



**World Health
Organization**

Regional Office for South-East Asia

**Expert Meeting on Emergency and Disaster Nursing
28-30 September 2011, Jakarta, Indonesia**

**Regional case study on Role of Nurses and Midwives in Emergencies
and Disasters**

Role of Nurses and Midwives in Emergencies and Disasters

Case studies from South-East Asia Region

Contents

Acknowledgements.....	1
Foreword.....	2
Background.....	3
Emergencies and Disasters in South-East Asia.....	3
WHO Benchmarks	6
Nursing and Midwifery in South-East Asia.....	6
Best Practices: The ICN Framework of Disaster Nursing Competencies	7
<i>Prevention/Mitigation Competencies</i>	9
<i>Preparedness Competencies</i>	9
<i>Response Competencies</i>	10
<i>Recovery/Rehabilitation Competencies</i>	10
South-East Asia Case Studies.....	11
Case Study: Bangladesh.....	12
Case Study: India.....	12
Case Study: Indonesia.....	12
Case Study: Maldives.....	12
Case Study: Nepal.....	12
Case Study: Sri Lanka.....	12
Case Study: Thailand.....	12
Analysis of Case Studies on Role of Nursing and Midwifery in Emergencies and Disasters with Conclusions on Focus Areas for Intervention and Scaling up.....	12
Recommendations and Way Forward.....	16
References.....	17
Annex I ICN Disaster Nursing Competencies.....	35
Annex II Guide/Template for Case Studies.....	44

Acknowledgements

Foreword

Background

Emergencies and Disasters in South-East Asia

Earthquakes. Volcanic eruptions. Armed conflicts. Tsunamis. Tornados. Droughts. Famine. Tropical cyclones. Floods. Landslides. Disasters are a part of everyday life and they are increasing. Nowhere are they increasing faster and with greater ferocity than in Asia Pacific, the world's most disaster-prone region where, on average, 40 per cent of the globe's "natural" catastrophes occur (IFRC, 2010). According to the World Disaster Report 2006, fifty eight percent of the total number of people killed in natural disasters during the decade 1996-2005 was from the South East-Asia (SEA) countries. In 2005, three countries of the SEA Region (India, Bangladesh and Indonesia) were among the top-10 countries most affected by natural disasters (WHO, 2007). In the last two decades, 38% of all the global disasters have occurred in the countries of the South-East Asia Region. Almost two thirds (61%) of the deaths due to disasters globally have been reported from the SEA region during 1998-2008. (Knight, 2008). One of the most devastating disasters in recent history was the Indian Ocean tsunami of 2004 that killed over 240,000 people across 13 countries. The 2004 Indian Ocean tsunami killed 226,400 people while the world disaster death total was just over 242,000 that year (IFRC, 2010). In 2008 Cyclone Nargis killed more than 138,000 people in Myanmar. Armed civil conflicts have also wounded and displaced several thousands in SEA affected countries. Over the past decades there were armed civil conflicts in Sri Lanka, Thailand, Timor-Leste, and Nepal.

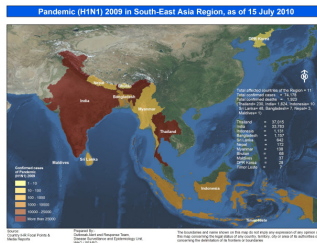
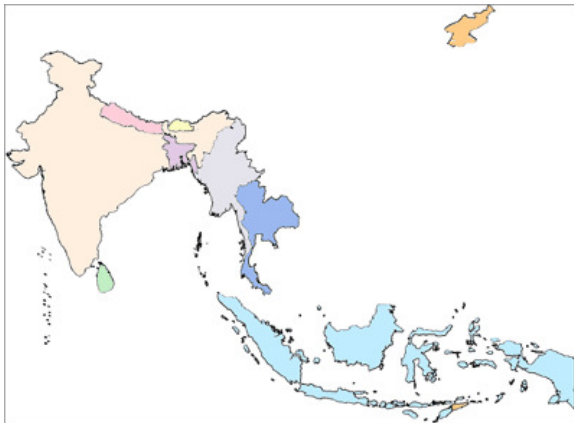
Emergencies and disasters severely affect individual, group, and community physical, mental, social and economic health. Morbidity, mortality and disability related to emergencies and disasters in the SEA region has increased. According to the Office of U.S. Foreign Disaster Assistance's Centre for Research on the Epidemiology of Disasters (OFDA/CRED), the humanitarian and health system impacts from disasters are staggering. From 1998 to 2008,

nearly 1 million people lost their lives to disasters, 3.3 million were injured and 2 billion were affected. Health systems, including human resources and physical infrastructures, though essential for population survival are very vulnerable to major emergencies and disasters (WHO/ICN, 2009).

