# **RESEARCH ARTICLE**



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# Developing Capacities of Professional Nurses on Disaster Risk Reduction and Management in the Philippine Nurses Association

#### Abstract

In the years 2010-2015, the Philippines experienced a number of disasters, both natural and man-made, that killed around 1,400 and affected more than 68M people. These recent disasters highlight the need for all health workers, especially nurses to be prepared to respond to possible consequences of all types of hazards interacting with communities. Nurses who are at the forefront of health care services are counted upon to plan for and respond to emergencies and provide substantial care to individuals, families and communities. However, there is a need to review the competencies that nurses should have in emergency and disaster management to be able to carry out these roles and functions. This study describes the development of a training program, which aims to build capacity of nurses to participate actively in emergency preparedness, response and recovery efforts of hospitals and communities. Participants included nurses from hospitals and the community, and volunteer nurses. Their knowledge and skills related to disaster management were measured before and after the training. Their involvement in disaster management months after the training were recorded to demonstrate the impact of training on their professional development and in helping communities during or after a disaster. This study demonstrates how continuing education helps professionals become significant in addressing the needs of the general public and in contributing to social development.

he Philippines is at risk based on its geographical location which exposes it to natural hazards such as typhoons, earthquakes and volcanic eruptions. The United Nations Office for the Coordination of Humanitarian Affairs' (UN OCHA) Seismic and Climatic Hazard map (UN OCHA, 2011) shows the area of risk from earthquake activity, volcanic eruptions and tropical storms according to established risk scales. Earthquake intensity risk is shown using the 1956 version of the Modified

Görres, & Schröder-Bäck, 2016). They provide services amidst difficulties in varying disaster situations and environments each with its unique and challenging conditions in terms of availability of space and supply of basic needs such as may be present in make-shift or designated evacuation centers like public schools, sports arenas or gymnasiums, and churches.

The increasing occurrences of disasters and crisis situations offer nursing the impetus to reflect on its competencies in order to clarify its roles in emergency and disaster management (ICN, 2009). A recent review of these competencies (Hutton, Veenema, & Gebbie, 2016), in addition to affirming their foundational value in disaster nursing education and in continuing professional development, suggest to look into other areas of concern that nurses may be missing out in terms of service, and that further research need to be done to determine best practices that would improve outcomes for victims of disasters.

As key players in emergency and disaster situations, nurses fulfill a variety of roles which include a number of activities and services particularly during the disaster response phase (Association of Women's Health, Obstetric & Neonatal Nursing [AWHONN], 2012; Ayuba, et al., 2015; Bonito & Minami, 2017). However, Davies and Moran (as cited in ICN and WHO, 2009) point out that nurses' roles are crucial throughout the disaster continuum, not only during the immediate response phase, in order to address the health concerns resulting from the disaster event. Experience show that the need for closer health surveillance and service delivery increase during the disaster recovery and rehabilitation phase particularly when losses in infrastructure and disruption in the delivery of basic services are high due to the extent of damage brought about by the disaster event (WHO Western Pacific Region, 2013; Bonito & Minami, 2017). Like all other health services, the demand for nursing care delivery likewise increase.

Beyond ensuring the delivery of quality direct patient care (WHO Western Pacific Region, 2013), nurses provide coordinated and continuous collaboration in disaster planning and implementation, community and consumer education, ensuring awareness of ethical issues and adherence to ethical guidelines, meeting surge capacity needs, risk assessment and disease surveillance, and leadership and management roles (Ayuba, et al., 2015; AWHONN, 2012; Magnaye, Munoz, Munoz, Munoz, & Muro, 2011; APHN, 2014). The growing scope of nursing service activities and the increasing need for capable nurses to fill-in varied roles and responsibilities arise in response to the overwhelming effects of disaster events, both natural and manmade, and the impact on public health in general (Rivera-Rodriguez, 2017). Bonito and Minami (2017) present ten case studies across the ASEAN regions to further illustrate the coverage and extent of the roles and responsibilities of nurses

Mercalli Scale (MM) describing the effects of an earthquake on the surface of the earth. The zones indicate where there is a probability of 20% that degrees of intensity shown on the map will be exceeded in 50 years. Tropical storm risk is taken from the Munich Reinsurance Company's World Map of Natural Hazards and shows tropical storm intensity based on the five wind speeds of the Saffir-Simpson Hurricane Scale. The zones indicate where there is a 10% probability of a storm of this intensity striking in the next 10 years. Volcanic risk is indicated by the locations of Holocene volcanoes, defined as having shown activity within the past 11,500 years approximately up to 2002. The Philippines is shown to have 20% probability of having IX-XII degree of earthquake intensity and 10% probability of 250+ kmh tropical storm intensity. This risk has been shown to be real in the wake of recent disasters in the country.

