Nurse Media
JOURNAL OF NURSING

Perceived Ability to Practice in Disaster Management among Public Health Nurses in Aceh, Indonesia

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Background: The increasing number of disaster events around the world has challenged every country to develop better disaster-management strategies. As a part of healthcare system, public health nurses (PHNs) should be involved in caring for people in disasters. Currently, there is no known study whether PHNs of Aceh, Indonesia, working with community people who are at high risk of confronting natural disasters, are able to perform their roles and functions regarding disaster management.
Methods: 252 PHNs from twenty-seven public health centers in Aceh were studied during November to December 2010 to evaluate their perceived ability to practice regarding disaster management at each disaster phase: preparedness, response, and recovery phase. The perceived ability to practice was assessed by using the 30-statement, five-point Likert-scale (0-4) of Public Health Nurses' Perceived Ability to Practice Regarding Disaster Management Questionnaire (PHNPP-DMQ). The composite scores of each phase and the total score were calculated and transformed to percentage for ease of presentation across disaster phases.
Results: Overall, the PHNs' perceived ability to practice regarding disaster management in Aceh was at a moderate level (M=74.57%, *SD*=13.27). The highest mean score was for the recovery phase (M=78%), and the lowest mean score was in the preparedness phase (66.15%).
Conclusion: The finding of this study evokes challenges to the local government of Aceh province to further prepare PHNs to increase their ability in disaster management.

Keywords: Disaster management, practice, public health nurses

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Introduction

In current times, disasters seem to occur quite often (Vogt & Kulbok, 2008). The incidence of disasters has even been estimated at once a week (Fung, Loke, & Lai, 2008), and there are approximately six large natural disasters in the world every year, on average (Morgan et al., 2006). Indonesia is a vulnerable country which is often attacked by disaster. In 2009, it was noted that several disasters attacked had occurred monthly in various provinces in Indonesia (Indonesian Disaster, 2010).

Based on media reports and further investigation about Aceh, during the period between 2006 and 2008 the province was hit 540 times by natural disasters (Aryono, 2009). Initially, natural disaster events are scattered throughout the many districts and municipalities in Aceh province, but there is no specific pattern relating disaster type to district location. However, based on past observations, earthquakes, floods, hurricanes, landslides, and abrasions are more often (Aryono; Putro, 2007). Based on this evidence of frequent disasters in Indonesia, the need for the nation, and particularly Aceh province, to develop a feasible disaster management strategy or program in order to reduce the impacts from disasters is clearly apparent.

Disaster management can be defined as the arrangements made to minimize the potential adverse effects of a disaster (Manitoba Health, 2000) which aims to create a safe environment and continue necessary healthcare services for victims throughout the disastrous event (Qureshi & Gebbie, 2007). To develop a plan for natural disaster management, it needs the support of many kinds of professionals (Savage & Kub, 2009) including nursing professional before math, during math, and aftermath (Stanley, 2005). Furthermore, since disasters affect people's health and the public healthcare system, PHNs have a major role; they must manage and provide assistance during all disaster phases (Vogt & Kulbok, 2008). Thus, training PHNs for involvement in all these phases is recommended as part of a comprehensive disaster management strategy (Polivka et al., 2008; Rogers & Lawhorn, 2007).

However, PHNs are not often appointed to important positions dealing with legislation, policy systems, and regulations, which are positions from which one could improve and sustain disaster management plans (Boatright & McGlown, 2005). These conditions combine to cause PHNs to feel insufficiently prepared and thus inadequately integrated into national disaster policy-making efforts regarding disaster response teams

(Fritsch & Zang, 2009). As a result, they make limited contribution to national action plans for improving nursing practice during disaster management. This situation is particularly true in the healthcare system of Indonesia.