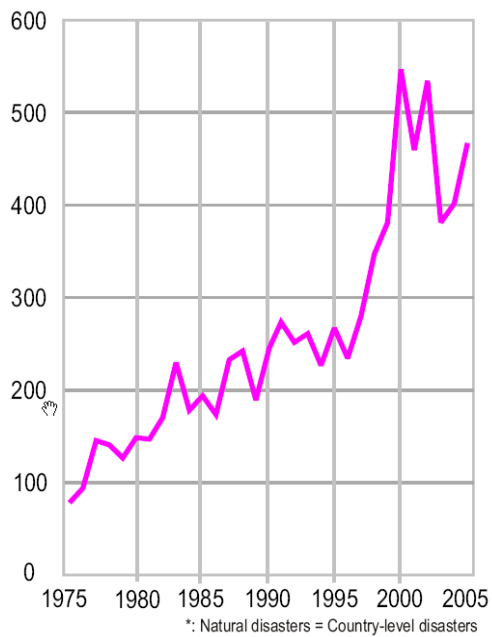
Due to climate change and the increasing severity of meteorological events, increasing numbers of people living in precarious situations, irregular migration, urbanization, environmental degradation, large scale displacement, public health crises and civil conflicts, emergencies and disasters are very common in the South-East Asia region (IFRC, n.d.). Large populations also live and work along vast coast lines making the people of South-East Asia even more vulnerable to climate change and severe meteorological events. Asia, particularly South and South-East Asia, is the most densely populated area in the world. Coastal areas have a disproportionately high population density (450 persons/sq.km versus 175 persons/sq.km elsewhere in the world). Due to disasters and emergencies in affected countries, coastal areas were flooded and homes and buildings, roads and bridges, water and electricity supplies, crops, irrigation and fishery infrastructure, food and fuel networks, telecommunication networks were washed away. The trauma caused by unprecedented catastrophes affect every facet of life and livelihood.

The map below highlights the 11 South-East Asia Region countries and recent disasters affecting their people and infrastructures.

South-East Asia Region Countries



And the situation continues to get worse. The graphic representation below shows the time trend of natural disasters from 1975 – 2005 (WHO, 2006).



The outlook offers no respite, and governments and societies across South-East Asia realize new challenges face us in a rapidly changing world. How we responded

yesterday will not meet the needs of tomorrow (IFRC, 2010). Experts agree that preparedness and mitigation are essential in reducing coping failures and the negative impacts of emergencies and disasters on communities. New policies, strategies, information systems, curriculums, and skills must be developed and implemented to prepare for coming emergencies and disasters in the SEA region.

WHO Benchmarks

The WHO Regional Office for South East Asia and its partners apply the process of setting benchmarks as a novel approach for increasing performance in emergency preparedness and response (WHO, 2007). The twelve benchmarks fall into the categories of 1) human resource development, training and education; 2) planning; 3) legislation and policy; 4) funding; 5) vulnerability assessment; 6) information systems; 7) surveillance; 8) absorbing and buffering capacities and responses; 9) patient care; and 10) coordination (WHO, 2007). There are numerous key roles for nursing and midwifery within these benchmark categories.

Nursing and Midwifery in South-East Asia

WHO has recently passed several resolutions to support improved strategies, technical guidance and interventions for emergency preparedness and response. The WHO South-East Asia region is a priority. WHO is working to support countries in developing self-sufficiency in emergency preparedness and response. There are over 1,600,000 nurses and midwives in the 11 countries of the WHO South-East Asia Region (WHO, n.d.). Nurses and midwives are the largest sector of the health care workforce and can lead the movement towards increased emergency and disaster preparedness. Nurses and midwives must “scale up” knowledge, skills, practices and abilities to meet ever increasing demands for disaster preparedness.

Nurses and midwives are the health care cadre to be mobilized before, during, and after an emergency or disaster. Nurses’ and midwives’ experiences and skills in assessment, triage,

first aid, pharmacology, prevention, holistic care, mental health, teamwork, health care information systems, education, community outreach, evaluation, policy, planning, etc are needed for all stages in the disaster management continuum. Due to the complex, varied, and changing nature of disasters and emergencies in SEA, nursing and midwifery skills and practices must be improved and expanded up to meet new demands.

