



# Framework for the Priority Actions of Filipino Physical Therapists in Disaster Risk Reduction and Management

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## Abstract

**Introduction:** The study was conducted to develop a framework where physical therapists could be integrated into the disaster risk reduction and management (DRRM) initiatives of a province in the northern Philippines.

**Methods:** This was a mixed-methods study that utilized a research and development design. A validated questionnaire on the experience and perceptions of DRRM was administered to 20 selected physical therapists. A validated interview guide was administered to 10 local disaster control office head and members. Descriptive statistics were used to analyze the quantitative data. Thematic analysis was used to synthesize and examine the qualitative data.

**Results:** Physical therapists were found to have minimal exposure to disaster scenarios due to lack of training and experiences in disaster response. However, the physical therapists perceive that they are prepared to participate in DRRM and should be included. The study also revealed that physical therapists are not part of the local disaster management team because of limited awareness of leaders and members of the disaster control office on the roles of physical therapists in disaster management.

**Discussion:** This study developed an action-oriented framework to guide physical therapists' active involvement in all phases of disaster management. Specific strategies for the priorities for action of physical therapists in DRRM were identified based on the results of the study and its theoretical underpinnings.

**Keywords:** disaster, disaster framework, disaster management, physical therapy, physical therapist

## Introduction

According to the World Risk Report in 2021, the Philippines was ranked 8th in disaster risk and 9th in disaster exposure out of 181 countries (Aleksandrova et al., 2021). The Philippines was also ranked the 17th most affected country from extreme weather events in the Global Climate Risk Index (CRI) in 2021 (Eckstein, 2021).

The geography and climate of the Philippines expose it to an abundance of natural hazards that are harmful phenomena caused by natural forces in the physical environment (International Federation of Red Cross and Red Crescent Societies [IFRC], 2021). Typhoons are the country's most common natural hazard, and the intensified damage caused by the lack of natural barriers, and the associated risk for storm surges, floods, and landslides, make it the most destructive. The country also has a high level of exposure to earthquakes, tsunamis, and volcanic hazards due to seismic activity by being in the Ring of Fire (Center for Excellence in Disaster Management & Humanitarian Assistance, 2018).

While natural hazards are often viewed interchangeably with natural disasters, they should not be, as disasters can only occur when a human settlement is inappropriately resourced or organized to withstand the impacts of natural hazards (Mizutori, 2020). This statement holds for the Philippines due to its lack of adapting and coping capabilities (Aleksandrova et al., 2020), making the country ill-equipped to mitigate and recover from the impact of natural hazards, leading to natural disasters.

Natural disasters can have catastrophic impacts on the human experience, specifically from loss of property, homelessness, and disruption of communities, compounded by death, disability, ill health, and mental trauma (Jha et al., 2018). Disasters may exacerbate existing disabilities and create new ones (United Nations International Strategy for Disaster Reduction [UNISDR], 2014 as cited in Rohwerder, 2015). Persons with disabilities (PWDs) and the elderly are the most vulnerable among those affected by natural disasters because they often have limited escape, evacuation, and access to post-disaster services or resources. PWDs are often excluded from disaster management processes, and the wide neglect of their needs in official planning processes has increased their death rates (UNISDR, 2014, as stated in Rohwerder, 2015). Meanwhile, the special needs of the elderly are rarely recognized or hardly catered to by emergency service providers (Guddo & Ramesh, 2020). Thus, physical therapists, as experts in rehabilitation and advocates of both PWD and elderly groups could improve the effectiveness and efficiency of post-disaster recovery efforts, assist in emergency responses,

and serve as consultants in developing inclusive disaster preparation and mitigation plans and policies.

World Physiotherapy (WPT), formerly World Confederation for Physical Therapy (WCPT) is encouraging its member organizations to facilitate the contribution of physical therapists to disaster preparedness and management strategies and ensure that populations affected have access to physical therapy intervention (WCPT, 2016). The role of physical therapists in responding to emergencies is evolving and is emerging as a core part of the humanitarian response (Norton et al., 2013 as cited in WCPT, 2016). Klappa and colleagues (2013) concluded that physical therapists are needed in disaster situations since they are trained to provide triage skills, clinical care, patient and family education, and community outreach that makes them useful in disaster situations. Moreover, WCPT (2016) states that physical therapists generally form part of a critical link between hospital and community health services and may have strong multidisciplinary links across social care, education, and community services.