To overcome this situation, disaster management guidelines are actually needed for PHNs so that they can improve their own knowledge and skills related to emergency and disaster preparedness (Fung, et al., 2008; INCMCE, 2003) in order to manage disasters well (Fritsch & Zang, 2009). Some disaster management guidelines and a model of disaster nursing management have been developed for comprehensive disaster management by several organizations and groups of experts. There include the Manitoba Health (2000); the WHO (2005); Rogers et al. (as cited in Rogers and Lawhorn, 2007); and Jennings-Sanders (2004). These resources are valuable for healthcare providers, and particularly for guiding nurses and improving their abilities relating to preparing for, responding to, and recovering from disastrous event (Kuntz, Frable, Qureshi, & Strong, 2008).

Currently, there are no known disaster management guidelines which apply to PHNs in Aceh, nor to nurses in Indonesia itself. The existing guidelines mentioned above were used to guide the study in order to examine the level of perceived ability to practice of nurses in Aceh to deal with disaster-related nursing situations.

Methods

PHNs who had been working at 309 Public Health Centers (PHCs) in Aceh Province, Indonesia were targeted. Ten percent of population (Singchangchai, Khampalikit, & Na-Sae, 1996) from 2,292 PHNs (Dinas Kesehatan Aceh, 2009) was considered adequate. Additional 10% of subjects were added to overcome unresponsive samples. The stratified proportionate random sampling method was employed to recruit the sample from twenty-seven PHCs in eleven districts and municipalities. Nurses were proportionately and purposively selected if they met the following criteria: a government or contract employee, educational background at least diploma in nursing, having at least one year work experience in community, and able to communicate in Indonesian language.

The Public Health Nurses' Perceived Ability to Practice Regarding Disaster Management Questionnaire (PHNPP-DMQ) consists of 30 items. It was constructed for

use in this study based on the existing disaster management guidelines and Jennings-Sanders' framework. Each item was rated by using a five-point Likert scale with the following values: 0 = Not able to practice this at all, 1 = Hardly able to practice this, 2 = Uncertain ability to practice this, 3 = Able to practice this when following given instructions and 4 = Able to practice this automatically. The possible scores range from 0 to 120. The subscale scores (according to disaster phases) and the total score were transformed into percentage. Higher scores indicate higher levels of perceived ability to practice. Concerning interpretation, the researchers divided the transformed scores into four levels using the following criteria: < 60.00% (Needs Improvement), 60.00-69.99% (Low), 70.00-79.99% (Moderate), and > 80% (High) (McDonald, 2002).

The PHNPP-DMQ was validated by three experts. The internal consistency reliability of the instrument was examined by using the Indonesian version on 20 subjects who were similar to the subjects in the main study. The Cronbach's alpha coefficient for the PHNPP-DMQ was .92. The modified back-translation method (Brislin, 1970) was used to translate the questionnaire from English to Indonesian language to ensure its validity. Then, approval from the Institutional Review Board of Faculty of Nursing, Prince of Songkla University, Thailand was obtained. The data were collected during November and December 2010 after the permission from the head of Health Department in province and districts level, and the head of PHCs were obtained.

Result

The response rate was 100%. More than half of subjects worked in urban areas (59.1%). Most of the subjects were less than 30 years old (61.1 %) with the mean age being 30 years old (*SD*=6.0). The majority of the subjects were female (79.8%), and approximately three-fourths of them were married (69.8%). Nearly half of the subjects (42.1%) had been working as PHNs for less than 5 years; the mean was 7.25 years (*SD*=5.7). The majority of them had a diploma level of education (89.7%). More than half of the subjects did not have direct experience in assisting the disaster victims (55.2%) or never received any specific disaster training and education (54.8%) (Table 1).

Table 1

Frequency and Percentage of Demographic Data of the Subjects (n=252)

Characteristics	N	%
PHNs' working area		
Urban	149	59.1
Suburban/Rural	103	40.9
Age (years old) (Min=20, Max=55, M=30, *SD*=6.0)		
< 30	154	61.1
30-40	87	34.5
> 40	11	4.4
Gender		
Male	51	20.2
Female	201	79.8
Marital Status		
Single	68	27.0
Married	176	69.8
Widowed	8	3.2
Working experience as PHNs (years) (Min-Max=1-32, M=7.2, *SD*=5.7)		
< 5	106	42.1
5-10	95	37.7
> 10	51	20.2
Educational background		
Diploma	226	89.7
Bachelor's	26	10.3
Experience in assisting the disaster victim		
Yes	113	44.8
No	139	55.2
Number of times involved in caring disaster victims (Min-Max=1-10, n=113)		
1 time	54	47.8
2-3 times	42	37.2
4-10 times	17	15.0
Attending to disaster training and education		
Yes	114	45.2
No	138	54.8