Best Practices: The ICN Framework of Disaster Nursing Competencies

The ICN (1997, p. 44) defines competence as “a level of performance demonstrating the effective application of knowledge, skill and judgment”. The ability to perform according to predefined standards or competencies is gained through work experience, education, mentors and training (Kak, Burkhalter and Cooper, 2001). Competencies serve as the foundation for research, curriculum development, evidenced-based practice and standards development. (ICN, 2009) Building on the competencies developed by the ICN and WHO/WPRO, this document further highlights standard roles and practices for nurses and midwives in emergencies and disasters. Nursing and midwifery best practices follow known parameters outlined in the disaster management continuum and the ICN Framework of Disaster Nursing Competencies. Throughout the “disaster management continuum” roles of nurses are integrated into each phase of a disaster. Parameters of nursing and midwifery emergency and disaster competencies are organized under four areas:

- mitigation/prevention;
- preparedness;
- response; and
- recovery/rehabilitation.

Within the four areas, 10 domains are identified: (1) risk reduction, disease prevention and health promotion; (2) policy development and planning; (3) ethical practice, legal practice and accountability; (4) communication and information sharing; (5) education and preparedness; (6)

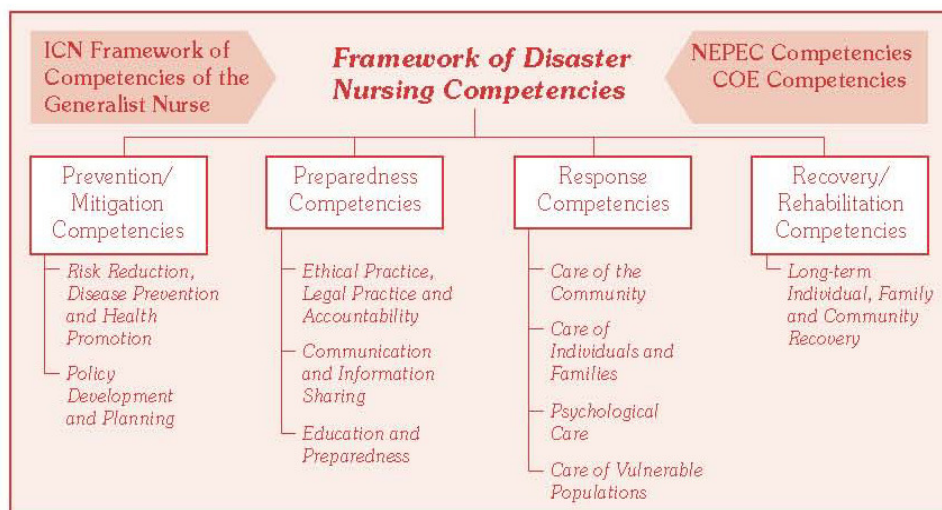
care of the community; (7) care of individuals and families; (8) psychological care; (9) care of vulnerable populations; and (10) long-term recovery of individuals, families and communities. The disaster management continuum provides a consistent way to organize the competences; and

it enhances the ability to develop educational curriculum that integrates the disaster management continuum with the competencies. (ICN, 2009) The figures and paragraphs below depict the disaster continuum and further explain the framework, key areas and domains for nurses and midwives competent in emergencies and disasters.

Figure 1 Disaster Management Continuum



Figure 2 Framework of Disaster Nursing Competencies



* COE: Center of Excellence; ICN, International Council of Nurses; NEPEC, Nursing Emergency Preparedness Education Coalition.

Prevention/Mitigation Competencies.

Health promotion, risk reduction, and disease prevention are fundamental activities for nurses and midwives. Nurses and midwives must also be involved in policy development and disaster planning to further direct roles and interventions. Nurses and midwives assist with hospital emergency plans and advocate for building codes for safe hospitals and health facilities. Nurses and midwives assist in linking health facilities to community mitigation plans.

Preparedness Competencies.

Nurse and midwife educators are involved in human resource capacity building at all levels. Nurse and midwife educators work at training institutions, developing and implementing curricula and continuing education programs for public health, paramedical and medical health providers. Through ongoing assessments and coordination activities, nurses and midwives assist in preparing, training, and equipping the community for potential emergencies and disasters. Community health nurses and midwives arrange essential services, supplies and logistics requirements for local emergency response to health needs. Nurses and midwives are

involved in community volunteer trainings on search, rescue and first-aid. Nurses and midwives assure that basic equipment for public health and mass casualty care is in place for trained community volunteers. Nurses and midwives build community resources and readiness by organizing disaster drills, mapping populations and communicating important health education messages via the media, social networks, and radio. Nurses and midwives use appropriate tools and IT technologies for gathering and analyzing necessary data. Nurses and midwives assist in the development and management of National rosters of experts to provide technical back-up for health sector emergency response. The nursing and midwifery pre-incident emergency preparedness work is crucial to reduce the risk and impact of disasters on communities.