The concept of physical therapy within disaster risk reduction and management (DRRM) is relatively novel or unrecognized in the Philippines. In cases where physical therapists are involved, Trivedi and Rathod (2018) reported that their roles were ill-defined roles, possibly limiting their effectiveness and indicating a need for greater understanding of disaster response in the physical therapy community.

This study aimed to develop an action-oriented framework presenting the integration of physical therapy in disaster management by looking into the configuration of the local disaster management and the involvement of physical therapists within its organization.

## Method

### Research Design

The study was approved by the Mariano Marcos State University's ethics review board which was awarded Level 1 accreditation by the Philippine Health Research Ethics Board. The study utilized a mixed-methods with a research and development design using the input-process-output approach. In Phase 1 (Research Phase), it surveyed physical therapists, and administered a focus group discussion (FGD) and key informant interview (KII) involving members of local disaster control offices. A statistical analysis of the quantitative data gathered from the survey and thematic analysis of the qualitative data gathered from the FGD and KII followed. In Phase 2

**Table 1. Perceived roles of the physical therapists in disaster risk reduction and management**

	SD		D		A		SA	
	f	%	f	%	f	%	f	%
1. Physical therapists should be included in the preparedness phase of disaster management.	3	15	1	5	6	30	10	50
2. Physical therapists should be included in the mitigation phase of disaster management.	2	10	3	15	7	35	8	40
3. Physical therapists should be included in the response phase following a disaster.	1	5	4	20	7	35	8	40
4. Physical therapists should be included in the recovery phase following a disaster.	0	0	1	5	5	25	14	70
5. Physical therapists should be involved in the planning of shelter operations.	0	0	3	15	7	35	10	50
6. Physical therapists should be involved in the evacuation planning process for special needs populations.	0	0	2	10	11	55	7	35
7. Physical therapists should be involved in the evacuation planning of healthcare facilities.	0	0	2	10	8	40	10	50
8. Physical therapists can provide valuable assistance in environmental modifications within shelters and disaster situations.	0	0	1	5	7	35	12	60

Legend: SA – Strongly agree A- Agree D-Disagree SD–Strongly disagree

(Development Phase), the statistical and thematic analyses guided the development of a framework for the action of physical therapists in all phases of DRRM.

## Participants

The study purposively selected 20 licensed physical therapists practicing in academic or clinical sites within the province of Ilocos Norte to determine their experiences in disaster activities and their perceived capacities and roles towards disaster management. The study also purposively selected 10 members of the local disaster control offices of Ilocos Norte to determine their existing disaster framework and action plan and determine the current involvement of physical therapists in disaster-related activities.

## Research Instrument

A survey questionnaire on the participation of physical therapists in disaster activities and their perceived capacities and roles towards disaster management was adapted from Baker (2012) that utilized a forced-choice Likert scale from Strongly Agree to Strongly Disagree. The original instrument has 26 questions involving disaster perception, knowledge, and attitudes.

However, only 19 questions were adapted initially as those were the ones relevant to the objectives of the study. The survey underwent content validation by an expert on disaster management and response. After the content validation, only 17 out of the items were included in the revised questionnaire that was pretested on five (5) randomly selected physical therapists in Ilocos Norte. The questionnaire was further revised in terms of clarity based on the feedback given during the pretesting. The final questionnaire consisted of three parts: (1) personal and sociodemographic characteristics; (2) experiences and perceived capacities; and (3) perceived roles of physical therapists in disaster management. The questionnaire was distributed to the survey participants and were given 10 days to complete.

A 10-item interview guide was developed and used in the FGD and KII to determine the existing disaster framework and action plan and the current involvement of physical therapists in disaster management. The guide underwent content validation by a senior physical therapist prior to administration. An interviewer with expertise in facilitating FGD and KII administered the activities within the DRRM provincial office, and recorded and transcribed the results.