Overall, the total score of PHNs' perceived ability to practice regarding disaster management was at a moderate level (M=74.57%, *SD*=13.27). The highest mean score was at recovery phase, followed by response phase, and preparedness phase (Table 2). Additionally, item analysis was performed in order to examine which items had high and few subjects who perceived whether they were able to practice such skill (Table 3).

Table 2

Mean, Standard Deviation, Min-Max, and the Level of PHNs' Perceived Ability to Practice Regarding Disaster Management (N= 252)

Perceived Ability to Practice	**M (%)**	***SD* (%)**	**Min-Max (%)**	**Level**
Preparedness (6 items)	66.15	16.63	20.83-100	Low
Response (18 items)	76.23	13.03	25.00-100	Moderate
Recovery (6 items)	78.00	18.21	4.17-100	Moderate
Total (30 items)	74.57	13.27	25.00-100	Moderate

Table 3

The Five Items with Highest and Lowest Percentage of Ratings Regarding the PHNs' Perceived Ability to Practice Disaster Management (N=252)

Statement	**Perceived Ability to Practice**	**M**	**%**
The five items with the highest percentage of ratings regarding the PHNs' perceived ability to practice			
24	Use standard personal protective equipment for infection control	3.61	90.1
14	Perform cardiovascular assessment	3.43	85.8
15	Perform integumentary assessment	3.41	85.2
30	Provide educational information to promote good hygienic practice	3.41	85.2
29	Provide educational information to prevent and limit infectious disease transmission	3.35	83.6
The five items with the lowest percentage of ratings regarding the PHNs' perceived ability to practice			
2	Identify the national organization or institution that is responsible to act during a disaster event	2.32	57.9
3	Lead the discussion and annual assembly between your own institution and the community stakeholders	2.33	58.1
4	Identify sources of potential hazards and disasters in your own district area, such as earthquakes, floods, etc.	2.43	60.7
19	Recognize the organizational command structure in emergency and disaster situations	2.62	65.5
21	Report and send information regarding a disaster situation and resulting conditions in your own area through fax, email, or any other computer program	2.70	67.5

Discussion

In this study, the PHNs' perceived ability to practice regarding disaster management was found to be at a moderate level. The highest level of the PHNs' perceived ability to practice was in the recovery phase, followed by the response and preparedness phases (Table 2). This finding is worthy of high attention from the health service authorities. It indicates that organizations may not be prepared to respond properly in case of disasters. Large numbers of healthcare providers are not necessarily needed but the right levels of training are needed for existing providers (Veenema, 2007). In other words, training that result in high levels of ability to practice is the most important aspect.

Although Indonesia is one of the most vulnerable countries to natural disasters in the world, only half of the PHNs in this study received disaster training. When comparing this to data from other countries, such a result is not surprising. In the US, which is at very high risk of both natural and human-made disasters, nurses are not well prepared either. Weiner et al. (2005) found that only about 50% of the necessary disaster-related content was presented to nurses in the 348 schools of nursing in the US. Thus, it can be stated that most of the nursing schools were insufficient in presenting the disaster management subject when attempting to develop well-prepared nurses for disaster occurrences. Given this explanation, the following additional findings are not surprising.