Response Competencies.

During emergencies and disasters, nurses and midwives triage patients and provide emergency clinical care and psychological support to individuals, families, communities and vulnerable populations. As the emergency situation begins to stabilize, nurses and midwives support public health interventions working for mass immunization campaigns and coordinating the distribution of clean water and sanitation kits. Surveillance, monitoring and reporting on communicate health risks to the community and populations at risk are key response competencies for nurses and midwives. Sharing information and communicating public health risks are important nurse and midwife skills. As the disaster incident transitions to the recovery phase, nurse and midwife leaders work on re-establishing health and mental health services for the whole community.

Recovery/Rehabilitation Competencies.

During the recovery phase, nurses and midwives serve as critical links for referrals to needed community resources. Nursing skills in data collection, disease surveillance, outbreak

investigation and health education will also be required post incident. Coordinating individual, family and community care services are ongoing responsibilities for nurses and midwives during rehabilitation phases of emergencies and disasters

See Annex I for the complete list of specific ICN Disaster Nursing Competencies. With best practices highlighted, we can now more objectively review the case studies of nurses and midwives in emergencies and disasters in South-East Asia.

South-East Asia Case Studies

To highlight the role and responsibilities of nurses and midwives during emergencies and disasters in the Region, the Nursing unit together with the Emergency and Humanitarian Action (EHA) unit in the South-East Asia Region Office (SEARO) have supported the documentation of case studies on the contribution of nurses and midwives during emergencies and in disaster preparedness. A case study template served as a guide with the purposes of: 1) acquiring a minimum information set; and 2) applying a common structure to cases for comparative analysis as appropriate. The case study template is outlined in Appendix 1. In a participatory manner, case study investigators incorporated focus groups and in-depth interviews to assess the needs. The final case studies are unique reports of the roles of nurses and midwives during disasters as well as their many issues, challenges and constraints. Reoccurring themes identified through the case studies will allow further strengthening of areas to improve for nursing and midwifery services in disaster and emergency preparedness.

Case Study: Bangladesh

Case Study: India

Case Study: Indonesia

Case Study: Maldives

Case Study: Nepal

Case Study: Sri Lanka

Case Study: Thailand

Analysis of Case Studies on Role of Nursing and Midwifery in Emergencies and Disasters with Conclusions on Focus Areas for Intervention and Scaling up

The case studies highlight nursing and midwifery practices during selected past and recent emergencies and disasters in South-East Asia. Importantly, the case studies were conducted in a participatory manner that allowed a learning process by all key stake holders. The case studies are often personal accounts of nurses and midwives working during disasters and emergencies and identify good practices and lessons learned on implementation and constraints. Successful interventions and practices were analyzed with an eye towards future scaling up of nursing and midwifery capacities. The cases provide answers to what the focus areas for intervention should be; how nursing and midwifery prevention/mitigation, preparedness, response, and recovery/rehabilitation disaster competencies can be improved.

The cases also identify the need for developing a roster of nurse and midwife experts who are on-call to provide immediate back-up in case of an emergency or disaster. The studies touch on several ethical and legal issues for nurses and midwives working in disaster and emergencies. Roles for nursing and midwifery in Community Based Disaster Prevention activities are discussed as well as the need for improved coordination and teamwork between all actors, agencies and institutions. The case studies tally the number of lives lost and enormous social and economic costs of emergencies and disasters. Given that SEA is one of

the most disaster prone regions in the world, a long term nursing and midwifery regional preparedness and prevention strategy is needed. As training and education, community programs, salaries, monitoring and evaluation and updated equipment and technology all require more resources, the cost implications of scaling up nursing and midwifery practices in an institutionally sustainable manner must also be considered.

From the case studies the following best practices are highlighted according to the benchmarks and competency domains.

Prevention/Mitigation

Policy Development and Planning.

The SEA case studies reveal the need for nurses and midwives to be more involved in decision making at policy and planning tables. With our innate knowledge of health facilities, nurses and midwives can assist in developing hospital emergency plans and advocating for safe hospitals. By supporting the documentation of the nursing and midwifery case studies, WHO has started the policy discussion amongst the stakeholders. Nurses and midwives want to be more involved politically and legislatively in the development of disaster preparedness and response policies and plans.

Risk Reduction, Disease Prevention and Health Promotion.

Through the case studies, a focus on community based risk reduction is highlighted. Nurses' and midwives' knowledge of community resources, populations at risk, vulnerable individuals, workforce issues, supply needs and nursing roles and practices are crucial contributions to disaster planning (ICN, 2009). In many countries, there are feelings of fatalism where God holds the master plan for everyone. **Climate change?** But nurses and midwives strive to mobilize youth, schools, women, and community leaders to identify and use community assets before, during and after disasters. Nurses and midwives highlight the importance of traditional knowledge in safeguarding the community from disasters effects. Nurses and

midwives are adept in health education and promotion and request more community assessment, coordination, and mobilization skills to assist communities to reduce disaster risks.