**Table 2. Priorities for Action – Sendai Framework for Disaster Risk Reduction**

<b>Priorities</b>	<b>Focus</b>
<b>Priority 1:</b> Understanding disaster risk.	Policies and practices for disaster risk management should be based on an understanding of disaster risk for appropriate pre-disaster risk assessment and appropriate preparation and mitigation. Knowledge of the different dimensions of disaster risk is needed for adequate preparation and mitigation efforts.
<b>Priority 2:</b> Strengthening disaster risk governance to manage disaster risk.	Disaster risk governance is of great importance for the effective and efficient management of disaster risk. Governance at all levels is critical and it is necessary to have a clear vision, plans, competency, direction, engagement, and coordination within and between sectors, as well as the stakeholders. S
<b>Priority 3:</b> Investing in disaster risk reduction for resilience.	Investment in DRRM through structural and non-structural measures are essential to enhance disaster resilience. These approaches are both cost-efficient and successful in terms of saving lives, preventing and reducing losses, and ensuring good recovery and rehabilitation.
<b>Priority 4:</b> Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction	The steady growth of disaster risk, combined with the lessons learned from past disasters, indicates the need to strengthen disaster preparedness for enhanced disaster response. The recovery, rehabilitation, and reconstruction phase are also critical opportunity to disaster resiliency.

**Data Analysis**

Descriptive statistics such as frequency and percentage were used to analyze the quantitative data. For qualitative data analysis, the study adopted the Braun and Clarke thematic analysis based from the discussion of Castleberry and Nolen (2018) to identify, analyze, and report patterns or themes within the data.

**Results*****Demographic information***

A total of 20 licensed physical therapists practicing in academic or clinical sites participated in the survey. There were more females than males. Mostly graduated with a bachelor's degree in physical therapy, with only one participant having a master's degree. Meanwhile, 10 tenured members of the local disaster

**Table 3. WCPT Report on the Roles of Physical Therapists in Disaster Management**

<b>Phase of disaster</b>	<b>Priorities for physical therapists</b>
Preparedness phase	Locally appropriate disaster preparedness should be included in entry-level physical therapy programs, continuing education, and CBR. Physical therapists should play a lead role in advocacy and have the responsibility to ensure that they are equipped to combat against disasters.
Response phase	The role of physical therapists can include assessment, coordination, psychosocial support, and advocacy, not just limited to the direct provision of rehabilitation. Physical therapists may help establish early communication, referral, links, and dissemination within teams and across organizations.
Recovery phase	Physical therapists form a key link between disaster response and recovery and should play a role in rehabilitation capacity building, planning service delivery, accessibility, and inclusion. It also presents them an opportunity to “build back better” through enhancing the accessibility of rehabilitation services.

control offices participated in the study. Eight joined the FGD and two underwent KII. They are mostly males.

#### ***Experiences and perceptions of physical therapists on DRRM***

**Experience.** A small proportion of the respondents reported having had any experience participating in disaster management activities. Four (20%) reported trying to volunteer in disaster response efforts, and seven (35%) had a personal disaster emergency plan. While only seven (35%) had participated in training on courses on disaster preparedness and response, most (85%) were interested in taking up courses in disaster preparedness and response.

**Perceived Capacity.** Fourteen out of the 20 (70%) physical therapists perceived that they could provide professional physical therapy services during natural disasters. More than half consider themselves prepared enough to provide physical therapy services during the preparedness (65%), mitigation (65%), response (60%), and recovery phases (85%).**Perceived Roles.** Most physical therapists believed that they should be included in

disaster management and its different phases, especially disaster recovery. Planning of shelter operations, planning evacuation processes for special needs populations and healthcare facilities, and assisting in modifying within shelters and disaster situations are all roles that physical therapists consider as capable of performing (Table 1).

Thematic analysis of the data gathered from the FGD and KII served as bases for the formulation of two major themes: the local disaster control office framework and action plan, and the involvement of physical therapists in DRRM.

