Enabling Factors, Hindrances, and Self-perceived Level of Preparedness of Typhoon Haiyan Emergency Medical Services (EMS) Responders

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ABSTRACT

Background. Despite the implementation of policies related to disaster risk reduction and management in the Philippines, the response after Typhoon Haiyan in November 2013 was hampered by operational challenges.

Objective. The purpose of this study was to document disaster response experiences of Typhoon Haiyan from field level emergency medical service (EMS) responders, a key component of the disaster response, specifically the enabling factors and hindrances to disaster medical response activities, including their self-perceived level of preparedness in these activities.

Methods. In this mixed-methods study, 52 respondents identified enabling factors and hindrances to their disaster response and their corresponding self-perceived level of preparedness. In a subsequent focus group discussion, the researchers used the nominal group technique to process the respondents' experiences.

Results. The respondents identified factors that enabled or hindered their response activities such as coordination, stress debriefing, infrastructure, and preparedness. Furthermore, an average of 33% of the respondents said they were adequately prepared to deliver the necessary medical services during the disaster response, thus validating previous studies on preparedness and disaster response operations.

Conclusion. The government should critically examine its cluster approach to disaster response and consider an integrated, inclusive, and proactive approach in disaster planning.

Key Words: disaster risk reduction and management, disasters, emergency medical services, Typhoon Haiyan

INTRODUCTION

Disasters are situations in which a community affected by a natural or man-made hazard fails to respond and recover on its own. In such cases, affected communities require outside assistance to address basic needs, provide shelter, and plan for recovery and rehabilitation. In 2009, these interventions were conveniently grouped by the United Nations Office of Disaster Risk Reduction (UNISDR) into a four-phase framework, dubbed the Disaster Risk Reduction and Management (DRRM) Framework: 1) prevention-mitigation, 2) preparedness, 3) response, and 4) recovery.[1,2] Notwithstanding, as typhoons increase in

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strength and impact, and affect a widening scope of areas in the face of global warming, there is a need to investigate ways on how to collaboratively plan for disasters, especially in contiguous areas and regions that are often affected by hazards such as typhoons, earthquakes, volcanic eruptions, and others.[3] As a country frequently affected by typhoons, in 2008 the Philippines grouped disaster response activities according to clusters, each with an assigned government agency, through National Disaster Coordinating Council (NDCC) Memorandum No. 12. Health-related disaster response activities were lumped under the cluster for Water, Sanitation, and Hygiene (WASH); and Health, Nutrition, and Psychosocial Services, both of which were assigned to the Department of Health (DOH). However, the focus of this strategy was on improving the quality of disaster response operations and did not give sufficient attention to disaster preparedness and risk reduction.[4]

Eventually, in keeping with the multinational agreements of the Hyogo Framework for Action in 2005, the Philippines enacted measures involving government and private agencies that sought to "promote a strategic and systematic approach to reducing vulnerabilities and risks to hazards," thereby adopting the disaster risk reduction and management (DRRM) framework.[5] Capping this effort was the signing into law of Republic Act 10121 or the DRRM Act of 2010, which decreed that the national and local governments must institute measures that parallel the four (4) steps of the DRRM framework. As a result, disaster planning councils in all levels of government, erstwhile named "Disaster Coordinating Councils," were rebranded as "Disaster Risk Reduction and Management Councils," all of which included an Incident Command System (ICS) network.[6] It also assigned the Department of Health to lead planning for disaster medical response (DMR), and through Memorandum Circular No. 4, Series of 2012 of the NDRRMC, empowered it to establish its own ICS where its offices are organized into these roles: command, operations, planning, logistics, and administrative/finance.[7]

