

COMMUNITY AWARENESS AND PERCEPTIONS OF HEALTH SECTOR PREPAREDNESS AND RESPONSE TO CYCLONE NARGIS

NW Myint^{1,2}, J Kaewkungwal², P Singhasivanon², K Chaisiri³,
P Ponpet³, P Siriwan⁴, AK Mallik⁵ and KW Thet¹

¹Medical Care Division, Department of Health, Nay Pyi Taw, Myanmar; ²Department of Tropical Hygiene, Faculty of Tropical Medicine, Mahidol University, Bangkok; ³Permanent Secretary Office, Ministry of Public Health, Nonthaburi; ⁴Relief and Community Health Bureau, Red Cross Society, Bangkok; ⁵Inter-Agency Coordination on Emergency and Humanitarian Action, WHO Office, Bangkok, Thailand

Abstract. Community awareness, preparedness and response to public health emergencies are essential for a successful response to public health emergencies. This study was carried out to determine community awareness and perceptions regarding health sector preparedness and response to Cyclone Nargis in Myanmar. Six focus group discussions were carried out in 3 villages severely affected by Cyclone Nargis. Thematic content analysis was carried out to determine community perceptions. Focus group participants, consisting of community members, community leaders and government personnel, were aware of the cyclone, but were unaware of its intensity and where it would make landfall. There was inadequate knowledge on how to prepare for a cyclone. There was some training on cyclone preparation but coverage was not wide enough. Participants received service and relief from health sector; they had a positive attitude toward health services provided to them. However, 5 out of 6 focus groups stated most villagers were not interested in health education. Only a few participants had some knowledge on how to prepare for a cyclone. Based on these results, there are evident weaknesses on how to prepare for cyclones. Community preparedness is essential to prevent disasters with cyclones, such as with Cyclone Nargis.

Keywords: awareness, preparedness, community, emergency

INTRODUCTION

There are about 450 to 800 major emergencies or disasters per year worldwide affecting the community socially and economically (Coppola, 2007; WHO,

2007). Cyclone Nargis hit the delta region of Myanmar on 2-3 May 2008 and moved inland through the Ayeyarwady Delta causing many deaths, destroying infrastructure and affecting economic and social activities (Tri-Partite Core Group, 2008). It was the most overwhelming natural disaster in the history of Myanmar and the most deadly cyclone in Asia since 1991 (Tri-Partite Core Group, 2008). Although most disasters are unpredictable, the impact of disasters can be mitigated

Correspondence: Dr Nyan Win Myint, Department of Tropical Hygiene, Faculty of Tropical Medicine, Mahidol University, 420/6 Ratchawithi Road, Bangkok 10400, Thailand.
Tel: 66 (0) 8525 81435
E-mail: drnwmymint@gmail.com

through strengthening the response capacity of nations and communities at risk (WHO, 2007). Community level preparedness is important, because people at the community level are first responders in emergencies (WHO, 1999).

Humanitarian action in emergencies must also show respect for the culture and health perceptions of the affected communities (WHO, 2008). Mortality due to the 2004 Indian Ocean tsunami occurred mostly during the first few days after the disaster (Nishikiori *et al*, 2006). Focus group discussions are useful to assess perceptions of disaster preparedness and attitudes about disasters (Kubicek *et al*, 2008). A study by Nozawa *et al* (2008) revealed awareness of the community is essential for following evacuation advice. Focus group discussions can identify socioeconomic and behavioral factors related to disaster preparedness and response which is useful for disaster management (Moore *et al*, 2004; Carter-Pokras *et al*, 2007). Obtaining feedback from the community about their perceptions regarding relief operations is essential for future disaster relief planning (Lee, 2008). This study was undertaken to determine community perceptions regarding preparedness and response to Cyclone Nargis. The results should be useful for future public health emergency preparations and response in Myanmar.

MATERIALS AND METHODS

This was a cross-section study using focus group discussions. The study population was selected from 3 villages: Amar Village and Kyan-ka-dune Village in Pyapone Township and Mangalake Village in Kynechangone Township, which was severely affected by Cyclone Nargis. In each village two focus group discus-

sions were carried out: one for community members and one for government personnel and community leaders. Each focus group consisted of 6 to 9 women and men selected from adult men and women >18 years old; at least one third of participants were women. One group was composed of government service personnel, such as health, education, agriculture, police and community leaders. The other group was composed of ordinary community members.

Survey instruments

A questionnaire including questions about cyclone warnings, health services and opinions about preparedness for Cyclone Nargis was followed for focus group discussions, which lasted 65 to 95 minutes.

Sampling methods

Multistage sampling methods were used to select 3 sites for the focus group discussions. Community member participants were chosen from different occupations and educational levels by purposive sampling.

