (2010, p. 217) defines local knowledge as "[…] a body of knowledge existing within or acquired by local people over a period of time through accumulation of experiences, society-nature relationships, community practices and institutions and by passing it down through generations." Through the years, such local knowledge had been tried and tested with the people's previous encounters with hazards.

In all three sites, several informants told of various signs from nature that informed them about their environment. Such signs included among others knowledge about fertile fishing and farming grounds, predicting the weather which was vital in scheduling fishing and farming activities, as well as how to cope with the hazards that they commonly encountered. Local knowledge had been the people's guide in their decisions and in how they acted in response to various hazards. Informants in the all the study sites, however, mentioned that it was the elderly who had a better understanding of local knowledge and thus, a more accurate interpretation of the signs from nature compared with the youth. Informants in the three sites said that they relied more on weather forecasts aired over the radio and the television. One informant mentioned that perhaps, had they given greater attention to the different signs in nature that they used to rely on, they would have been better prepared for Haiyan.

In Tacloban City, informants observed that westerly winds brought high-intensity typhoons whereas easterly winds were associated with typhoons of a low intensity. Another indication was the presence of *buranday*, a species of sea shell which can be found in abundance along the sea shore whenever a strong typhoon is about to come.

In Guiuan, some of the informants mentioned that they had unusual experiences before typhoon Haiyan. Looking back, they felt that these served as nature's warning signs which they had misread or ignored. For instance, one saw a flock of birds that seemed to not know which direction they should be going. Normally, birds in flight exhibit a definite flight path. Pets like the dogs and cats were scampering for no reason at all the day before the typhoon. These reflect Bankoff's view that humans can benefit from observing the behavior of certain animals in the wake of an impending disaster (Bankoff, 2007, 2015). Animals are known to be sensitive to ground tremors or changes in environmental temperatures and humidity. With these signs they were usually able to discern approaching severe weather disturbances. One informant said that the sky was unusually colored a bloody red before the coming of Haiyan. Another informant said that he noticed a large halo which he called the *balaraw* around the moon on the evening of November 7, 2013. The presence of the *balaraw* signified a coming strong typhoon.

The people in San Francisco also shared the legend of a bird that would appear only before a particularly heavy storm. No one has seen this bird, though. Some informants mentioned the *kanaway sa timog*, a term they used to refer to the final rush of the tail winds of a passing typhoon coming from the south. Such winds indicate that the typhoon has passed their area and it is safe for them to return to their homes from the evacuation sites. Prior to Haiyan, the people observed unusually large waves as well as abnormal wave direction which indicated a coming storm.

However, informants in all three sites noted that there was one sign which had not been observed with Haiyan. The sky had been bright and sunny and the sea was calm the day before Haiyan made landfall. Usually, storm clouds had been present prior to a typhoon. Hence, particularly in Tacloban and in Guiuan, the informants were not alarmed and had taken lightly the typhoon warnings, including the order from the local government to evacuate.

4.5 Protecting the products of their life's work

All of the informants lived simple lives and they held occupations involving skilled or unskilled work rather than lucrative high-paying jobs. Whatever material possessions they had were products of hard work and numerous sacrifices on the part of the family breadwinner to be able to provide comforts of living that these material possessions brought them. The houses, furniture and pieces of appliances that they were able to

pundar (accumulate) represented their life's work and sacrifices. Acquiring these had not been easy for them and so they would not easily let go of these. Hence, they were hesitant to lose all these in one stroke of ill luck with hazards. As a result, the men, particularly, refused to evacuate and leave their houses and belongings behind. Apparently, being family breadwinners, the men worked for these material possessions, and they were vulnerable because they would readily risk their lives to protect their possessions from being ravaged by typhoons.

All of the FGD participants in San Francisco mentioned that it was a usual practice in the island to wrap and tie down their appliances and furniture to the floor so these would not be carried away by rushing flood waters. They also secured the roofs their houses to the ground with rope. In Tacloban, the FGD participants expressed fear of losing their material possessions after the storm. They recounted experiences wherein housing materials got washed away by the storm and were taken by their neighbor as soon as the storm had subsided. They said that a "finders keepers" policy prevailed after a typhoon. It was difficult to take these back as this would result to a heated argument with the neighbor. Material losses were not only from the hazards in natural environment like the typhoon but they also felt the threat of loss from their neighbors as well. Hence, people were hesitant to evacuate.