However, these legal and organizational interventions were put to the test when Typhoon Haiyan (Philippine name: Yolanda) made landfall and swept through the Visayas islands group in November 2013. The typhoon, leaving 6,300 people dead, 28,688 injured, and 1,062 missing, was recognized as one of the strongest typhoons ever recorded to make landfall. It also caused PhP 89.6 billion (USD 2.05 billion, 2013 rate) worth of devastation to infrastructure and agriculture.[8] Though it might be argued that there would have been more casualties and damage without DRRM interventions, the ensuing local chaos in the first few days of the disaster aftermath underlined the need for stronger implementation of the above-mentioned legal frameworks. This also highlighted the essential role of volunteer organizations and disaster response units, of which a vital component is the emergency medical services (EMS) sector.[9]

Emergency medical service responders are composed of emergency medical technicians, physicians, nurses and allied health personnel specially trained for emergency response, and are thus uniquely equipped to handle disaster situations and put up DMR operations. However, these groups encountered various concerns in responding to the disaster, among them poor coordination with other responders and the lack of medical supplies and other essential resources. To prepare EMS responders for future disasters, it is therefore significant to glean lessons from previous disaster response activities, while also looking at how the DRRM framework, most especially the preparedness and response phases, should have guided their life-saving work.

Therefore, the purpose of this study was to document and analyze the response carried out by EMS groups in areas that were severely affected by Typhoon Haiyan. It also aimed to elicit and document information from field level EMS responders about their experiences, specifically the enabling factors and hindrances to their deployment activities. It also gathered information on the self-perceived level of preparedness of the EMS responders.

METHODS

This was a mixed-methods study integrating a survey instrument and focus group discussions. For its analytical framework, this study focused on the definitions of "preparedness" and "response" in the DRRM framework to analyze elicited facilitating or hindering factors. "Preparedness" is defined by the UNISDR as

> *the knowledge and capacities developed by governments, response and recovery organizations, communities and individuals to effectively anticipate, respond to and recover from the impacts of likely, imminent or current disasters.[1]*

Using this definition as analytical frame, the study intended to examine qualitatively how preparedness is determined by professional training, locale of deployment, and deploying institution. Meanwhile, "response" is defined by the UNISDR as

> *Actions taken directly before, during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.[1]*

This definition proposed a chronological framework to analyze factors that facilitated or hindered the disaster response. For the purposes of the study, the following actions were included in the analysis, based on the researchers' interpretation of the UNISDR definition as applied to the EMS sector: 1) pre-deployment, 2) arrival on scene, 3) set-up of camp, 4) delivery of services, 5) closedown of camp, and 6) return to home base.

Three hundred (300) EMS responders were invited to participate in a survey that gathered the following information: pseudonym, sex, age, marital status, educational background,

official name of organization/ agency/EMS group, mailing address and contact numbers of group/organization, current position in organization, type of organization, leader of organization, point person for disasters for the organization, and EMS accrediting body that certifies the organization. Patient tallies were also requested, as well as a response template that asked them about facilitating and hindering factors in the six (6) response-related activities enumerated above. Accompanying this was a question on self-perceived level of preparedness for each of the six (6) response-related activities. The specific question posed was "Do you feel you were adequately prepared for this activity by your training?" An informed consent form accompanied the questionnaire. Fifty-two (52) responses were received. Each respondent was then formally invited to a focus group discussion (FGD) on concerns that emerged from their experiences in DMR. Travel expenses were reimbursed and accommodation was provided for participants arriving from the provinces. Also invited were key persons from the following Philippine agencies and organizations: Department of Health, National Disaster Risk Reduction and Management Council (NDRRMC), Metropolitan Manila Development Authority (MMDA), Department of the Interior and Local Government (DILG), Ugnayan ng Pahinungod (University of the Philippines Manila volunteer group), and other volunteer organizations which helped in the Typhoon Haiyan disaster.