#### ***Local disaster control office framework and action plan***

The local disaster control office, locally known as the Resiliency Office, is a multi-sectoral agency that anchors its initiatives towards the national DRRM framework. The oversight for each phase of DRRM is divided among different agencies with one stating that "In disaster relief, the Department of Interior and Local Government (DILG) and the Provincial Health Office (PHO) take the lead. The local finance office handles resource

management. We also have the rescue team, media, Philippine National Police (PNP), and the engineering office for support." (RM #1).

Another respondent added that "For rehabilitation and recovery, all agencies are involved in fixing all damages. For infrastructure, we have the Department of Public Works and Highways (DPWH), as well as the engineering offices for damaged houses. For the medical services post-disaster, we have the Department of Health (DOH)." (RM #3)

The members also identified the Department of Science and Technology (DOST), the Department of Social Welfare and Development (DSWD), and the National Economic and Development Authority (NEDA) as significant contributors in the mitigation, response, and recovery phases, respectively.

The primary priority of the Resiliency Office is disaster preparation; however, some members feel that too much emphasis is placed on being reactive instead of proactive against disasters.

### ***Involvement of physical therapists in DRRM***

There are approximately 200 personnel involved in the local disaster control office, however, none of them are physical therapists. Some members believed that physical therapists could play significant roles in disaster management by participating in information dissemination, evacuation, and safety of special populations; and could be included as volunteers, especially those with training in basic life support. Likewise, they opined they could provide rehabilitation services to affected individuals found in evacuation centers and serve as facilitators for the elderly and PWDs inside evacuation centers.

## **Discussion**

Most of the physical therapists who participated have minimal exposure to disaster scenarios due to a lack of training, experience, and participation in disaster management initiatives. However, their minimal involvement is mainly due to time, geographical distance, and financial constraints caused by the lack of affordable or accessible resources for disaster management training. Although, most were interested in participating in disaster management training or courses which implies some willingness in taking part in disaster activities.

Despite the lack of formal education or experience in disaster management, most physical therapists perceived that they are capable and prepared to provide physical therapy services during a natural disaster, thus, they believe that physical therapists should be providing their services during the different phases of disaster management. This perceived readiness could stem from the fact that entry-level physical therapists are already experienced and

knowledgeable in providing clinical care, triage, and rehabilitation services, tasks which closely resemble those performed within disaster management. Their experiences in community service, special populations advocacy, and administrative management also provide them a model for performing non-clinical functions within the disaster management framework. Lastly, physical therapists are adept in multidisciplinary collaboration, allowing seamless integration within disaster management teams.

At present, the local disaster control office of the province is a multi-sectoral agency responsible for oversight of all provincial disaster management efforts. The office mainly relies on the expertise of the different agencies that support it to function. However, several concerns surround the office, such as its overreliance on the multi-sectoral approach, which has led to a lack of core personnel that manages the office's operations. Unfortunately, there are no physical therapists as members of the local disaster control office and its management teams. The community's and, by extension, the local disaster control office's minute awareness of physical therapy as a profession could explain the lack of recruited physical therapists. Another factor could be the concentration of physical therapists working in hospitals and private clinics within the province, causing the community to view physical therapists as professionals viable only within health care facilities. Also, physical therapists are often misconstrued as masseurs, leading to poor community perception of the possible roles of physical therapists in disaster management. However, the office and its members believe that physical therapists could become valuable members of disaster management teams, especially with their ability to provide immediate intervention for injuries suffered during disasters; and rehabilitation services to help patients return to their near-normal functions.

### **The Nalagda Disaster Framework: Priority actions of physical therapists in DRRM**

The Nalagda (an Ilokano word that means durable or resilient) disaster framework was developed to serve as an impetus for physical therapist involvement in disaster management. It is an action-oriented framework meant to guide physical therapists and the local disaster control office to prioritize physical therapists in disaster management and serve as the foundation for future endeavors.

The Sendai Framework for Disaster Risk Reduction 2015–2030 and the WCPT Report served as the theoretical underpinnings of this disaster framework. The Sendai framework (United Nations Office for Disaster Risk Reduction, 2015) offers four priorities of action for DRRM (Table 2).