Preparedness

Ethical Practice, Legal Practice and Accountability.

In the case studies the nurses and midwives brought up several ethical issues related to emergencies and disasters. They were often conflicted between caring for their own families or caring for their patients. Feelings of disbelief, shock, helplessness, fear, responsibility, and guilt are all discussed. The nurses do not feel they are appreciated or recognized for their brave work and fear working outside their scope of work. Standing orders are requested during emergencies to reduce liability issues. Nurses and midwives experience much human suffering and work with a spirit of humility and volunteerism.

Communication and Information Sharing.

The nurses and midwives realize the importance of communication and information sharing, but focus more on coordination and teamwork. Strong coordination amongst multi professional teams is highlighted in the case studies. Nurses and midwives need more coordination between the central MoH to local levels as well as across sectors, programs and trainings. Reviewing supportive systems, communication equipment, and referral systems is also requested.

Education and Preparedness.

All the case studies highlight the need for more effective training and education on disaster skills. Several of the nurses and midwives had didactic courses on first aid, triage, and trauma care, but need more hands on learning experiences. Role plays, drills, and ongoing competency development are requested in trainings and education. Improved psychosocial and mental health counseling methods are also needed. Many of the nurses and midwives need better communication, advocacy and empowerment skills to meet the needs. Clinical skills are

mostly sufficient, but strengthened community assessment, disease outbreak, disaster management, and leadership courses are required. Several of the case studies highlight formative research in disasters and call for disaster preparedness to be part of formal education and nursing curricula in all schools and universities.

Response

Care of Individuals, Families and Communities.

As emergencies and disasters strike, nurses and midwives go into action. Personal worries about families and loved ones often cloud the response efforts. Nurses and midwives use their assessment and implementation skills to triage, refer and transport patients. More training on triage processes is needed. Nurses and midwives adapt guidelines and protocols as needed to meet patient care needs.

First aid, emergency and trauma care are performed with limited resources. Ongoing health education is part of the nurses' and midwives' role. Nurses and midwives are involved in the collection and distribution of money, medicines and materials such as chlorine tablets and mosquito nets to aid the victims. Innovative nurses and midwives develop creative solutions to meet patient care needs. Worries of unsafe facilities also slow down the response effort. Nurses and midwives provide medications, clean water and food. Wound care, splinting and casting are all done as well as managing the care of the deceased victims. Nurses and midwives have difficulty shifting care from individuals to large populations. As the focus of the disaster operation changes from lifesaving and emergency care to public health, nurses must possess the knowledge and skills to adapt to the change in focus of care (ICN, 2009).

Emergency communication skills

Care of Vulnerable Populations and Psychological Care.

Midwives were involved in assisting deliveries including cesarean sections, pre/post natal care, and family planning activities. Infection prevention and control are always on the nurses' and midwives' agendas. Nurses and midwives also support families of victims during

emergencies and disasters and provide emotional support and mental health counseling for post traumatic stress. Nurses and midwives lead home visits and attend chronic care patients. Nurses and midwives are naturally good communicators and advocate for victims around access issues as well as mobilizing the community and working in public relations. Nurses and midwives take on leadership roles, distributing manpower as needed and managing emergency and disaster health care activities .

Recovery/Rehabilitation

During the recovery and rehabilitation phase, nurses and midwives continue with administrative duties often securing shelter and housing for victims. Nurses are involved in outreach to schools and communities to raise awareness and continue advocating for vulnerable populations. Ongoing monitoring, data collection, and evaluation are also important nursing and midwifery roles and responsibilities during the recovery phase.

Cross Cutting Themes

From the case studies, cross cutting themes were identified. Improved technologies such as early warning systems, communication systems, disaster management information systems and geographic information systems (GIS) are requested. Procurement of equipments including improved referral and transportation vehicles are also needed. Attention to human resources and rapid deployment teams are highlighted as well as supportive human resource packages for nurses and midwives. Resource mobilization according to the Hyogo Framework for Action (HFA) is also repeatedly highlighted in the nursing and midwifery case studies.