The focus group discussion was held in Manila, Philippines in March 2014, four (4) months after the disaster. Participants were grouped according to their period of deployment in the Typhoon Haiyan response (i.e. responders already in the area during landfall or within the week, responders arriving after one week, responders arriving after two weeks, and responders arriving after three weeks and beyond). In conducting the FGD, a facilitator presented the survey results to all participants. The above-mentioned groupings were then convened, after which the nominal group technique (NGT) for consensus building was used. Here, group members were given pieces of paper on which to write answers to questions posed by the facilitator on various DMR aspects. These answers were affixed on a board, whereupon the facilitator clustered similar responses together, and identified emerging themes, which the group members discussed. After the discussion, consensus was built among respondents on which theme was representative of the group's experiences. Participants were given five (5) dots that serve as votes; either they chose to stick all dots on one theme they greatly identified with, or apportioned the dots to select more than one theme, the number of dots manifesting their level of preference. Each group's top themes were then merged with those of other groups, and a similar clustering of issues and voting ensued. Themes with the highest number of votes were selected as the consensus input of all participants.[10]

SPSS version 21 and Microsoft Excel were used to generate descriptive statistics.

RESULTS

Respondent demographics

There were 37 (71%) male respondents and their ages ranged between 23 to 65 years. The female respondents comprised 27% of the respondents and their ages ranged from 19 to 55 years (Table 1). Most of the respondents were health professionals; there were 22 (43%) nurses, 8 (16%) EMTs, and 7 (13%) doctors. The rest of the respondents were non-health professionals (19%) and university students (8%) (Table 2). Based on deployment, the location where most of the responders rendered their services was in Leyte island (62%), which was the most devastated area. There were 7 (13%) responders who were deployed in Samar island and 7 (13%) responders who went to the Panay island. The rest of the responders were deployed in Villamor Air Base (8%) and Cebu (4%) (Table 2). In addition, the majority of the respondents were from non-government organizations (NGOs) (40%) while other private organizations such as businesses and groups of individual volunteers comprised 38%. Among the private organizations, academic sector was represented by 19% of the respondents. Government agencies were represented by 21% of the respondents, wherein 15% of respondents were from the Department of Health.

Table 1. Sex and age of respondents

Sex	n	%	Age		
			Mean	Min	Max
Male	37	71%	32	23	61
Female	14	27%	30	18	55
No answer	1	2%	No answer	No answer	No answer
TOTAL	52	100%	31	18	61

Table 2. Profession and location of deployment of respondents

Profession	n	%
Nurse	22	42%
Non-health related	10	19%
EMT	8	15%
MD	7	13%
Student nurse	3	6%
Student midwife	1	2%
Midwife	1	2%
Location of deployment	**n**	**%**
Leyte island	32	62%
Samar island	7	13%
Panay island	7	13%
Villamor Air Base	4	8%
Cebu	2	4%
TOTAL	52	100%

Pre-deployment

Most of the respondents either deployed themselves voluntarily (33%) or in response to requests from victims (28%). Factors that encouraged responders to be deployed included a self-perception of being adequately trained to respond (20%), influential persons issuing a call for volunteers (16%), and personal connection with victims, either as

relatives or friends (14%). Hindrances that respondents encountered included the lack of communication lines from the affected areas (29%), the insufficiency of several internal resources (23%), concern for their own safety (13%), delayed arrival of relievers and substitutes (13%), insufficient external transportation units (13%), and poor coordination from concerned national agencies (10%). Meanwhile, main enabling factors that facilitated deployment included their self-perceived preparedness during the call for deployment (35%) and the willingness of donors to donate supplies, services, and funds (26%).

Arrival on scene

Activities that the respondents undertook upon arrival at their deployment destination included coordination with local government units (LGUs), Department of Health (DOH), community leaders, and other government agencies (61%), as well as conducting scene surveys (22%). These activities demonstrated awareness of standard operating procedures at the local government level, and the importance of multisectoral collaboration in disaster responses. Nonetheless, a number of responders reported that they immediately set up their disaster response, without preparatory coordination leading to non-systematic patient and area assessments (5%). The most cited hindrance to the implementation of their activities upon arrival was the apparent lack of preparedness of local government units (LGUs), which were described as either "not organized", "not visible", or "not prepared" (28%). Meanwhile, the lack of "crowd control" was the second most cited hindering factor (15%). Commonly cited factors that facilitated the arrival of responders were coordination with LGU and other government agencies (61%) and the warm reception of the host communities (19%).