**Figure 1. The Nalagda disaster framework**

Meanwhile, the WCPT Report highlighted the need for physical therapists' involvement in disaster management. The paper (WCPT, 2016) highlighted the three phases of disaster management most relevant to physical therapists (Table 3).

The developed Nalagda Disaster Framework is modeled after the disaster management cycle, and within each phase of disaster management, strategies had been identified which should be the priorities for physical therapists in disaster management (Figure 1).

**Mitigation phase.** This phase focuses on eliminating the impact of natural hazards to prevent its transition towards natural disasters. Physical therapists may be involved in disaster mitigation through the following strategies.

**Strategy 1** involves the needs and risk assessment of the community, especially the vulnerable populations. Physical therapists could help conduct a situational analysis of the community to assist in the planning and designing of disaster management programs relevant to the community's needs.

Specifically, physical therapists could look into the vulnerabilities of PWDs and the elderly, the accessibility of vital facilities, and the availability of resources needed in disaster situations.

**Strategy 2** focuses on proactive interventions. Physical therapists may help plan and design community infrastructures and facilities. Specifically, they could help facilitate environmental modifications to enhance accessibility in the community as well as for equipment and assistive devices. Moreover, they could participate in efforts dedicated to shaping and adopting strategies and policies meant for disaster risk reduction such as policy planning and conducting researches on disaster management and climate change, especially by advocating for the inclusion and prioritization of vulnerable populations.

**Strategy 3** is all about information dissemination and community education. Physical therapists could educate the community on relevant strategies in disaster management to ensure that they are capable of enacting the measures needed in mitigating the impact of natural hazards so that they do not lead to natural disasters. Physical therapists should specifically ensure that these efforts are

inclusive by making relevant information accessible to vulnerable populations.

**Preparedness phase.** This phase focuses on ensuring adequate readiness to respond to natural disasters once they occur. Physical therapists may participate in disaster preparedness through the following strategies.

**Strategy 1** involves contingency planning. Physical therapists could help strategize evacuation plans against different natural disasters, especially for the elderly and PWDs. Physical therapists could enhance and develop arrangements for coordination, communication, and public information or warning by making them accessible, especially for PWDs with sensory or communication problems. They could also help develop referral systems during disasters to allow multidisciplinary action and care.

**Strategy 2** focuses on capacity building for both internal and external parties involved in disaster management. Physical therapists could help facilitate or conduct trainings or courses in disaster management for members and volunteers of the management team, specifically on competencies involving basic first-aid and other acute interventions and proper handling of PWDs and the elderly. Physical therapists could also help facilitate community disaster preparation exercises or drills, specifically in training the elderly and PWDs on how they could protect themselves during disasters; and educating other community members on how to support the vulnerable populations during these situations. Physical therapists could also be part of the physical and functional screening of rescue team members and volunteers to identify if they are fit to act in search and rescue operations. Lastly, physical therapists who specialize in or have had prior experiences in disaster management may form a collective to expedite communication and coordination efforts, as well as resource sharing during disasters.

**Strategy 3** consists of personal enhancement and development in disaster management. Physical therapists should educate themselves about local policies and strategies on DRRM. They should develop their emergency action plan based on these local policies and strategies, which can help them prepare for challenging scenarios that can arise. Their plan should include emergency hotlines and contacts, addresses for essential facilities that provide specialized services, storage of resources, and strategies for evacuation and survival during disasters. Their action plan should have contingencies based on whether they are at home, at work, or in the community. They should also raise their awareness on hazard areas and locations of vulnerability in their locale and assess their likely consequences. Also, they should make efforts to attend disaster management training and courses to enhance their knowledge and skills.

**Response phase.** This phase revolves around the immediate and timely provision of support and services to those in need during disasters. Physical therapists can participate in disaster response through the following strategies.