Among the three phases, the PHNs' perceived ability to practice was found to be lowest in the preparedness phase. This might be due to the subjects' lack of experience in assisting disaster victims. According to O'Sullivan et al. (2008), nurses with the perception that there is a low risk of a disaster occurring may allow this perception to influence their awareness and preparedness for disaster emergencies. This, however, does not imply that those who have no experience in disasters would have perceived lower risk perceptions. Another contributing factor might be the low number of subjects who undertook self-directed learning. The number of PHNs in this study who "sometimes" developed their own competencies regarding disaster management accounted for only 50-75% of the total participants. Thus, PHNs should gain more knowledge regarding disasters and emergencies (Hammad, Arbon, & Gebbie, 2010) in order to enhance their self-preparedness for future disaster occurrences (Burstein, 2006). This is because appropriate disaster preparedness will determine their successfulness in responding to and recovering from disastrous events (Rowney & Barton, 2005).

In the PHNPP-DMQ, the lowest mean scores were found for items 2, 3, 4, 19, and 21 (Table 3). The low mean scores for items 2 (57.9%, M=2.32) and 3 (58.1%, M=2.33) indicated that most of the subjects in this study were not confident in the sufficiency of their inter-agency collaboration skills regarding disaster preparedness. Moreover, the lack of perceived ability to practice regarding "addressing the national organization that is responsible to act during a disaster event" might be derived from their lack of opportunity to attend training and education related to disasters. Initially, PHNs should be able to recognize the organizational structure in disaster responses (e.g., system, policy, planning, command structure/hierarchy, and communications) (INCMCE, 2003) in order to enhance the collaborative work of healthcare providers during a disaster response.

In addition, the low mean score for item 3 regarding "lead the discussion and annual assembly between your own institution and the community stakeholders" could be due to the fact that the PHNs in this study were more concerned about their roles and responsibilities in providing direct health services to their communities (UI, 2009). Also, they might have thought that this practice was the responsibility of a nurse manager/coordinator only. Furthermore, since the researcher did not take into account the PHNs' positions in the PHCs, the hierarchical status could be an important factor that influenced their low perceived ability to practice in this area.

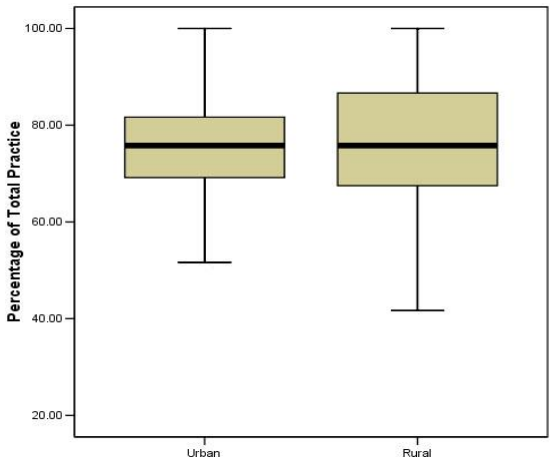
Subjects in this study also perceived their abilities to be inadequate to address "additional potential hazards and disasters around their working areas" as noted from the low mean score for item 4 (60.7%, M=2.43). This poses certain questions regarding the PHNs' ability to recognize the signs of impending disasters. Previously, the risk identification of disaster skill has been highlighted as necessary for community safety (Reissman & Howard, 2008). A study conducted by De Felice et al. (2008) also noted that insufficient knowledge among nurses will lead to their inadequate performance in managing bioterrorism risks. As Indonesia is a country that is prone to frequent natural disasters (Her, 2010), this skill is very important for people in Aceh, in particular healthcare providers, who are most likely to have to deal with some form of catastrophic event. Identifying the risk of hazards and disasters is therefore an important step in order to develop strategies to diminish the impact of disaster occurrences (Manitoba Health, 2000).

Low mean scores were also found regarding risk communication skills, addressed by item 19 (65.5%, M=2.62) and item 21 (67.5%, M=2.70). According to Gebbie and

Qureshi (2002), the lack of skill in using a communication plan and associated equipment will contribute to failure in implementing the plan and collaborating on actions during a disaster. The findings of this study might be due to the unfamiliarity of the PHNs with advanced technology devices such as fax machines, two-way radios, Blackberry devices, electronic mail, laptop computers, and satellite phones, as well as their unfamiliarity with how to operate them. Accordingly, communication is classified as one of the greatest barriers for healthcare providers during a catastrophe event (O'Boyle, Robertson, & Secor-Turner, 2006; Qureshi et al., 2005). Phillips and Lavin (as cited in Veenema, 2006) also reported that in the aftermath of the World Trade Center disaster, nurses were eager to offer assistance but many of them lacked proper training in communicating with disaster management teams and the specific skills necessary for dealing with the victims and their families (Veenema).