Setup of camp

Upon arrival, activities that the respondents undertook in setting up their disaster response operations were organizing the site for medical response (45%), and scene survey (22%). Meanwhile, the most frequently cited hindrance to the setup of operations was the lack of visibility of the local incident command system or poor coordination with the same (26%). This difficulty was attributed to the intensity of post-disaster conditions, to which, as the respondents themselves admitted, they were not trained to respond to adequately (13%). The most frequently cited factor that facilitated setup was coordination with LGU, and with other government agencies (47%), followed by team organization and team preparedness in terms of equipment and supplies (44%). Interestingly, the two most frequently cited enabling factors in this phase were interpersonal factors, which may be attributed to local cultural and political norms.

Delivery of services

Activities that were carried out in disaster response camps were the delivery of medical services (46%) and distribution of relief goods (11%). Frequently cited hindrances to service delivery were "inadequate supplies or equipment" (22%), the inherent severity of post-disaster conditions, which overwhelmed the capacity of response teams (16%), "road obstructions" (11%), lack of transportation units (8%), poor ICS/no triage (8%), and poor sanitation in hospitals (5%). A few participants related this unpreparedness to the lack of communication lines in the affected areas (8%). Enabling factors that facilitated service delivery included team preparedness and internal organization (27%), "LGU cooperation and coordination" (20%), the spirit of volunteerism and caring attitude (18%), inter-agency cooperation (16%), and the gratefulness of host communities (11%).

Closedown of camp

Upon closedown of their facilities, the respondents carried out the following activities: documentation and patient-handover (46%), debriefing (11%), inventory taking (7%), and donation of leftover medicines and food supplies to local health centers and service facilities (13%). In addition, respondents reassured patients/victims that they will be assisted by the next incoming disaster response team and organized health education activities for the community. There were five (11%) respondents who reportedly had to abandon their facilities because of a false alarm about an impending storm surge. Also, it was pointed out by many of the participants that there was no standard procedure for endorsement of documentation (25%). The other concerns included LGU officials not being available for turnover, concern about public perception of "abandoning" the hospital upon closedown of disaster response operations, lack of transportation and electricity, poor communication signal, and the poor ICS coordination, which led to poor endorsement and coordination between incoming and outgoing response teams. Meanwhile, factors that facilitated closedown activities were LGU cooperation (51%) and cooperation with DOH regional offices and other government agencies (26%).

Return to home base

Upon returning to home base, 15 (22%) respondents underwent debriefing, however, only five (7%) of them had resilience-focused stress debriefing in the method of Harvey, et al.[3] It was noted that nine (13%) of the respondents used alternative routes/transportation means for them to get back to home base, due to unreliability or unavailability of the usual routes. There were ten (14%) respondents who took some time off for recreation, while four (6%) respondents went straight back to work. Subsequently, while some participants underwent debriefing, many (33%) felt that the time allotted for their debriefing was too short. Other issues related to the debriefing process (i.e., that the process was "ineffective," that it led to burnout; language barriers with international sponsors, 33%) were also cited as hindrances. A

key factor frequently cited that facilitated adjustment from disaster zone to home base was resilience-focused stress debriefing (38%). Its helpfulness was noted notwithstanding the perceived insufficiency of time.

Level of preparedness

Only 35% of the EMS responders felt adequately prepared, even after having received training for disaster response. Responders felt that they were most prepared for activities upon arrival at the disaster site and for setup. Meanwhile, activities for which they felt most ill prepared for were related to their respective homeward travels. This was because they were unprepared for the poor condition of roads, transportation routes, and communication lines (Table 3). On average, if preparedness for all stages of disaster response was concerned, respondents who were deployed to Panay island areas felt best prepared (50%), followed by respondents to areas in Leyte island (37%) and those who responded to areas in Samar island, northern Cebu and the Villamor Air Force Base in Manila (33%) (Table 4). Meanwhile, as regards the type of deploying institution, 45% of responders from government agencies reported

feeling adequately prepared, while only 38% of responders from NGOs and 18% of private individuals and businesses reported feeling adequately prepared. The activities that the responders felt relatively more prepared for were activities during the time upon arrival and setup (Table 5).