**Strategy 1** involves providing health care services during natural disasters. Physical therapists could support rescue efforts, serve as frontliners for emergencies, or augment the allied health team within shelters. Physical therapists may provide first-aid and other forms of acute interventions while on the field as search and rescue teams members. Physical therapists deployed in shelters may provide rehabilitation services, especially in providing care to individuals with chronic conditions and disabilities; and facilitating the prevention of specific conditions and illnesses. Physical therapists may also provide triage within shelters to prioritize those in need of immediate and emergent care. Lastly, physical therapists should also provide injured team members with acute intervention and rehabilitation services.

**Strategy 2** involves providing support services during disasters. Physical therapists could help set up and manage special needs and evacuation shelters during disasters. They could serve as the facilitators inside these shelters and help maintain their organization. Physical therapists could also help map available and accessible rehabilitation and other specialist services. They could also support and coordinate discharge, referral, and follow-up operations.

**Strategy 3** focuses on the immediate training of colleagues and volunteers. Physical therapists could provide on-field and immediate training on specialized trauma care, basic handling of vulnerable populations, acute interventions, and rehabilitation needs of PWDs, the elderly, and other vulnerable populations.

**Recovery phase.** This phase emphasizes efforts to restore and recover from the damaging effects of the disaster. Physical therapists can participate in disaster recovery through the following strategies.

**Strategy 1** involves the provision of post-disaster rehabilitation and health care services. Physical therapists could collaborate with other rehabilitation team members to re-establish balance in activities of daily living, work, leisure, and social participation and help individuals reach their expected level or near-normal level of functioning within the limits of their disability. They should also ensure continuity of care from an acute response to ongoing rehabilitation. They could also endorse physical engagement to maintain or enhance physical wellness and divert from stressful events.

**Strategy 2** focuses on participation in community development programs. Physical therapists could facilitate post-disaster community recovery by initiating CBR programs. CBR programs

could help facilitate accessible resources and services to the community and provide education and capacity-building opportunities. Barangay health workers could be trained to help serve as force multipliers for the program itself. Also, CBR programs can ensure heightened disability inclusion in post-disaster relief efforts.

**Strategy 3** involves post-disaster planning and monitoring. Physical therapists could conduct surveys and other means of data gathering to identify the status of the community post-disaster. They could primarily assist in identifying the needs and status of the vulnerable populations. They could also assist in developing plans and strategies to build back the affected communities. They could make an effort to ensure the needs of vulnerable populations are considered and prioritized in facility renovations, social relief efforts, and post-disaster debriefings. The physical therapist ensures that most disaster relief efforts are accessible and inclusive to the PWDs and the elderly.

## Conclusion

Recent advances in physical therapy, disaster medicine, and DRRM have led to physical therapy being recognized as a core component of disaster management initiatives. However, there have been limited efforts or opportunities to integrate physical therapists locally into disaster management. This study established that the lack of experience and training of the physical therapists, and the lack of awareness of the local disaster control offices on the roles and capabilities of the physical therapists are compounding factors on the lack of physical therapists in local disaster management settings. However, factors such as the perceived readiness and willingness of the physical therapists to be included in DRRM and the recognition of the local disaster control office of the viability of physical therapists in DRRM serve as catalysts for bridging the gap between the two fields. Thus, the Nalagda Disaster Framework was developed to provide specific strategies in guiding physical therapists to contribute and integrate themselves into local disaster control efforts and DRRM initiatives. It would also guide physical therapists on methods to enhance their lack of experience and training in DRRM. It would also inform the local disaster control office of the capabilities physical therapists have in DRRM, and bolster the local DRRM framework by allowing for more human resources and inclusive strategies in addressing the disaster needs of vulnerable populations.

The study only looked into the involvement of physical therapists in natural disasters, as it is the most relevant form of disaster for the Filipinos. However, future studies can look into the involvement of physical therapists in other types of disasters such as wars and disease outbreaks, both of which are timely to the current state of affairs of the country. For future research

direction, to conduct a validation of the developed framework. This study, in particular, only had a limited sample size of physical therapists and local disaster control office members. Furthermore, a focus group discussion among the physical therapists was not conducted, which could have contributed to a more in-depth qualitative analysis. Thus, future researchers who plan on conducting similar studies should consider these.

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## Conflict of interest statement

The author declares no competing interests.

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