Recommendations and Way Forward

References

International Federation of Red Cross and Red Crescent Societies (IFRC), Disasters in Asia: the Case for Legal Preparedness, Geneva, 2010

Knight, Lindsey, World Disasters Report 2008, International Federation of Red Cross & Red Crescent Societies (IFRC), 2008

Walter, J., World Disasters Report 2006: Focus on Neglected Crises, International Federation of Red Cross & Red Crescent Societies (IFRC) , 2006

Red Cross Red Crescent and the Hyogo Framework for Action Focus on the Asia-Pacific region, 2008

WHO, Emergency Preparedness and Response: From Lessons to Action Report of the Regional Consultation Bali, Indonesia, 27-29 June 2006

WHO, Workshop on Managing Disaster Health Information, 2010 Report of the Meeting Jakarta, Indonesia, 10-12 November 2009

World Health Organization and International Council of Nurses, ICN Framework of Disaster Nursing Competencies, 2009

WHO, South East Asia Nursing and Midwifery Profile, n.d.

WHO, Guide/template for case studies in countries in the South-East Asia region.

WHO, Regional Office for South East Asia , Benchmarking Emergency Preparedness, Emergency & Humanitarian Action, 2007

WHO, Regional Office for South East Asia, Emergency & Humanitarian Action, Benchmarks, Standards and Indicators for Emergency Preparedness and Response, 2007

U.S. Foreign Disaster Assistance's Centre for Research on the Epidemiology of Disasters (OFDA/CRED) International Database, 2008

United Nations International Strategy for Disaster Reduction Secretariat, In times of dwindling resources, disaster risk reduction is an easy win. ISDR, 2011

<http://www.ifrc.org/en/what-we-do/disaster-management>

<http://www.searo.who.int/en/Section1257/Section2263.htm>

Case Study References

Bangladesh References

Abeyesundere, A. N. A. (1992). Speech of special guest. In Ministry of Health and Family Welfare (Ed.), *Workshop proceedings on Lessons Learnt During Cyclone - April 1991*. Dhaka: Ministry of Health and Family Welfare.

Afif-ul-minhaz (2009). Climate Change and Natural Disaster in Bangladesh : Will it be neglected?, from <http://www.scribd.com/doc/17188736/Climate-Change-and-Natural-Disaster-in-Bangladesh>

Ahmed, P. (2007). Bangladesh Cyclone Toll Rises to 1,723 Retrieved 20, September, 2010, from http://www.worldproutassembly.org/archives/2007/11/bangladesh_cycl.htm

Ahmed, R. (2010). Earthquakes in Dhaka Bangladesh on 10 September 2010 Night Retrieved 25, September, 2010, from <http://www.southasiablog.com/2010/09/earthquakes-in-dhaka-bangladesh-on-10.html>

Alexander, D. E. (1993). *Natural disasters*. London: University College London Press.

Ali, A. (1996). Vulnerability of Bangladesh to climate change and sea level rise through tropical cyclones and storm surges. *Water, Air, & Soil Pollution*, 92, 171-179.

Asian Disaster Reduction Centre (2003). Country report 2003 Bangladesh: Disaster management in Bangladesh Retrieved 20, September, 2010, from <http://www.adrc.asia/countryreport/BGD/2003/page2.html>

Association of State and Territorial Directors of Nursing (2007). The role of public health nurses in emergency preparedness and response Retrieved 21, August, 2010, from www.astdn.org/.../ASTDN%20EP%20Paper%20final%2010%2029%2007.pdf

Australian Nursing and Midwifery Council (ANMC) (2008). The Responsibilities of Nurses and Midwives in the Event of a Declared National Emergency. Guideline Retrieved 19, September, 2010, from [http://www.anmc.org.au/userfiles/file/guidelines_and_position_statements/The Responsibilities of Nurses and Midwives in the Event of a Declared National.pdf](http://www.anmc.org.au/userfiles/file/guidelines_and_position_statements/The%20Responsibilities%20of%20Nurses%20and%20Midwives%20in%20the%20Event%20of%20a%20Declared%20National.pdf)

Azam, J. P. (1993). The impact of floods. *The Quaterly Journal of Bangladesh Institute of Development* 21.

Bangladesh Bureau of Statistics (2009). An overview. *STATISTICAL POCKET BOOK BANGLADESH* Retrieved 18, September, 2010, from www.bbs.gov.bd/dataindex/pby/pk_book_08.pdf

Bangladesh State of the Environment (2001). Natral disasters, from <http://unpan1.un.org/intradoc/groups/public/documents/apcity/unpan009378.pdf>

BBC News (2007). Bangladesh cyclone kills hundreds Retrieved 22, September, 2010, from http://news.bbc.co.uk/2/hi/south_asia/7097678.stm

Billings, D. M. (2008). Responding to Emergencies, Mass Calsualties, and Disasters. In D. M. Billings (Ed.), *Lippincott's Q&A Review for NCLEX-RN* (9th ed.). New York: Lippincott, Williams & Wilkins.