Data collection and analysis

Ethical approval was obtained from the Ministry of Health, Myanmar and the Faculty of Tropical Medicine, Mahidol University. The focus group discussions were carried out in April 2010. Two facilitators and two note takers carried out the focus group discussions, then the data was coded and the answers were summarized by two researchers. The answers summarized by the two researchers were compared for agreement.

RESULTS

Characteristics of participants

Twenty-two community members participated in one of three groups. The youngest participant was 18 years old

and the oldest was 58 years old; the mean age of the participants was 34.4 years old. Most of the community members were farmers; the remaining members were students, merchants, fishermen, manual laborers, and dependents. There were 20 government personnel, community leaders and NGO members consisting of 7 health personnel, 5 community leaders, 5 NGO members and 3 government personnel, who also participated. The youngest in these groups was 24 years old and the oldest was 67 years old with a mean age of 41.1 years old.

Knowledge about Cyclone Nargis

In the community member groups, some heard the warning about Cyclone Nargis and some participants did not. Of the community participants who heard the warning, most heard it from the radio or television. They stated the warning came only a short time before the storm made landfall. The community participants were not aware of the intensity or the exact location of Cyclone Nargis.

“I heard it from the television; it was announced after every song. However, I did not realize the cyclone was coming toward my village. I only had 2-3 hours warning” (19 year old student).

The government personnel and community leaders knew about the storm, but some did not know where it would hit and did not relay the information to the villagers.

“As a village leader, I did not relay the warning to villagers. Most of them (villagers) knew about the storm but did not expect this intensity” (42 year old village leader).

The villagers received their warning from mass media, such as radio and television.

“Most of the villagers knew (about the storm) from the radio but did not do anything. Because of a lack of electricity in my village, we rely on the radio for information” (37 year old woman).

Many of the villagers heard about Cyclone Nargis from the mass media but did not know what to do with the warning. Most villagers stated the warning came only short time before the storm not allowing enough time to prepare.

Perceptions of preparedness for Cyclone Nargis

During the 6 focus groups, the villagers stated there was nearly no preparedness for Cyclone Nargis due to a lack of previous experience with how to respond to cyclones. There were also gaps in knowledge about where Cyclone Nargis was heading. Some community members mentioned the religious believe of karma (religious belief) as a reason for doing nothing.

“Every human being has a birth and a death as a religious belief; I didn't prepare anything” 53 year old woman.

“I was not prepared because I have never experienced this before. The warning did not tell how to prepare and it did not disturb my meal” (39 year old woman).

Some respondents left their cyclone damaged home and went to religious or public buildings for shelter.

“My house was destroyed by the cyclone at 10 PM. My family and I went to a village monastery. Every villager went to the monastery because it situated on high ground and quite strong. Our village was quite fortunate because we had only a few deaths and were able to take shelter at the monastery, but in Laut-me

village some casualties occurred” (23 year old woman).

One community leader mentioned trying to have a simulation exercise in his area after the Indian Ocean tsunami in 2005 but villagers were not interested.

“A tsunami drill was carried out at national level after the tsunami in 2005. Unfortunately, the villagers were not interested” (53 year old health worker).

The villagers did not know how to prepare for the cyclone due to lack of interest and weakness in training for cyclone preparedness.

Disaster preparedness training before Cyclone Nargis

During focus group discussions, 4 out of 6 groups stated there were gaps in disaster preparedness training. One health worker mentioned receiving training for disaster management before Nargis but was not familiar with how to apply public health policies during emergency situations.

“During the health assistant training program, disaster management was included. I did not relay the information to the villagers because they were not interested” (30 year old health staff).

Participants from the education sector said the disaster preparedness topic was included in the basic education curriculum for schoolchildren but the parents were not interested.

Health services after Cyclone Nargis

All the villages in which the community participants resided received some kind of health service after Cyclone Nargis. The medical teams took 2 days to 2 weeks to reach each of the villages. They received treatment from the medical teams if they had health problems. There

were a few complaints of inexperienced medical teams.

“There were both experienced and inexperienced medical teams. It was better to receive help from an experienced medical team” (35 year old farmer).

The villagers received some relief supplies, such as water, sanitation items, bed nets and medicines from health sector personnel, but there were differences in the type of items received by village.

“The first medical team arrived 10 days after the cyclone and the villagers sought treatment from the team. They distributed water purification tablets but the villagers did not know how to use them and the smell was quite strong” (43 year old man).

During focus group discussions, 4 out of 6 groups mentioned success with sanitary latrine construction, but others stated they were not successful in their villages because they did not receive the necessary supplies:

“The latrines were constructed for free; there were almost no sanitary latrines in the villages before Nargis. The villagers constructed them because they were given some supplies and assisted with construction costs” (45 year old farmer).

Two out of 6 focus group discussions stated there was a lack of psychosocial support and dead body clearance in their villages. The majority said they went for health education lectures after the cyclone only if they were given incentives, such as relief items.