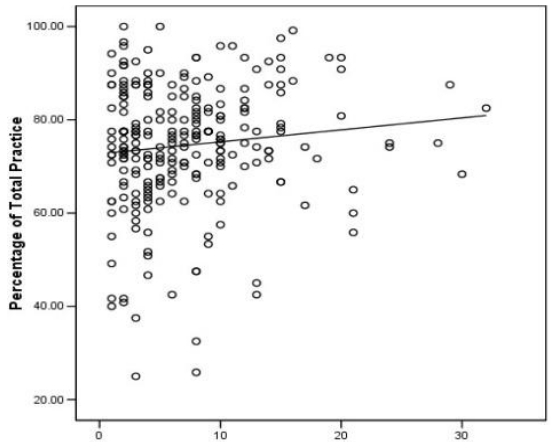
In contrast, the PHNs had a higher perceived ability in the recovery phase, followed by the response phase. This can be seen from the high mean scores for the five items in the PHNPP-DMQ (Table 3). The first item with a high mean score was about the concepts of sterilizing techniques and contamination (90.1%, M=3.61). This principle is fundamental to nursing, as it is used in everyday nursing care in clinical practice, so that may be the reason for the high score for perceived ability to practice for this skill. The nurses' capabilities in this skill were important and useful for protecting them from unknown infections that are commonly transmitted through the air-borne and injured sites (Mitani, Kuboyama, & Shirakawa, 2003). Thus, their high perceived ability with this skill will help these nurses when working with limited resources and under stressful conditions (Rebmann, English, & Carrico, 2007). Consequently, their ability to control infections contributed to their high scores for the following items: "to prevent and limit infectious disease transmission" and "to promote good hygiene practice." This is proven by their high mean scores for items 29 (83.6%, M=3.35) and 30 (85.2%, M=3.41). Beyond their main responsibility to deliver physical, emotional, and psychological support during and after a disaster event (Secor-Turner & O'Boyle, 2006), PHNs are also responsible to conduct health education or promotions related to infectious diseases by partnering with their community (Rebmann et al.; Rogers & Lawhorn, 2007). The health educational programs, such as hand hygiene products/facilities, sanitation, and outbreaks of unusual infectious

diseases were all classified as critical factors for preventing secondary disease transmission in overcrowded places, such as shelters (Rebmann, Carrico, & English, 2008).



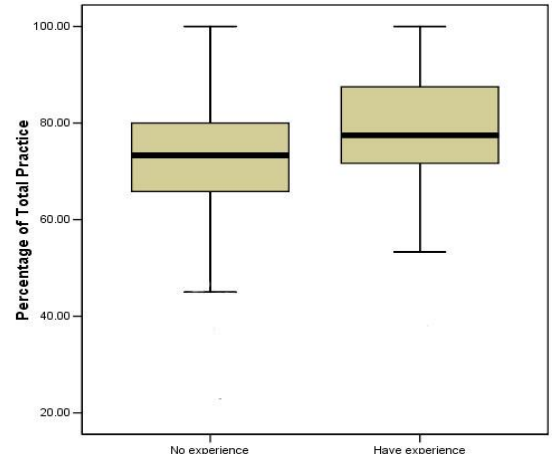
Working area (Z= -.746, p= .456)

Figure 1 *Box Plot between Working Area and PHNs' Perceived Ability to Practice (Mann-Whitney U test)*



Working experience (years) (r_s = .13, p= .044)

Figure 2 *Scatter Plot between Working Experience and PHNs' Perceived Ability to Practice (Spearman Rank Correlation)*