4.6 Gender and sexuality concerns

In the evacuation center, delineation of roles based on gender were temporarily set aside to facilitate the restoration of order and normalcy in their lives. For instance, in rebuilding, the women and the men shared in the tasks that were necessary to reconstruct their homes. In the evacuation centers, informants from Tacloban mentioned that tasks were done regardless of who usually did such tasks in their homes. For instance, in their homes, food preparation and caring for the children were regular tasks of the women. In the evacuation center, however, both men and women cooked food and attended to the children.

Nonetheless, there were instances wherein specific tasks had been carried out as a reflection of traditional gendered norms and expectations. The women, for instance, had the task of caring for the children and the elderly during evacuation. The task of securing the homes during the storm was a job for the men as this entailed great risk and strength. In a display machismo some men in all three sites stayed in their homes and ensured that the women were out of harm's way.

In evacuation centers, the lack of privacy led to concerns related to sexual harassment. One informant in Tacloban shared that she felt quite troubled because of a man who kept staring at her while she was applying lotion after a bath.

One barangay Barangay Councilor in Tacloban City was concerned that teen-age pregnancy incidence rose in her Barangay after Haiyan. She feared that sexual norms and morals had relaxed in the evacuation centers.

5. Summary, conclusions, and recommendations for building resilient communities

The study has shown that disasters result not from the occurrence of hazards in the environment. Risk perception appears to be a vital aspect that contributes to people's vulnerability to hazards.

The study has shown that there are various elements in culture that shape perceptions of risk in relation to hazards. Because of their long engagement with

hazards in their environments, people have developed coping strategies that are embedded in their cultures that equip them with the confidence to face such hazards. In this context, *sanay na kami dyan* is articulated as a dominant view in how they perceive the risks associated with the hazards. For instance, the study showed that this perspective has influenced the informants' evacuation decisions in response to Haiyan.

What the informants considered as safe and unsafe spaces seem to be critical in designating evacuation centers. In both Guiuan and Tacloban City, the government designated evacuation centers were severely ravaged by Haiyan. The informants mentioned that safe structures that were ideal for disaster evacuation were those that were on high ground, made of concrete and more than one storey high. Aside from serving as evacuation centers, these centers could also serve other purposes. It is recognized that buildings solely for evacuation purposes might not be cost effective, because of the seasonality of typhoons. It is thus recommended that such buildings could serve as DRRM centers DRRM personnel could work for monitoring hazards. It could also be used as a center for regular training sessions for drills on evacuation and other related activities such as seminars, training, and orientation for the DRRM programs of the LGU. Information materials like posters, films, 3D hazard maps, could be displayed there as well. It could also house a disaster museum wherein memorabilia and photographs could be placed to remind people not to be complacent and to continue to adopt sound DRRM practices. Field trips to the center cum museum could be part of the disaster preparedness curriculum of schools. Currently, the evacuation centers in all three sites were multipurpose centers that served as schools or the LGU offices during regular days. In crisis situations that required evacuation, however, these serve as temporary evacuation centers. Hence, during crisis periods, schooling and regular uses of buildings that served as evacuation centers are disrupted. Another difficulty with multipurpose centers is that in time, people could resort to renovating or redecorating these to conform to their other purposes and eventually these would no longer be suited to serve its original purpose as an evacuation center. It was suggested further that the proposed DRRM centers can contain provisions for evacuees that would be enough for a few days.

Gender and sexuality concerns in the evacuation centers were also articulated by the informants. These contributed to their perception of evacuation centers as unsafe spaces. The evacuation centers could be designed to allow privacy, safety, and security. In the current temporary evacuation centers, evacuees had to contend with small spaces allocated per family. Sanitation is also a major issue in cramped evacuation centers. Under these circumstances, the spread of diseases becomes a major health concern. Moreover, the open spaces do not allow intimacy between couples so when the days spent in the evacuation centers are extended; this becomes a problem for them.

The informants lamented that there were no facilities for the special needs of the elderly and people with disabilities in the evacuation centers. In Tulang Diot, one elderly woman was an amputee and climbing to the school which served as the Tulang Diot evacuation site had been difficult for her. In Guiuan, an elderly lady drowned in the flood that rushed in the school house that was used as an evacuation center. She was not able to climb to the higher areas of the church because of old age.