“Health education about communicable diseases was given. Most of the villagers did not join because they were busy and were not yet settled” (24 year old woman).

Health care personnel pointed out the villagers seeking treatment resulted in success with the immunization program. They mentioned a lack of interest in health education by the villagers. The villagers received health care if needed but most were not interested in health education.

Attitudes towards health care after Cyclone Nargis

Many community participants said they were satisfied with the health care provided, but preferred all expenses be paid, including referral expenses. They also preferred station medical teams to mobile teams due to the availability of health services at all times.

“We were satisfied with the medical teams. They provided enough drugs. Diseases were cured and villagers sought treatment. We preferred on site teams for treatment” (19 year old woman).

The villagers had mostly positive attitudes towards relief items provided by the health sector. Community leaders stated villagers were satisfied with the relief items received because they were poor.

“We preferred the organizations who gave treatment and relief items. Most of the villagers were satisfied if the team gave relief items” (42 year old village leader).

Health personnel stated coordination between NGOs and local health departments was good; some complained of inappropriate or too many supplies.

“The townships arranged coordination meetings so there was no overlapping of medical teams. There were too many of some items, such as malaria drugs, tablets and surgical instruments. Our township did not have a high prevalence of malaria” (53 year old health worker).

In focus group discussions, 5 out of 6 groups stated villagers had a lack of interest in health education because they were busy with their work. Health care personnel stated success with some health programs, such as immunizations but mentioned a lack of interest in health education by villagers.

“Villagers came to health education lectures only if given relief items because they were poor and had negative attitudes towards health education” (34 year old health worker).

Generally, villagers had positive attitudes toward the medical teams and relief items given by medical teams. However, they were not interested in health education.

Common illnesses after Cyclone Nargis

The villagers stated that pneumonia, acute respiratory infections, diarrheal disease, injuries and mental health problems were common during the 6 months after Cyclone Nargis. Health personnel also agreed with the health problems mentioned by the villagers. Health personnel reported there were no outbreaks of communicable diseases during the 6 months after the cyclone.

“The villagers suffered diarrhea, common colds, and pneumonia. Abdominal pain was especially common in children. Some suffered injuries due to Nargis. We received enough drugs at no costs” (25 year old fisherman).

The health problems mentioned by villagers were consistent with common diseases reported by health management information systems/INGOs after the cyclone (Department of Health Planning, 2008).

Preparations for future cyclones

Villagers, community leaders and

government personnel stressed the importance of constructing cyclone shelters and disaster resistant buildings, as well as having life jackets, drinking water and food to prepare for future cyclones. They also requested medication, tents, water and sanitation items at health centers because of the roads were blocked by the cyclone. They requested advanced warning of cyclones and disaster drill training exercises. There were some villagers, who did not want to make preparations due to the religious belief of karma.

“Life jackets should be distributed to villagers. Villagers should prepare water containers because ponds could not be used after the cyclone due to the entrance of seawater” (47 year old woman).

“Hospitals should have adequate supplies of essential drugs, water, sanitation items, and tents in case the hospital is destroyed by a cyclone. Drills should be carried out to prepare for disasters” (53 year old health worker).

Five out of 6 groups agreed there was some disaster preparedness training. The attitudes towards the training were mostly positive.

“In our villages, the Red Cross carried out first aid training for community volunteers. Various organizations (government/NGOs) distributed educational material about preparing for natural disasters, such as cyclones, floods and earthquakes” (18 year old student).

DISCUSSION

Data from this study reveals many community members were not aware of the cyclone warnings. This should be improved through educational programs.

Cyclone warnings should include how to prepare for and respond to cyclones. Warnings should be made by village leaders because most villagers were unaware of the warnings through mass media. Education regarding such terms as intensity of the hurricane can increase understanding of the risks (Eisenman *et al*, 2007). Warnings should be given for enough in advance to evacuate to a safer location and should include where to evacuate to. First responders in the community should be educated on how to prepare and respond to disasters (WHO, 1999). Public and religious buildings used for emergency situations should be disaster resistant. The World Health Organization has recommended construction of disaster resistant health facilities (Pan American Health Organization, 2008). It may take 48 to 72 hours for outside medical teams to reach disaster affected areas (WHO SEARO, 2007). Community search and rescue teams should be provided with medicine and equipment sufficient to meet immediate response needs before outside teams arrive (WHO WPRO, 2006). Local health staff should be trained in disaster management at the community level. Lack of proper coordination among various responders to public health emergencies/disasters can have a negative impact (WHO SEARO, 2005). Coordination of medical services developed in response to Cyclone Nargis should be strengthened for future emergencies. The relief operations should take into consideration local beliefs and contexts (WHO, 2008).