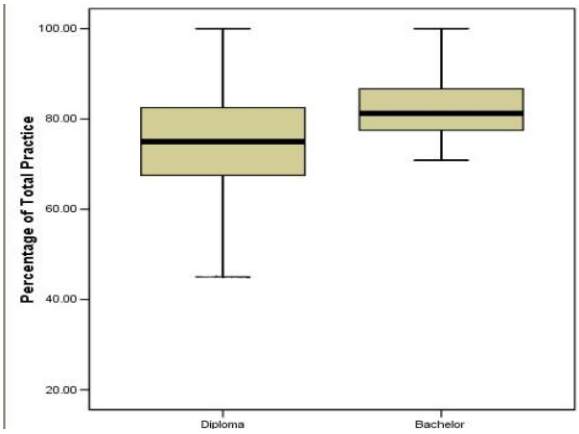


Experience in disaster (Z= -4.00, p= .000)

Figure 3 *Box Plot between Experience in Disaster and PHNs' Perceived Ability to Practice (Mann-Whitney U test)*

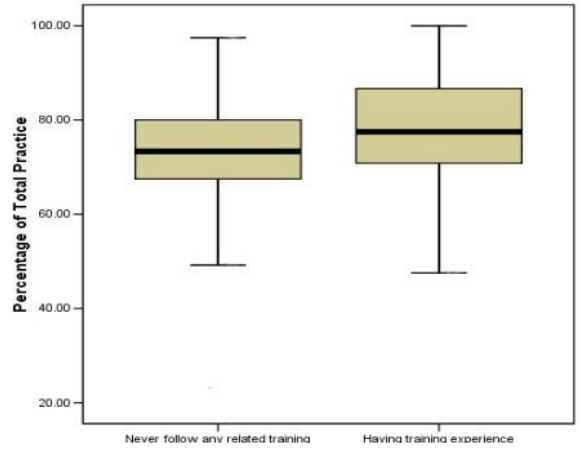
High mean scores were found for life saving and stabilization skills (items 14 & 15). According to Kalb et al. (2006) and Rogers and Lawhorn (2007), good performance from PHNs in stabilizing victims' conditions during the response phase depends on their basic life support and first aid skills. Hence, the PHNs' responsibility in providing healthcare services, such as physical assessments and basic medical treatments, in their clinical practice is considered something which contributes to their high perceived ability with this skill (UI, 2009).

Some factors including subjects' working area, working experience, disaster experience, nursing education, and training and education were contributed to the PHNs' level of perceived ability to practice. Then, these factors were examined to determine the relationships with the PHNs' perceived ability to practice scores by using Spearman rank correlation (r_s) and Mann-Whitney U test. Here, it was found that greater working experience, disaster experience, nursing education, and training and education were all congruent with higher levels of perceived ability to practice (Figure 2-5). Whereas, PHNs who worked in suburban/rural areas had a higher level of perceived ability to practice (Figure 1) than their urban colleagues.



Nursing education (Z= -3.13, p= .002)

Figure 4 *Box Plot between Nursing Education and PHNs' Perceived Ability to Practice (Mann-Whitney U test)*



Attending training & education (Z= -4.00, p= .000)

Figure 5 *Box Plot between Training and Education and PHNs' Perceived Ability to Practice (Mann-Whitney U test)*

Firstly, the fact that their perceived ability to practice regarding disaster management was at a moderate level might be due to the subjects' working area. The data showed that more than one-third of the subjects in this study worked in suburban/rural areas (40.9%). Although there was no significant difference between the PHNs in urban areas and those in suburban/rural areas, it was noted that nurses who worked in rural areas had higher perceptions of their ability to practice regarding disaster management (Figure 1). Similarly, a study conducted by Bigbee, Gehrke, and Otterness (2009) found that PHNs who worked in rural areas were more competent than PHNs in urban areas. They had higher perceived competencies related to the community dimensions of practice skills. The findings of this study contradict the opinion that rural nurses are less skilled than urban nurses because they lack proper educational preparation in public health nursing (Bigbee, Otterness, & Gehrke, 2010). In fact, the subjects who worked in suburban/rural areas in Aceh had higher perceptions of their ability to practice regarding disaster management. In addition, the dissimilarity of the subjects who worked in urban and suburban/rural areas may have resulted in a potential sampling bias which could have affected the findings regarding the PHNs' perceived ability to practice regarding disaster management. Therefore, in future studies on PHNs' practices, it is recommended that researchers include equal numbers of subjects from each of the two areas.