In the years between 2010-2015, the Philippines experienced a number of disasters, both natural and man-made. The Emergency Events Database (EM-DAT) showed that out of 115 natural disasters from 2010-2015, 44% was related to tropical cyclones or typhoons and 39% to typhoon-related events such as floods and landslides (Guha-Sapir, Below, & Hoyois, 2015). This may be expected given the geographical location of the country and its topography. The database further showed that the number of people reportedly killed by natural disasters given this period was 13,795, eighty six percent (86%) of which were related to typhoons, while more than 68 million people were affected by these natural disasters with an estimated damage of \$17 million (Guha-Sapir, Below, & Hoyois, 2015). Aside from natural disasters, the Philippines also experienced man-made or technological disasters such as road, water, air transport accidents, fire, and explosion. For example, the largest fire in 2015 occurred in a slum area of Manila affecting 50,000 people (International Federation of Red Cross and Red Crescent Societies, 2016). The Philippines' increasing disaster risk is largely due to the following factors: (1) increasing population density, (2) human vulnerability due to poverty and social inequality, (3) increased settlement in high-risks areas, (4) poor infrastructure and poor urban planning, (5) environmental degradation and effects of climate change, (6) increased technological hazards and dependency, and (7) threats of terrorism and emerging infectious diseases (Bonito & Minami, 2017; National Disaster Risk Reduction and Management Plan [NDRRMP], 2011; Swiss NGO DRR Platform, 2014)

Nurses are at the forefront in the delivery of health care services, thus, they are counted upon to plan for and respond to emergencies and provide substantial care to individuals, families and communities in all healthcare settings (Association of Public Health Nurses Public Health Preparedness Committee [APHN], 2014; Bonito & Minami, 2017; Grochtdreis, Jong, Harenberg,

across the disaster continuum. They highlight the fact that nurses bring in critical expertise to every phase of the disaster continuum and, in close collaboration with humanitarian team players, are able to fill in gaps and address priorities in services before, during and even beyond the recovery and rehabilitation phase of disaster events.

Moreover, in a series of conferences and workshops (Veenema, et al., 2016), nurse leaders place emphasis on enhancing nurses' roles as leaders, educators, responders, policymakers, and researchers in disaster preparedness and response as future directions for disaster nursing. Many nurses and nursing organizations across the globe agree to these priority areas and express that the starting point towards those directions should initially focus on increasing nurses' awareness of their roles and responsibilities and filling-in the gaps in disaster competency through education and training in disaster management (Loke & Fung, 2014; Grochtdreis, Jong, Harenberg, Görres, & Schröder-Bäck, 2016; Usher, et al., 2015).

The Philippine Nurses Association (PNA) as the national nursing organization has among its program thrusts the development of activities to prepare nurses to be globally competitive and engage in institutionalized social responsibility initiatives (Philippine Nurses Association, 2017). These have been carried out primarily through capacity-building seminars and training programs on priority areas of interest. With the recent disasters that has challenged the country, the global concerns on the resulting health effects of disasters and its consequences, including the call for action in response to disasters (Asia Pacific Emergency and Disaster Nursing Network (APEDNN), 2009; Bonito & Minami, 2017), the PNA assumes a proactive stance reflecting on its role and how it can best address these emerging issues.

The ICN (2009) publication on disaster nursing competencies facilitates initiatives to prepare nurses for any disasters as it outlines the required capabilities for effective and quality nursing care in disaster response. However, given the extent and breadth of roles and responsibilities expected from nurses by the global community (Veenema, et al., 2016), these may seem overwhelming particularly if adequate training and coordination in nursing disaster management are lacking (Xu & Zeng, 2016; Labrague, et al., 2017) and nursing remains an under-utilized workforce in disaster preparedness and response (World Health Organization - Western Pacific Regional Office, 2010). The PNA acts on this increasing global expectation and awareness for the need for disaster preparedness by developing and conducting a national training on emergency and disaster management for capacity building and mobilization of nurses (PNA Disaster Preparedness Committee, 2010). Post-training and evaluation reports provide insights into the benefits derived from the training

program (PNA Disaster Preparedness Committee, 2015). However, the impact of the training program in terms of outcomes that assisted individuals and communities affected by disasters has yet to be determined (Evio & Bonito, 2014).