Most focus group participants had positive attitudes towards health services given but expressed concerns about deficiencies, especially affecting vulnerable populations (Eisenman *et al*, 2007; Fabien, 2008). Distribution of drugs and medical equipment should be based on require-

ments of the community. Sustainability of community awareness is also important for public health emergency management. The health sector should consider how to make health education attractive to the population affected by the disaster (Cater, 1991). Rincon *et al* (2001) found previous experiences with hurricanes did not result in better preparedness for future hurricanes in the United States. Cyclone shelters should be constructed in large villages situated in storm surge areas (WHO SEARO, 2005). Drills are the best test of public health emergency preparedness. Drills should be carried out at least yearly (WHO, 1999).

This study had several limitations. First, the study population may not reflect the perceptions of the population as a whole due to the small sample size, and a few focus groups. Second, there is recall bias since the study was carried out two years after the cyclone.

In conclusion, there was inadequate community awareness, preparations and response to Cyclone Nargis. Only some community members had knowledge on how to prepare and respond to future cyclones. The health sector must develop and maintain community level awareness because of the low frequency and high impact of natural disasters.

ACKNOWLEDGEMENTS

We would like to thank the Myanmar Ministry of Health for permission to carry out the study. Special thanks to Pyapone District Health Department and Kung-yankone Township Health Department and the participants of the focus group discussions for taking part in the study. Thank also to DAAD and SEAMEO-TROMED Network for their partial support with research grant.

REFERENCES

- Cater WN. Disaster management: A disaster manager's handbook. Manila: ADB, 1991.
- Carter-Pokras O, Zambrana RE, Mora SE, Aaby KA. Emergency preparedness: knowledge and perceptions of Latin American immigrants. *J Health Care Poor Underserved* 2007; 18: 465-81.
- Coppola DP. Introduction to international disaster management. Oxford: Elsevier, 2007.
- Department of Health Planning. Health management information report. Yangon: Department of Health Planning Myanmar, 2008.
- Eisenman DP, Cordasco KM, Asch S, Golden JF, Glik D. Disaster planning and risk communication with vulnerable communities: Lessons from Hurricane Katrina. *Am J Public Health* 2007; 97 (suppl 1): S109-15.
- Fabien N. Risk perception, risk management and vulnerability to landslides in the hill slopes in the city of La Paz, Bolivia: A preliminary statement. *Disasters* 2008; 32: 337-57.
- Kubicek K, Ramirez M, Limbos M, Iverson E. Knowledge and behaviors of parents in planning for and dealing with emergencies. *J Community Health* 2008; 33: 158-68.
- Lee ACK. Local perspectives on humanitarian aid in Sri Lanka after the tsunami. *J Public Health* 2008 122, 1410-7.
- Moore S, Daniel M, Linnan L, Campbell M, Benedict S, Meier A. After Hurricane Floyd passed: investigating the social determinants of disaster preparedness and recovery. *Fam Commun Health* 2004; 27: 204-17.
- Nishikiori N, Abe T, Costa DGM, Dharmaratne SD, Kunii O, Moji K. Timing of mortality among internally displaced persons due to the tsunami in Sri Lanka: cross sectional household survey. *BMJ* 2006; 332: 334-5.
- Nozawa M, Watanabe T, Katada N, Minami H, Yamamoto A. Residents' awareness and behavior regarding typhoon evacuation advice in Hyogo Prefecture, Japan. *Int Nurs Rev* 2008; 55: 20-6.

- Pan American Health Organization (PAHO). Hospital safety index: evaluation forms for safe hospitals. Washington DC: PAHO, 2008.
- Rincon EL, Marc YR, Greenberg B. Effect of previous experience of a hurricane on preparedness for future hurricanes. *Am J Emergency Med* 2001; 19: 276-9.
- Tri-Partite Core Group (TCG): Post-Nargis Joint Assessment (PONJA): A summary of health-related issues. Yangon: TCG, 2008.
- World Health Organization (WHO). Community emergency preparedness: a manual for managers and policy-makers. Geneva: WHO, 1999.
- World Health Organization (WHO). Mass casualty management systems: strategies and guidelines for building health sector capacity. Geneva: WHO, 2007.
- World Health Organization (WHO). Primary health care in crises annual report 2008: health action in crises. Geneva: WHO, 2008.
- World Health Organization Regional Office for the Western Pacific (WHO WPRO). Field manual for capacity assessment of health facilities to emergencies. Manila: WHO WPRO, 2006.
- World Health Organization Regional Office for South-East Asia (WHO SEARO). Health aspects of emergency preparedness and response report of the regional meeting, Bangkok, 21-23 November 2005. New Delhi: WHO SEARO, 2005.
- World Health Organization Regional Office for South-East Asia (WHO SEARO). Risk reduction and emergency preparedness: WHO six-year strategy for the health sector and community capacity development. New Delhi: WHO SEARO, 2007.