In this study, work experience in clinical settings was also considered to be a contibuting factor to the moderate level of perceived ability to practice regarding disaster management that was found. As noted, more than one-third of the subjects (42.1%) had

less than five years of public health nursing work experience. Although the significance of the relationship between work experience and the PHNs' perceived ability to practice was rather low (Figure 2), it did indicate a trend where subjects with longer durations of work experience in clinical practice had higher levels of perceived ability to practice regarding disaster management.

The previous studies found a relationship between duration of work experience and level of performance in nursing clinical practice (Arbon, 2004; Bjørk & Kirkevold, 1999; Chan, 2007). According to Arbon, individual experience in clinical practice made nurses more able to accomplish their roles competently. In the nursing profession, nurses with greater work experience are considered to be more capable in applying their own knowledge, skills, and attitudes (Chan) than their less experienced colleagues, so they are subject to high expectations of efficiency and mastery when performing their professional duties (Bjørk & Kirkevold). From this, it can be stated that experience in clinical settings will provide advantages for PHNs in identifying the potential health problems of disaster victims and in improving the PHNs' confidence when responding to disaster occurrences (Gebbie & Qureshi, 2002). Relevantly, Akins et al. (2005) conducted a study in which they sought to monitor the ability of PHNs to participate in bioterrorism preparedness and disease surveillance; they found that nurses who had a minimum of clinical skills could improve their own skills by doing work in their communities. Dedication to community service is a factor which will help nurses to improve their own clinical competencies in public health nursing areas. This will enhance PHNs' self-preparedness regarding disaster management (Akins et al.).

Experience in assisting disaster victims may also influence the level of a PHN's perceived ability to practice. The findings of this study showed that more than half of the subjects (55.2%) were inexperienced, and the findings revealed statistically significant differences between the experienced and inexperienced subjects in terms of their perceived ability to assist disaster victims (Figure 3). Similarly, Maulidar (2011) also found that the level of perceived skill in tsunami disaster nursing was higher among subjects in tsunami-affected areas than in non-affected areas. This might be due the fact that all the subjects in the affected areas had direct experience with earthquakes and tsunamis in Aceh previously. According to Arbon et al. (2006), previous disaster experience will help nurses to adjust their use of limited resources during a disaster event. Also, it can enhance the nurses'

awareness of disaster skills and practices and can increase their confidence during disaster events (Duong, 2009). Moreover, past experience in assisting disaster victims will help nurses to be more prepared for and aware of disaster impacts and consequences (Mitani et al., 2003; O'Sullivan et al., 2008; Suserud & Haljamäe, 1997). Also, previous experience enhances the perceived autonomy of PHNs to make decisions, as they feel fairly independent and competent (De Felice et al., 2008); their experience diminishes their feelings of inadequacy and fear in the face of an unknown situation (Hammad et al., 2010).

The level of nursing education might have been another influencing factor for the perceived ability to practice of the PHNs regarding disaster management. As mentioned previously, the majority of the subjects studied at the diploma level (89.7%), whereas the overall number of diploma nurses in Indonesia was only 39% (Shields & Hartati, 2003). Since 1997, the nursing diploma has been classified as the lowest educational rank in the nursing profession in Indonesia (Saha, 2006). This educational background might have lowered the level of perceived ability to practice regarding disaster management among the subjects in this study. It was also found that there was a significant difference among diploma and bachelor's degree nurses in terms of their perceived ability to practice regarding disaster management (Figure 4).

