

Knowledge and skills of Emergency Care During Disaster For Community Health Volunteers: A Literature Review

Anda Kamal¹, Praneed Songwathana², Wipa Sae Sia³

Background: Nowadays, disaster preparedness and responses are essential for everyone to be involved since the disaster becomes increasing. The Community Health Volunteers (CHVs) in particular are the key partners required adequately prepared in emergency care during disaster event.

Purpose: The study aims to examine the essential knowledge and skills of emergency care during natural disaster for CHVs.

Method: The reviews published during 2000 and 2011 searching from PubMed, Science Direct, CINAHL, ProQuest Medical Library were conducted.

Result: Twenty-four articles and documents related to community-based disaster preparedness programs were intensively reviewed. Based on the review, six components of knowledge and skills for emergency care in natural disaster for CHVs are required including 1) early warning, 2) disaster triage, 3) first aid, 4) search and rescue, 5) logistic and communication, and 6) team organizations.

Conclusion: There was a few studies focusing on the emergency care in disaster management and some factors related to knowledge and skills were shown. It is therefore recommended that the current CHVs' knowledge and skills should be explored in order to assist people in their community following disaster event when professional responders are not immediately available to help.

Key words: Knowledge, Skill, Community health volunteers, Emergency care, Natural disaster.

¹ Master Student, Master of Nursing Science, Faculty of Nursing, Prince of Songkla University, Thailand

² Associate Prof, Faculty of Nursing, Prince of Songkla University, Thailand

³ Assistant Professor, Faculty of Nursing, Prince of Songkla University, Thailand

Background

According to the World Health Organization (2008) reported the last 10 years were from the South-East Asian region, approximately 62% of the total numbers of people killed in disasters. The devastating Asian tsunami on December 26, 2004 in Aceh, Indonesia in particular caused more than 120,000 deaths, 403,420 homeless persons, and 37,000 people missing and presumed deaths (Vogt & Kulbok, 2008). The impact of the disaster has made people to face with many physical, psychosocial and economical problems.

Nowadays, disaster preparedness and responses are essential issue for everyone to be involved since the incidence of natural disaster becomes increasing. To prevent the loss of life and impact of disaster, there is a need for CHVs to be readiness in emergency preparedness because they live in the community and could perform some tasks in helping community people in emergency phase (Flint & Brennan, 2006). However, a previous study addressed that assistance from health volunteers during disaster event was limited due to the lack of qualified staffs (DeSimone, 2009). Moreover, CHVs have a responsibility to prepare themselves for effective service before disaster strikes and they need to have the ability to think critically and to respond to whatever the needs may be (Merchant & Lurie, 2010).

The CHVs often consist of people living in the community who contribute to primary health care (PHC) in order to improve health outcomes. Their roles were depending on the level of training (Lehmann, & Sanders, 2007). In the first few hours to the first days from the onset of a disaster event, disaster may destroy roads, bridges, ports and airports, and communication facilities (World Health Organization & UNECE, 2010). The CHVs play a critical role in crises or emergency phase because many victims can be saved in the first hours after a crisis (Thomas, 2003). The evidence suggests that CHVs (both lay and professional) can play an important role in the development and achievement of emergency management (Fulmer, Portelli & Foltin, 2007). However, lay people will be the main focus as

they are the first line to prevent exposure to local hazards for the community. In order to assist the victims in the emergency phase during disaster, basic skills are required, such as providing early warning, first aid, triage, logistics and communication, search and rescue, and team organization (Flint & Brennan, 2006). More importantly, basic first-aid techniques are essential for helping most victims with injuries during a natural disaster, which include control bleeding, treat shock and to stabilize fractures (Kano, Siegel, & Bourque, 2005). The aim of this review is to determine the concepts of CHVs in emergency care knowledge and skills which needed in helping the victims during disaster and also to determine the factors that related to CHVs of knowledge and skills.

Method

This review included recent research literature concerning the role for CHVs in emergency care during disaster events. The searching was retrieved from science direct, CINAHL, Pubmed, Proquest, Google scholar.com and the <http://Lib.med.psu.ac.th/libmedeng/> from the years 2000 up to 2011. Keywords in searcher included knowledge, skill, community health volunteers, emergency care, and natural disaster. Article titles were searched for inclusion of keywords. Twenty-four articles and documents were found for appropriateness that used to explore the CHVs knowledge and skills in emergency care during disaster.