Informants in all sites mentioned that they were aware of the risks associated with typhoons; however, they were not adequately informed about the risks associated with storm surges. Other studies (Leelawat *et al.*, 2014) have also pointed out the lack of information on storm surge impacts during Haiyan among affected population. Capacity building programs should inform and educate people on the

nature and impacts of hazards not only of typhoons but other hazards that are common in their areas. Part of the success of San Francisco in implementing an effective evacuation program was the people's familiarity with procedures and protocols. People in San Francisco had been taking part in LGU-initiated drills on DRR that involved safe evacuation procedures. They knew what to do, where to go, and who to approach for help in crisis situations. Equally important, they knew whom to follow when calls for evacuation were issued. None of the other LGUs had the same program. Similar drills could be implemented in the other sites. Knowing whom to listen to for accurate information and guidance is critical under such circumstances. It is also necessary for communities to possess the capacity to help themselves, especially in the first few days after a major hazard. After Haiyan, major roads leading to the devastated sites had been damaged as well and aid from outside had been slow. One FGD participant in Tacloban City suggested the evacuation centers should be equipped with supplies that would last at least three days so as to give time for aid to arrive.

Also, while they had local knowledge that used to forewarn them of typhoons, these were mostly held by the few elderly in the study sites. The youth were no longer knew about these or relied on these. Announcements from the radio, the television as well as local government officials were relied on nowadays. Popularizing local knowledge among the youth could prove to be helpful. Radio and television media, which are popular among the youth, can incorporate local knowledge into its key messages about hazards. In this way, the youth could still learn about local knowledge.

The need to protect the fruits of one's labor as well as gender and sexuality concerns in evacuation centers had also been articulated as dilemmas that contributed to their hesitance to evacuate. The informants in all the study sites acknowledged that they placed value on their possessions including farm animals not necessarily because of their material worth but more because of what these represented. In the follow up interview in Tacloban, informants with houses made of light materials shared that they had dismantled their houses prior to typhoon Ruby's landfall. It was also recommended that evacuation centers allocate spaces for farm animals, and other objects and valuables that evacuees may bring with them to the evacuation centers. Moreover, disaster insurance for the property, farm animals and other possessions may be secured by vulnerable households. None of the informants in the three sites had secured any insurance for their property.

The social networks the informants maintained seemed to be a vital entity that enabled the informants during the recovery and rehabilitation periods after a disaster. Relatives were the first responders, providing immediate assistance to their relatives. The practice was called in Tacloban as *pauswagan*. Such a system of taking in relatives and neighbors has been reportedly practiced in Albay through the community-based *pagpapadagos* (Dalisay and Tatel, 2011). While the evacuees were welcomed warmly by relatives and friends, their stay could drain the resources. It is recommended that an incentive program be implemented for homes that would take in relatives and friends. The incentives could be in the form of relief goods that could tide the needs of the evacuees. An awards and recognition program by the LGU could be given for participation herein. The incentive program could incorporate systems to check actual participation.

It was observed that, children had been most vulnerable to post-traumatic stress disorder and anxiety (Piyasil *et al.*, 2011). Except for one of the key informants, no one else mentioned availing of counseling and therapy services after Haiyan. A more aggressive information campaign needs to be instituted to inform people of when such services are needed and where to go for help.

All of the informants in the three sites agreed that they learned a valuable life lesson in their experiences with Haiyan. In the aftermath of Haiyan, the informants' perceptions of typhoons and their destructive powers changed dramatically. As a community, they were witnesses to each other's struggle and fight for survival. And as a community, they will remember the damage wrought by Haiyan for the rest of their lives. Social memory frames people's responses. Social memory is an important resource in risk communication, as studies have shown that risk awareness is increased with previous experiences with hazards (Bradford *et al.*, 2012). In due time and as the memory of the disaster slowly fades, it the informants feared that the people will return to their old complacent ways. Furthermore, the future generations who have not experienced Haiyan will not have the firsthand experience of the tragedy and may not fully comprehend the necessity of disaster preparedness. Hence, it is recommended that commemoration of Haiyan is continued not much for the tragic experiences but more for the lessons that were learned.

Finally, in the midst of more recent experiences with climate extremes, continuous research and development on emerging engineering and social technologies is imperative. For instance, PAGASA's has recently released information on its reclassification of the storm and typhoon signals (Lopez, 2015). New knowledge and information that could help in stemming disasters have to be updated regularly in response to climate change.

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