The moderate level of the PHNs' perceived ability to practice might be due to the fact that diploma nurses constituted the majority of the subjects. This educational background is still considered lack of clinical experience and nursing competencies that the PHNs had (Carlisle, Luker, Davies, Stilwell, & Wilson, 1999), and their degree of knowledge regarding common healthcare issues (Hennessy, Hicks, Hilan, & Kawonal, 2006). Certainly, a higher educational level was considered to positively influence the nurses' clinical skills and practices (Chan, 2009). For this reason, all nurses are highly advised to improve their educational backgrounds in order to expand their professional competencies, as well as their personal and professional values (Crooks et al., 2005). Higher education is important for developing more knowledgeable and experienced nurses who are better equipped and trained in disaster management (O'Sullivan et al., 2008).

Training and education is considered one of the contributing factors which enhances a nurse's ability, in general (Gould, Berridge, & Kelly, 2007). It was certainly considered to be one of the factors that influenced the PHNs' perceived ability to practice in this study. The data showed that more than half of the subjects (54.8%) never attended a

disaster training and education course, and attendance at such a course was found to be significantly associated with an improvement in the level of the PHNs' perceived ability to practice regarding disaster management (Figure 5). Similarly, a study conducted by Evers and Puzniak (2005) also found that nurses who lacked disaster training and education seemed to have a lower perception of their ability to perform the skills that should be performed during a bioterrorism attack.

The previous studies addressed the importance of this factor in improving nurses' skills and disaster preparedness (Duong, 2009; Gould et al., 2007; Hsu et al., 2004; Husna, Hattakit, & Chaowalit, 2011). A study conducted by Fung et al. (2008) also found that almost all nurses (97%) perceived themselves to be inadequately prepared for disastrous events due to a lack of training and education related to disasters. A systematic review on the effectiveness of disaster training for health workers by Williams et al. (2008) also clarified these statements. Regular training, particularly related to disasters and emergencies, is recommended for nurses to improve their own practice in clinical settings (Husna et al.) and to help them better perform their current roles, functions, and competencies when managing disasters (Gould et al.). Also, this training will be useful in addressing their individual limitations in order to develop their awareness and decision-making processes. Furthermore, it will help to improve information systems; develop standard operational procedures for inexperienced nurses; limit inaccuracies in treatment, triage, and documentation; and avoid the problem of insufficient training and resource shortages during future disaster events (Edwards, Caldicott, Eliseo, & Pearce, 2006; Henderson, Inglesby, O'Toole, & Grossman, 2001).

Finally, when faced with unpredicted situations such as emergencies and disaster events, nurses must possess the essential scientific and technical skills to provide adequate physical and emotional support to the victims (Sturgeon, 2008), make immediate and effective decisions, and protect facilities and resources (Hsu et al., 2006). Because the lack of knowledge among nurses regarding preparedness and their disaster plan will lead to inadequate performance by healthcare providers in caring for disaster victims. Therefore, PHNs need to expand their disaster management knowledge in order to diminish such unexpected problems (Rebmann et al., 2007).

Conclusion

The result of this study found that PHNs' perceived ability to practice regarding disaster management was at a moderate level. The highest PHNs' perceived ability to practice was in the recovery phase, followed by response phase, and preparedness phase. Some factors from PHNs might contribute to the finding in this study, included subjects' working area, working experience, experience in assisting disaster victim, nursing education, and attending to training and education that related to disaster.

Recommendation

For maintaining practice and improving clinical skill related to disaster management, it is highly suggested for PHNs to improve the knowledge and skills regarding disaster management by actively reading book, searching on the Internet, and attending seminars and conferences related to disaster. While, the public health centers and the health policy makers are responsible to develop appropriate disaster training and education for PHNs and other health care providers in the PHC as the primary responders for disaster event. This study would also valuable to evaluate the disaster preparedness plan, adequate personnel, and appropriate disaster training and education for disaster response in the community setting.

Acknowledgments

The authors gratefully thank to the Director of the Institute for Research and Development on Health and Epidemiology Unit, Faculty of Medicine, Prof. Dr. Virasakdi Chongsuvivatwong for his initiation of Aceh-Southern Thailand Collaboration, and the Graduate School, Prince of Songkla University, Thailand for partial funding to support this study. Also, thanks are extended to the Rockefeller Foundation for the scholarship that corresponding author was awarded during studying Master of Nursing Science.

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