Billings, D. M. (2009). Managing Emergencies and Disaster. In D. M. Billings (Ed.), *Lippincott's Q&A Review for NCLEX-RN* (10 th ed.). New York: Lippincott, Williams & Wilkins.

Black, R. (1994). Environmental change in refugee affected areas of the third world: The role of policy and research. *Disaster*, 18, 107-116.

Chowdhury, J. A. (2002). *Perspective of nursing and nursing policy in Bangladesh*. Dhaka, Bangladesh: Jafar Ahmed Chowdhury.

- Corsi, M., & Halder, S. (2009). 2009: Looking back. *The Challenging Time*, 7, 1.
- Director of Nursing Services (2002). *The nursing contribution to future health care delivery; A policy paper* (1st ed.). Dhaka, Bangladesh: Director of Nursing Services.
- Directorate General of Health Services (2009). *Health Bulletin*. Dhaka, Bangladesh.
- Directorate of Nursing Services (2007). *Job description of government employees; Directorate of Nursing Services Dhaka*. Dhaka, Bangladesh: Directorate of Nursing Services.
- Disaster Management (2003). Country report 2003: Disaster management in Bangladesh Retrieved 21, August, 2010, from <http://www.adrc.asia/countryreport/BGD/2003/page2.html>
- Disaster Management Bureau (2009). Bangladesh disaster vulnerabilities. *Disaster risk management in Bangladesh: Best practice*.
- Durkin, M. S., Khan, N., Davidson, L. L., Zaman, S. S., & Stein, Z. A. (1993). Natural disaster on child behaviour: Evidence for post traumatic stress. *American Journal of Public Health* 83, 1549-15553.
- Emergency Preparedness and Responses Programme Bangladesh (1996). *Emergency country profile*. Dhaka, Bangladesh.
- Financial Indicators Bangladesh (1991). Cyclone damage estimated at US\$ 2.4 billion. *ANZ Grindlays Bank and Bangladesh Centre for Advanced Studies*, 1.
- Haque, C. E., & Zaman, M. Q. (1989). Coping with Riverbank Erosion Hazard and Displacement in Bangladesh: Survival Strategies and Adjustments. *Disasters*, 13, 300-314.
- Home Office (1992). *Dealing with Disaster* (1st edition ed.). London: HMSO.
- Hoque, B. A., Sack, R. B., Siddiqi, M., Jahangir, A. M., Hazera, N., & Nahid, A. (1993). Environmental health and the 1991 Bangladesh cyclone. *Disaster*, 12, 143-151.
- Hoque, E., & Blair, D. (1992). Vulnerability to tropical cyclones: Evidence from the April 1991 cyclone in coastal Bangladesh. *Disaster*, 16, 217-229.

Huda, Q., & Malik, M. M. R. (2004). *Standard operating procedure: Management of health in emergencies*. Dhaka: Bangladesh Center for Emergency Preparedness and Responses.

International Centre for Diarrhoeal Disease Research Bangladesh (2001). ICDDR's epidemic expert team sent in Aila affected area. *Shatta Songlap*, 18,8

International Committee of the Fourth International (1999). Hundreds of thousands hit by Bangladesh floods Retrieved 20, September, 2010, from <http://www.wsws.org/articles/1999/oct1999/bang-o20.shtml>

International Federation of Red Cross and Red Crescent Societies (2010). Bangladesh: Cyclone Aila Retrieved 22, November, 2010, from http://www.ifrc.org/docs/appeals/10/MDRBD004_OU7.pdf

International Federation of Red Cross and Red Crescent Societies (2010). Bangladesh: Cyclone Alia Retrieved 21, August, 2010, from www.ifrc.org/docs/appeals/10/MDRBD004_OU7.pdf

Irtiza (2009). Cyclone Aila: Bangladesh Takes Another Blow Irtiza Retrieved 22, September, 2010, from <http://lifeasiknowit22.blogspot.com/2009/05/cyclone-aila-bangladesh-takes-another.html>

Kafiluddin, A. K. M. (1991). *Disaster preparedness for Bangladesh floods and other natural calamities*. Dhaka, Bangladesh: Salauddin and Taslim Jahan.

Kibreab, G. (1994). Migration, environment and refugeehood. In B. Zaba & J. Clarke (Eds.), *Environment and population change* (pp. 115-130). Liege: Ordina.

Manik, J. A., & Khan, S. (2007). Big blow to the Sundarbans Retrieved 9, October, 2010, from <http://www.thedailystar.net/story.php?nid=12339>

McMichael AJ, Haines A, Slooff R, & Kovats S, e. (1996). *Climate change and human health* (No. WHO/EHG/96.7). Geneva: World Health Organization.