This study aims to describe the activities organized by the PNA in developing capacities of its professional nurses for disaster response and management from 2010-2015. Specifically, it aims to: (1) describe the development of a training program on emergency and disaster management; (2) determine the knowledge and skills related to disaster management of participants before and after the training program; and (3) determine the impact of the training program on the participants' professional development and post-training activities/service delivery to communities affected by disaster events.

## Methodology

Records review were conducted to determine the activities done by the PNA in developing capacities of its professional nurses. The records and documents reviewed included the training curriculum for disaster risk reduction and management, the posttraining reports and evaluation submitted by the PNA Disaster Preparedness Committee from 2010 – 2015, the year-end reports of the Committee from 2010 - 2015, and summary reports from PNA chapters who participated in or rendered post-disaster response services and programs. In the course of this review, survey documents, evaluation and post-training reports submitted by participants during and after the training were also re-visited to determine the progression of events and milestones in terms of professional development and extent of activities conducted including services provided arising from the training program. These participants included 161 nurses in 16 regions across the country who attended the annual PNA national training on emergency and disaster management from 2010 – 2015. They were identified nurse leaders from their respective PNA local chapters and appointed as nurse coordinators during emergency/disaster events. Data from the document review, including surveys, reports and evaluation were anonymized to ensure privacy and confidentiality. Participants were further instructed during the course of the training not to identify themselves in any of the written reports or surveys as these will be used for program evaluation research. Descriptive statistics were used to summarize and analyze data.

## Results

The documents or records review conducted showed that in developing capacities of nurses in disaster management PNA through the Disaster Preparedness Committee: (1) conducted a

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baseline survey on knowledge, skills and practice of nurses; (2) developed a training curriculum on disaster risk reduction and management; (3) implemented above curriculum in a national training offered annually from the years 2010 to 2015; and (4) tracked nurses who were mobilized during emergencies and disasters.

#### **Needs Assessment**

Prior to the development of the training curriculum and conduct of the national training program, a needs assessment among nurses was carried out as basis for determining the level of preparedness and areas of disaster competency and to rationalize the need for the training program. The baseline survey on disaster preparedness of nurses involved 154 nurses working in hospitals and communities. Based on Table 1 below, respondents showed only a moderate level of preparedness.

Preparedness	Mean (SD)
Disaster knowledge	3.86 (0.72)
Disaster skills	3.91 (0.96)
Family preparedness	3.70 (1.19)
Response	3.76 (0.93)
Patient management	3.91 (0.92)
Disaster recovery preparedness	4.03 (1.13)
Recovery management	3.77 (1.04)

Note: Rating is 1-6 (highest)

#### Development and Implementation of the PNA National Training Program on Emergency and Disaster Management

The PNA Disaster Preparedness Committee conducted a series of meetings and consultations with nursing and medical experts to discuss on the content and strategies for the training program. They agreed to use the ICN Framework of Competencies for Disaster Nursing (ICN, 2009) and the Asia Pacific Emergency and Disaster Nursing Network (APEDNN) Ecological Framework (WHO Western Pacific Regional Office, 2011). The result was a 3-day program on the following topics: challenges and roles of nurses in emergency and disaster management, basic emergency care and disaster triage, mental health and psychosocial support, communication and coordination, and emergency response planning. The training program consisted of lectures, discussions, tabletop exercises (including role play) and skills demonstration on the above topics. The resource speakers chosen for the lectures and discussions were experts of their respective fields who likewise helped develop the modules and handouts. The materials developed underwent revisions based on the updates provided by the WHO, UN OCHA, the Department of Health (DOH), NDRRMC and other agencies involved in humanitarian response.