DISCUSSION

These themes emerged from the results of this study, which were found to validate existing literature: 1) difficulties in engaging with government during the acute phase of the disaster, 2) the importance of the private sector, within which are challenges that concern the local government, the ICS and cluster approach implementation, and infrastructure; and 3) determinants of self-perceived level of preparedness of the study participants and how these should influence future disaster planning.

Government-related concerns

Three (3) aspects of engaging with government during disasters were highlighted by study participants: local government, the incident command system, and

Table 3. Level of self-perceived adequate preparedness in carrying out specific disaster response activities, according to profession

Profession	n	Activity						Average % of respondents by profession who felt well-prepared for their deployment
		Arrival	Setup	Delivery	Closedown	Return	Home base	
Nurse	22	50%	55%	27%	45%	18%	23%	36%
EMT	8	63%	38%	25%	25%	25%	38%	35%
Others	9	56%	56%	56%	33%	11%	0%	35%
MD	7	43%	43%	43%	29%	0%	29%	31%
Student nurse	3	0%	0%	33%	0%	0%	0%	6%
Student midwife	1	0%	0%	0%	0%	0%	0%	0%
Midwife	1	0%	0%	0%	0%	0%	0%	0%
AVERAGE		47%	45%	33%	33%	14%	20%	32%

Table 4. Level of self-perceived adequate preparedness in carrying out specific disaster response activities, according to area of deployment

Location of deployment	n	Activity						Average % of respondents by area of deployment who felt well-prepared for their deployment
		Arrival	Setup	Delivery	Closedown	Return	Home base	
Leyte island	26	50%	46%	38%	38%	19%	31%	37%
Samar island	13	46%	62%	46%	31%	8%	8%	33%
Panay island	8	63%	75%	25%	75%	25%	38%	50%
Cebu	2	50%	100%	0%	50%	0%	0%	33%
Villamor Air Base	2	50%	100%	50%	0%	0%	0%	33%
AVERAGE		52%	77%	32%	39%	10%	15%	37%

Table 5. Level of self-perceived adequate preparedness in carrying out specific disaster response activities, according to type of deploying institution

Institutions of participants	n	Activity						Average % of respondents by type of deploying institution who felt well-prepared for their deployment
		Arrival	Setup	Delivery	Closedown	Return	Home base	
Government agencies	11	64%	64%	45%	45%	27%	27%	45%
Nongovernmental organizations (NGOs)	20	60%	55%	35%	40%	15%	25%	38%
Private organizations	20	25%	25%	25%	20%	5%	10%	18%
AVERAGE		43%	40%	30%	30%	10%	18%	28%

infrastructure. An oft-cited difficulty was engaging with the local government, which was virtually paralyzed in the first few days of the typhoon aftermath, as families of employees and officials were themselves victims of the disaster. Though not all disasters generate this outcome, it pinpoints the need to assess the local government's capacity to coordinate local efforts. Additionally, because of the resultant weakening of local law enforcement, security of personnel is also an important concern. Other ongoing or recurring hazards caused by the disaster may likewise continue to pose danger to locals and responders alike, such as aftershocks in the case of earthquakes, or landslides after typhoons. Thus, there is a need to establish protocols for risk communication, defined by the World Health Organization as "the real-time exchange of information, advice and opinions between experts or officials and people who face a threat (hazard) to their survival, health or economic or social well-being," which, if done in collaboration with other agencies, may avert additional casualty.[11,12] This also emphasizes the need for a national strategy to prepare for disasters that transcend regional boundaries, as in the case of Typhoon Haiyan. This national strategy should have been mediated by an incident command system (ICS), which was a key component of the DRRMC network established by Republic Act 10121. Unfortunately, as seen in the study, the ICS failed because of these reasons: 1) lack of awareness on the system and the need to coordinate, 2) apparent delays in response, and 3) failure of coordination and communication, which led to maldistribution of resources.