Results

The results of literature review will separate into three parts, the overview concept of emergency care during disaster, the CHVs of knowledge and skills regarding emergency care during disaster, and factors that help develop CHVs' knowledge and skills regarding emergency care during disaster.

a. Concept of emergency care during disaster

Disasters happen naturally or can be human-made. Natural disasters often happen suddenly such as storms, flooding, earthquakes, tsunami, and eruption (Vogt & Kulbok, 2008). Human-made disasters are those resulting from events or situations that are clearly caused by mankind, such as war, armed conflict, overwhelming environmental contamination, and significant technological catastrophe (Gebbie & Qureshi, 2007).

Emergency care during disaster, the conceptual knowledge developed in the community emergency response teams (CERT) programs. The CERT program was initially developed for use in Los Angeles since 1984 and subsequently has been expanded to use in other parts of the United States and other countries. The CERT program can provide a guideline for people and organizations to address important local issues and challenges for emergency response. Based on the concept of neighbors helping neighbors, the CERT program trains local volunteers as first responders to emergencies. The CERT training focuses primarily on emergency care which includes first aid, triage, logistics and communication, search and rescue, and team organization (Flint & Brennan, 2006).

b. CHVs' knowledge and skills regarding emergency care during disaster

The knowledge and skills related to emergency care during disaster were reviewed based on Flint and Brennan (2006), and Vogt and Kulbok (2008). In order to be capable in helping victims during disaster, the six essential components were found to be essential knowledge and skill for CHVs. These included early warning, first aid, disaster triage, logistics and communication, search and rescue, and team organization.

Knowledge and skills in early warning

Early warning is important during an impending disaster, the CHVs must be prepared to understand about the situation and the characteristic of the disaster events and

need to concern about warning, mobilization and evacuation it is the first action in emergency or response phase during disaster to inform the community (Kafle & Murshed, 2006). Moreover, CHVs need to identify the available resources and equipments that can be used for early detection and send notification to inform the community (Gebbie & Qureshi, 2007).

Knowledge and skills in disaster triage

The definition of triage is the process of sorting and categorizing patient based on the sickest patients as priorities. According to CERT (2011) the commonly used triage system is the classification of the patient's medical condition. This classification is divided into four levels: 1) immediate medical care, 2) delayed care, 3) non-urgent or minor and, 4) dead or near dead. This classification refers to the Simple Triage and Rapid Treatment (START) using a color coding system.

Knowledge and skills in first aid

Providing life saving requirements and support to persons and communities affected by disasters will be the latter important action, because minor injuries can be effectively treated using basic first-aid techniques, such as clearing an airway, performing mouth-to-mouth resuscitation, carrying out CPR, treating shock, controlling bleeding and applying a splint (Kano, Siegel & Bourque, 2005). In emergency situations, airway obstruction, bleeding, and shock often cause death. The main priorities of CHVs operations must include opening the airways, controlling excessive bleeding, and treating for shock (CERT, 2011).

Knowledge and skills in logistic and communication

In the aftermath of natural disasters, agencies face many logistical challenges including the destruction of the physical infrastructure, for example roads, bridges and airports, the remoteness of an area and a limited transport capacity and if logisticians are not

included in the planning and decision-making process, this causes delay in distributing relief (Thomas & Kopczak, 2005). In this situation, the CHVs can assist in offering essentials logistic for community needs such as water, sanitation and hygiene for saving the victims' lives in emergency situations (WHO & UNECE, 2010). Furthermore, during a crisis, humanitarian agencies require information related to the disaster situation. The communication systems must be established, for health care providers to communicate with each other, with government leaders, and collaborating partners such as the police, fire, and security services, and the local hospital (Veenema, 2007). After providing appropriate and timely emergency medical care, the next priority for the survivors of a natural disaster is shelter. Finding appropriate shelter for all victims usually becomes a priority around the 48-hour after a disaster. Moreover, during disaster response, CHVs must provide shelters and temporary camps for families. The shelter is a basic human need that protects individuals against the elements, and allows for the restoration of proper public health practices that will protect against long-term health consequences (WHO, 2011).

Knowledge and skills of search and rescue

The search and rescue team's priority is to find and evacuate victims from the impact zone and transfer them to the medical post after assessing their status. The CHVs team may provide victims in the impact zone essential first aid measures such as control bleeding, maintaining clear airways, but this is not the time for cardiopulmonary resuscitation (International Federation Red Cross, 2004). Victims with minor injuries may be transferred by non-medical transport after all acute victims have been evacuated. Upon arrival at the hospital, every injured person must be re-triaged, reassessed, stabilized and given definitive care.