The instructional design created for the training program provided the overall description and guide for the content and conduct of the program. It included the program's course description, intended audience, pre-requisites (in terms of professional background) and learning outcomes. The learning outcomes for the training included the following:

- Describe the challenges and roles of nurses in emergency and disaster management
- Perform basic emergency care and services in the prehospital and hospital setting
- Discuss community health nursing interventions related to emergency and disaster management
- Provide basic psychosocial support and mental health services for victims of emergencies and disasters
- Analyze communication and coordination needed in emergency and disaster management
- Plan for policies, programs and plans needed in emergency
  preparedness and response

Each learning outcome included specific objectives, the content or topics covered to achieve the learning outcome, the teaching/learning activities, and the assessment or evaluation method. As required, the instructional design also included the pre-test/post-test to be answered by the participants. The instructional design was submitted to the PNA's Committee on Continuing Professional Development (CPD) for approval and as part of the requirement to receive CPD units from the Professional Regulations Commission.

Months prior to the training program, the local chapter presidents of the PNA across the country received invitations to send in 2-3participants to the program. Screening and choice of participants depended on the local chapter. The limit in the number of participants per chapter provided for better interaction and networking during and after the training. The invitation was likewise extended to the local chapter officers many of whom participated during the initial offering of the program.

A training program packet was prepared for each of the participants which consisted of the 3-day program schedule, module handouts, workshop materials and program evaluation. At the end of the training, participants were further given copies of the highlights of the workshops, summary results of the short

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breakout sessions, and copies of the lectures provided by the resource speakers, including other materials that could be of use to them as resources when planning out their own training program. This was done since one of the expectations of the training program was for the participants to re-echo or replicate the training in their respective regions or chapters. To facilitate this expectation, the participants made re-entry plans to ensure re-echo of training at the local level and to serve as initial directives in the mobilization of local nurses in response to possible disaster events. A database of the participants and a social media group (Facebook©) provided for communication and information sharing after the program.

One of the highlights of the training was the emergency response planning. The participants received initial briefing regarding the emergency and disaster response policy and proposed activities developed by the PNA Disaster Preparedness Committee. They also presented proposals on mobilization of nurses for disaster response and management within their respective chapters. The planning included identification of local networks to which the trained nurses will establish linkages, as well as meetings with local officials responsible for disaster risk reduction and management, and other non-government agencies involved in disaster-related work.

#### Knowledge and Skills Related to Disaster Management

From a total of 161 participants who took the 20 – item pretest/post-test exams in the training program, only 74% results (n=118) were available for review. The rest were either lost to storage or with missing pre-test exams. The results as summarized below (Table 2) showed improvement in terms of knowledge related to disaster management. While 78.8% of participants obtained scores 15 and above in the pre-test, post-test results showed marked increased in the number of participants, that is 98.3%, who obtained scores 15 and above. Based on the profile of the participants a good number have background on disaster management based from prior experience and professional involvement, or as members of the academe. The slight difference or improvement in scores may be attributable to clarification in terms of concepts and applications, rather than new knowledge, except perhaps in the area of mental health and psychosocial support services. The latter was validated during the discussions and post-training evaluations.

#### Impact of The Training Program

**Professional development.** Evaluation and post-training reports indicated perceived benefits gained from the training. These included enhanced personal capability, increased awareness and desire for involvement, increased competency in disaster management, development of skills (leadership, organizational planning, critical thinking) and increased self-confidence and appreciation of nurses' role in disaster management. In contrast to their earlier personal fears and concerns related to the training, they saw themselves with improved disposition in meeting the expectations of the training.

**Table 2.** Pre-test and Post-test Frequency Distribution and Mean Scores

<b>(</b>	Pre-test		Post-test	
Scores	Frequency	Percentage	Frequency	Percentage
20	2	2%	4	3%
19	0	0%	13	11%
18	10	8%	22	19%
17	23	19%	32	27%
16	25	21%	26	22%
15	33	28%	19	16%
14	13	11%	2	2%
13	9	8%	0	0%
12	3	3%	0	0%
Mean	15.60		16.92	
SD	1.57		1.39	

n = 118

Post training activities. Trained PNA nurses submitted initial reports of their involvement in mobilizing the nursing force before, during and after a disaster event. The summary of the reports showed that most conducted seminar/workshops among nurses on disaster management (a re-echo of the training program), participated directly in disaster response and rehabilitation efforts through health missions reaching out to survivors of disasters and local communities. Some were able to establish networks or linkages which included civic organizations, government and international humanitarian agencies. This facilitated coordination immediately after a

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disaster event and even way beyond the rehabilitation phase of the disaster. The reports further highlighted the mobilization of nurses and their response efforts during major disaster events that hit the country over the past years as summarized below (Table 3).