Failures in communication may also have been exacerbated by damage to infrastructure, for which responsibility is shared by the national and local governments, thus degenerating into a "turfing" concern, where the resultant finger-pointing causes delay in decision-making, and therefore, delay in construction.[13] Infrastructure damage was reported by the respondents under these themes: insufficient external transportation units, road obstructions, lack of communication lines, poor hospital sanitation, and electricity outages. These were considered as hindrances to response efforts. Because of this finding, the inclusion of disaster resilience as a standard for the construction of roads and other infrastructure is of paramount importance, involving structural measures such as the design and construction of flood control systems, protective embankments, seawall rehabilitation, and retrofitting of buildings.[14] Nonstructural measures, meanwhile, include risk-sensitive planning, hazard mapping, ecosystem-based management, and disaster risk financing.

Role of the private sector

Majority of respondents were from NGOs and private organizations. Though this does not necessarily reflect that most disaster responders come from the private sector, this emphasizes the importance of collaborating with non-government stakeholders in disaster planning.

Notwithstanding, critical analysis of the Philippine DRRM framework reveals more focus on government-centric interventions, with private sectors only included in committees formed by government actors.[4,15] It also does not include the need to coordinate efforts of private sector-led disaster initiatives, thus leading to difficulties in communication, referral and endorsement between DMR groups. Yet, private sector-led initiatives for disaster planning and how these may be integrated into government-led coordination mechanisms have not been investigated extensively, with most literature describing their role in disaster preparedness education, information management, or public-private partnerships, where government acted as mediator or facilitator.[16-20] A preliminary study of experiences in disaster response collaboration between government and the private sector revealed these three major concerns: 1) difficulty in matching needs with available resources, 2) lack of appropriate rules for engagement, and 3) difficulty in establishing "common ground."[18] Further studies are thus warranted.

Therefore, we believe that reliance on the national government in the initial phase of the Typhoon Haiyan response proved to be catastrophic, and closer local partnership with the private and NGO sector was a missed opportunity that would have improved disaster planning and streamlined disaster response. To promote partnership between government and the private sector in disaster preparedness, the results of a review of NGO-initiated DMR timelines during the Typhoon Haiyan aftermath recommends the greater empowerment of local governments in mobilizing resources, coordinating response groups, and receiving aid, both foreign and national. However, it admits that the strategy must be adjusted to minimize risks posed by local politics, which may well imply the reason for the difference in self-perceived levels of preparedness according to area of deployment.[15] As a lesson learned, disaster planning in the local government level must also consider the eventuality of collapse of local government functions, and how partner agencies should take over.

Self-perceived level of preparedness

This study only focused on self-perceived level of preparedness for carrying out various DMR activities, but there is further need for investigating the determinants of self-perceived preparedness for DMR response activities. Nonetheless, the results of the study seem to confirm these areas of preparedness among disaster responders in the aftermaths of Hurricane Rita and Hurricane Katrina in the United States, as studied by Slepski: 1) personal, which involved knowledge on personal safety, and the use of protective equipment; 2) expectation, which included factors that overwhelmed presupposed notions on the DMR operations, such as immense patient load, clerical work, lack of sleep, poor acquaintance with other team members, and "hostile public contact;" 3) organization, which dealt with

poor implementation of the ICS; 4) lack of resources on the ground; 5) scope, which dealt with the wide range of clinical complaints for which the responders may or may not have the necessary competence; 6) skill, which included concerns on proper technique for specific medical and surgical procedures, the establishment of DMR, and conducting area surveillance, and; 7) systems issues, which were beyond the scope of the ICS, such as lack of awareness of partner agencies and how to engage with them, difficulties with communication, and the "lack of a team."[21]