The CHVs usually work together with other teams and multi-disciplinary include personnel from police, fire fighters, and emergency medical services and most of the

personnel have the ability to assist victims in structural collapse and the dangers from earthquakes, hurricanes, and other hazards (WHO, & UNECE, 2010). Additionally, ambulance areas should be within easy access of medical treatment stations. All CHVs should be aware of the plans for transportation and know where transport vehicles will be located (Veenema, 2007). As soon as the rescuers reach an injured person, CHVs should be careful to help the victims such as assess the respiration, open airways by using the fingers to clean the mouth and throat, take out dentures and loosening collars, belts and clothing, and use blankets to keep the victim warm, furthermore, while the rescue workers are freeing the trapped victims, the next action is preparing transportation for the victims to a health centre or hospital use ambulance or a stretcher for the injured person (CERT, 2011).

Knowledge and skills of team organizations

In emergency phase, effective collaboration parties including the local population, local government authorities and humanitarian organizations is an essential part of natural disaster management and needed the coordinated efforts of all key stakeholders including community leaders to provide the necessary resources for local action during the emergency phase (Oloruntoba, 2005). Moreover, when disaster occurs, there is a need of many teams or organizations to help the victims, which also involves the collaboration between CHVs and other health professionals, particularly in the emergency phase and they should commit to this affiliation in order to enhance effective communication and collaboration to reduce morbidity and mortality of the victims in the emergency phase (Kuntz et al., 2008).

c. Factors that help develop CHVs' knowledge and skills regarding emergency care during disaster

The factors that help develop CHVs' knowledge and skills regarding emergency care during disaster were explored from literature review. These included 1) training related

emergency care, 2) experience during disaster, 3) period of working, and 4) disaster drill regarding emergency care.

Training and education are essential parts of preparedness skills for CHVs while handling a disaster response. Moreover, attended training is essential part to gained skills for health volunteers while handling disaster response. The training will increase the skills for preparing CHVs to become active contributors in life-saving in emergency care (Kano, Siegel & Bourque, 2005). These trained personnel can provide early intervention with basic life support and basic trauma life support which are critical and efficient in disaster response when the patients cannot be urgently admitted in a health facility (Pan American Health Organization, 2011).

Another factor influences CHVs in responding to disaster event is direct experience on disaster event, from the experience CHVs can gain insights, acquire new views on the benefit of former learning, absorb from others examples, and pick up from one mistake and repeat action in similar situations by being attuned (Maulidar, 2010). Similarly to Flint and Brennan (2006) found that CHVs who have more experience in disaster response can play an important role at site of disaster. They also can perform actions such as performing triage, starting basic life support, and communication with another teams. Moreover, CHVs who had more experience in emergency care during a disaster could play a critical role in disaster response and they were often the first people to arrive at the scene, and typically trusted by the victims (World Health Organization, 2011).

Duration of working can be an absolute factor of achieving experience in helping the victim during emergency care of disaster, CHVs who have long time working years may gain more experience and mastery on knowledge and skills related to emergency care (Williams, Nocera, & Casteel, 2008). Similarly, a study conducted by Maulidar (2010) among public health nurses where half of the nurses who had less than five years of working

experience were considered as having limited knowledge regarding disaster nursing management and duration of working in a disaster was correlated with improvement in skills of health care providers, CHVs will act more adequately than those who had less duration of working.

However, disaster simulation or drills are use full to increase knowledge and skills to be able to acting in the real situation and widely used throughout the world and are considered as a fundamental tool for evaluation and improvement of disaster response capacity for health care providers (Green, Modi, Lunney & Thomas, 2003). The involvement of CHVs is important. Their function in the health system and communities with continual training and disaster simulation before emergencies or disasters can enhance their capacity to respond to basic public health needs and adapt to new needs in a more appropriate and timely manner (Brennan, 2005).

Conclusions

The CHVs in emergency care during disaster have played importance role in helping victims when the health care professional are not available at immediate time and also CHVs are often and actual the first responder in many disaster events. Therefore the recruitment, development, and retention of volunteers who have their knowledge and skills in the event of a disaster are essential to create a functional workforce during natural disaster. The essential knowledge and skills for CHVs needed to prepare themselves in emergency care during disaster consist of early warning, first aid and triage, logistics and communication, search and rescue, and team organization. Moreover, many factors can help develop to CHVs' knowledge and skills in emergency care, those factors are training related emergency care, experience in helping victims during disaster, period of working and attending disaster drill.

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