In terms of scope these activities were coordinated on a national scale although mainly initiated and carried out by the local chapters. However, there were other emergencies and later disaster events where trained nurses provided services and programs in their respective regions and chapters. Disaster mitigation and preparedness seminars were organized targeting not only nurses but other health professionals, the community and civic groups as well.

# Discussion

Disasters are catastrophic events with devastating consequences affecting all aspects of human life in particular health (WHO Western Pacific Region, 2013; Bonito & Minami, 2017). As key players in the delivery of quality health care at all times and in all circumstances, nurses are called upon to render nursing care not only immediately after the disaster event but more importantly even before and way beyond after it has occurred. For nurses to respond adequately and effectively they need to understand their roles and responsibilities in disaster risk reduction and management and be sufficiently competent to provide the required services (ICN; WHO, 2009).

PNA Disaster Response during Typhoon Washi – local name <i>Sendong</i> (16 Dec 2011)	<ul> <li>PNA Cagayan de Oro City (Region 10) Chapter participated in the Cluster meetings for Health and mental health and psychosocial support services (MHPSS)</li> <li>Conducted orientation and training of 63 nurses from 26 nursing institutions in the region on WASH and psychological support services; they were afterwards deployed to evacuation centers</li> </ul>
PNA Disaster Response during Typhoon Bopha – local name <i>Pablo</i> (3 December 2012)	<ul> <li>PNA Davao City (Region 11) Chapter initiated medical assistance and psychosocial support to survivors during Typhoon Pablo in coordination with local government</li> <li>Forged strong partnership with local government and NGOs in the region</li> </ul>
PNA Disaster Response during Bohol Earthquake (15 October 2013)	<ul> <li>PNA Bohol City (Region 8) Chapter coordinated emergency response efforts with local government after the Bohol earthquake</li> </ul>
PNA Disaster Response during Typhoon Haiyan – local name <i>Yolanda</i> (8 November 2013)	<ul> <li>PNA Davao City (Region 11) Chapter initiated medical assistance and psychosocial support in Tacloban City and Samar</li> <li>PNA Cebu City (Region 7) Chapter with the DOH provided service relief operations in Northern Cebu</li> <li>PNA Cagayan de Oro City (Region 10) Chapter provided psychological first aid and relief operations in Ormoc City</li> <li>PNA NCR Zones in coordination with NDRRMC, DSWD and DOH provided health services to survivors who were brought to Camp Aguinaldo and Villamor Airbase</li> <li>A team participated in the post-disaster health camp and relief operations in Borongan City, Eastern Samar organized by TFCOS</li> <li>Other PNA chapters sent donations</li> </ul>

Note: DOH – Department of Health; DSWD – Department of Social Welfare and Development, NDRRMC – National Disaster Risk Reduction Management Council, NCR – National Capital Region, TFCOS - Task Force Children of the Storm

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The development of the national training program curriculum on emergency and disaster management and its consequent implementation has demonstrated the organizational efforts of the PNA with regard to disaster risk reduction and management. The needs assessment survey provides important basis for determining the topics and areas included in the training program as well as an overview of the level of disaster preparedness among nurses. As expected the level of preparedness is moderate since basic knowledge and skills related to disaster preparedness are more often attributable to prior experience in dealing with disasters, post-disaster clinical experience, institutional or work-related trainings (Noguchi, Inoue, Shimanoe, Shibayama, & Shinchi, 2016; Labrague, et al., 2017; Baack & Alfred, 2013) and perceived competence in managing disasters (Baack & Alfred, 2013). Although there are growing interests and initiatives on disaster preparedness and response among nurses and organizations, evidence shows that there are gaps that further education and training will need to cover. As such preparedness for and response to emergency and disaster events require competent nurses who are equipped with needed specialized knowledge, skills and attitude (Loke & Fung, 2014; Xu & Zeng, 2016) beyond basic nursing education or some related experience (Rivera-Rodriguez, 2017).