In addressing these challenges, participants in the study by Slepski recommended adopting a "flexible, patient" attitude equipped with a good "sense of humor," having a standard list of things to bring, preparing oneself and immediate family spiritually and mentally, practicing self-care and proper hydration, having reference guides on hand; and undergoing drills and training courses such as advanced cardiac life support training, triaging, or basic wound care, as well as the setup of the incident command system and the national response plan. Notably, the recommendations in the Slepski study on self-perceived preparedness inevitably lead to a further examination on responders' mental and emotional readiness to participate in DMR operations.

Often overlooked in disaster planning is the mental health of responders themselves, which if left unaddressed, may lead to greater risk of developing post-traumatic stress disorder.[22] An intervention that aims to ensure mental health among responders is resilient-focused stress debriefing, which was deemed very helpful by respondents upon their arrival at home base, confirming previously studied associations between resilience training, increase in positive emotions, and decrease in psychological distress, improvement of coping mechanisms against stress and anxiety, and improvement of quality of life.[23-25] Nonetheless, Harvey and colleagues suggested that more sustainable gains can be achieved by a full-fledged resilience training program instead of a single session.[23] Additionally, due to the individual nature of mental health issues, of which self-perceived preparedness is a key determinant, further study of self-perceived preparedness and its relationship with mental health in the Filipino context is needed.[26]

With due consideration of all aforementioned as well as other aspects of the DRRM framework, it is noteworthy to mention that the management of disaster risk became the focus of the 3rd UN World Conference on Disaster Risk Reduction, which produced the 2015 Sendai Framework for Disaster Risk Reduction, succeeding the 2005 Hyogo Framework. The Sendai Framework, already informed by lessons learned from the 2011 Great Earthquake in the Tohoku region of Japan, Typhoon Haiyan, and other disasters, encouraged Member States to adopt these four (4) priorities of action: 1) understanding disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics, and the environment; 2) strengthening disaster risk governance to manage disaster risk, especially in promoting multisectoral collaboration and partnership; 3) investing in disaster risk reduction for resilience, through "public and private investment" to "enhance the economic, social, health and cultural resilience of persons, communities, countries, and their assets, as well as the environment," and; 4) enhancing disaster preparedness for effective response and to "build back better in recovery, rehabilitation and reconstruction, "through integrating disaster risk reduction into development measures."[2] We believe that this study demonstrates how these priorities of action should be carried out, and how an organized engagement with EMS responders and other DMR-oriented groups should inform the country's disaster planning to minimize damage and loss of life in future disasters.

Limitations

Since EMS practitioners in this study were not professionalized, vetting was necessary to confirm their participation in the response, thus requiring purposive sampling, and thereby reducing the generalizability of the results. Also, despite our best effort in ensuring that all sectors were represented in the study, the study was limited only to those who could answer the survey questionnaire and attend the focus group discussion. The relatively small number of respondents may also be attributed to the fact that most of the potential respondents were part-time volunteers, and as such, may have returned to their day jobs by the time of the focus group discussion.

CONCLUSION AND RECOMMENDATIONS

In summary, the results of the study seem to suggest that disaster response planning should not only focus on distributing tasks to agencies, as what has been the apparent case in the implementation of the DRRM framework. The government should reimagine how its DRRM councils should implement the recommendations of the Sendai Framework for Disaster Risk Reduction by rethinking its cluster approach and considering an integrated, inclusive, and proactive approach in disaster planning. This may require reorganization of committees, improving the flow of inter-agency communication, collaborating with private sector initiatives, and streamlining incident command systems. A proactive strategy also highlights the need to consider mental health issues among responders, which may impact future disaster response.

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Ethical Clearance

The UP Manila Research Ethics Board gave ethical clearance for this project under protocol number 2014-087-01.

Statement of Authorship

All authors approved the final version submitted.

Author Disclosure

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