The development of the training program also demonstrates the application of the ICN (2009) core competencies on disaster nursing and the APEDNN Ecological Framework (2011) as bases for identifying priority content and processes for the training. The use of various teaching-learning strategies is important to ensure active participation and engagement, and to serve as formative evaluation (Subotnik & Walberg, 2006). Collaborative learning exemplified by group activities and workshops facilitates creation of working relationships among participants and contributes to future collaborative benefits (Simonin, 2017). Long after the training, participants maintained communication among themselves through the social media for updates, information exchange on other disaster-related programs and to coordinate during disaster events as manifested when Super Typhoon Haiyan devastated the country.

In addition to improving knowledge in disaster management, education and training likewise increase the individual's awareness on disaster which contributes to enhancing a culture of preparedness (Seneviratne, Pathirage, Amaratunga, & Haigh, 2011). There is a need to sustain the training efforts since published evidence shows that long-term impact on individual and organizational preparedness and response is limited (Skryabina, Reedy, Amlôt, Jaye, & Riley, 2017). Whether the perceived benefits gained as reported by the nurses will persist over time and be translated into improved emergency response should be considered and included as part of follow-up reports. Mounting an effective response in large scale disasters would not have been possible without coordination and collaboration with government and humanitarian agencies both local and international. A broad-based humanitarian response within and across sectors (WHO Western Pacific Region, 2013) was an important take-home message for the participants who recognized the value of coordinated efforts, thus, readily establishing networks with these organizations and agencies soon after training.

Professional nursing associations provide an important venue for articulating nursing values, professional integrity, practice, and social advocacy as well as demonstrating self-regulation (Matthews, 2012). Furthermore, they advocate for nurses' welfare and interests, one of which is lifelong learning, through professional development in order for nurses to acquire and maintain competence, enhance professional practice, and achieve career goals (Schneider, 2015). For nursing to maintain its relevance in client care particularly during disasters national nursing associations ought to assume a leadership role (ICN, 2009; ICN, 2017), develop policies and preparedness plans (Knebel, Toomey, & and Libby, 2012), and endeavor to engage its members to take a proactive position in relation to disaster preparedness and response (APHN, 2014; AWHONN, 2012).

The results of the training program show that the national nursing association – PNA - is crucial in coordinating and supporting its nurses in preparing for and responding to emergencies and disasters. Training participants might already possess basic knowledge and skills related to disaster management, however, an organized profession-based response was only made possible when nurses are brought together through shared goals and commitment. This is a clear illustration of how the PNA is able to contribute to nation-building, advocate not only for the welfare of its nurses, but the public as well, and make the nursing sector be identified as a distinct member of the health sector response team.

#### Conclusion

Nurses remain a major component of the frontline response to any disaster, so nursing involvement and leadership is called for in preparedness planning which can reap benefits during the actual crisis. Getting nurses ready to respond to emergencies and disasters is part of the responsibility of the nursing sector to the society to try to save lives, minimize disabilities, and help build resilience of individuals and communities. It is with this in mind that the PNA developed and implemented a national training program as a venue to increase the Filipino nurses' competencies and consequent participation in disaster management. The role of training in developing capacities of nurses to be ready to

respond has been shown to facilitate volunteerism of Filipino nurses who participated actively in emergency preparedness, response and recovery efforts during recent disasters. This study demonstrates how continuing education helps professionals become relevant in addressing the needs of the general public and contribute to social development.

# Recommendation

Taking into account the important role of training in capacitybuilding, commitment to service and volunteerism, it is recommended that PNA engage in specific collaborative training programs with government agencies following the cluster approach, particularly with the Department of Health through the Health Emergency Management Bureau (HEMB) and the Department of Social Welfare and Development. PNA can likewise explore further coordination with non-government agencies (NGOs) who may have similar programs in line with disaster preparedness and mitigation. In terms of the training program itself, it is recommended to include topics that cover culture-specific care management in disaster response. For example, Filipino Muslims in Southern Philippines have culturalreligious beliefs related to touch, lifting and gender-specific assistance, as well as those related to diet and care of the dead and dying. The same will be true with people in the Mountain Province and other indigenous people with health practices specific to their own culture and beliefs. These recommendations together with continuing development in its training program and extending networks in line with disaster management will truly make PNA a prepared professional organization.

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"It's not important that you understand what something 'means'. What's important is that you understand that something has meaning."

- Philip Glass, 2012, Artist, Composer

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