Mehovic, J., & Blum, J. (2004). Arsenic Poisoning in Bangladesh Retrieved 22, September, 2010, from <http://www.sarid.net/sarid-archives/04/040908-arsenic-poisoning.htm>

Ministry of Food and Disaster Management Bangladesh (2004). *Bangladesh country report June 2004*. Dhaka.

Murelli, E., & Arvanitis, T. N. (2003). e-Health & Learning: The Bangladesh experience Retrieved 19, September, 2010, from <http://www.hon.ch/Mednet2003/abstracts/992581377.html>

Park, K. (2008). Disaster Management. In 17th (Ed.), *Park's Textbook of Preventive and Social Medicine* (pp. 568-573). Prem Nagar.

Rahman, M. O., & Bennis, M. (1993). Health related responses to Natural disaster: The case of the Bangladesh cyclone of 1991. *Social Science and Medicine*, 36, 903-914.

Rezwan (2007). SIDR strikes Bangladesh Retrieved 22, September, 2010, from <http://www.e-bangladesh.org/2007/11/15/sidr-strikes-bangladesh/>

Siddique AK, Baqui AH, Eusof A, & Zaman K (1991). 1988 floods in Bangladesh: pattern of illness and causes of death. *Journal of Diarrhoeal Diseases Research*, 9(310-4).

Stalker, P. (1994). *A fork in the path : human development choices for Bangladesh*. Dhaka, Bangladesh: Colour Dots Ltd.

The daily star (2007). SIDR starts pounding coastline. *The daily star*, pp. 11-15,

The Economist (1991). Bangladesh in troubled waters Retrieved 20, September, 2010, from <http://www.highbeam.com/doc/1G1-10704830.html>

The Pacific Disaster Center (2006). Dhaka, Bangladesh, disaster risk management profile, from http://emi.pdc.org/cities/CP_Dhaka-July2006.pdf

Ullah, M., Roy, R. B., Begum, F., Begum, R., & Dibra, I. (2003). *Group Analysis on the study report on curriculum review: Making Choices for nurses training and education*. Dhaka: Director of Nursing Services

Ullah, M. M. (1997). *The Socio-economic Impact of Disasters and its effects on Health: Lessons for Bangladesh*. Queen Margaret college, Edinburgh.

Ullah, M. M. (2009). Nursing Through my eyes: An experience. *Souvenir on the Obseance of Internatonal Nurses Day and Award Ceremony for Good Nurses*, 23-24

United Nations International Children Emergency Fund (1993). Health effect of the 1991 cyclone; Report of a UNICEF evaluation team. *Disaster*, 17, 153-165.

United Nations International Children Emergency Fund (1994). Bangladesh from disaster to development *the state of the world's children*. Dhaka, Bangladesh: Oxford University Press.

UNOPS (2009). Disaster management in Bangladesh Retrieved 25, September, 2010, from http://www.preventionweb.net/files/9001_GBLPJFSCDMPEN8.811.pdf

Verghese, A., Shrestha, N. M., Singh, S., Shrestha, S., Thapa, S., & Bantawa, S. (2004). *Introduction to nursing* (2nd ed.). Kathmandu, Nepal: Helath Learning Material Centre.

WHO (1989). Coping with Natural Disasters: The Role of Local Health Personnel and the Community. In WHO (Eds.) Available from <http://helid.desastres.net/tmp/export/who/who07e.pdf>

Wijnroks, M., Bloem, M. W., Islam, N., Rahman, H., Das, S. K., Hye, A., et al. (1993). Surveilance of the health and nutritional status of the Rohingya Refuzees, . *Disaster*, 17, 348-357.

World Health Organization (2001). Emergency and humaniterian action: Country report, from www.searo.who.int/LinkFiles/EHA_CP_Bangladesh.pdf

World Health Organization (2003). Health system in Bangladesh Retrieved 15, August, 2010, from http://www.whoban.org/health_profile.html

World Health Organization (2008). Health System in Bangladesh Retrieved 15, August, 2010, from http://www.whoban.org/health_system_bangladesh.html

Zaman MQ (1991).The displaced poor and resettlement policies in Bangladesh. *Disaster*, 15,117-125.

India References

Malik, Javed, N; Murty, C.V.R; M.EERI; and Rai, Durgesh, C. Landscape changes in the andaman and Nicorbar Island (India) after the December 2004 Great Sumatra Earthquake and Indian Ocean tsunami. Earthquake Spectra, Vo. 22, No. S3, pages S43-S66, June, 2006

Cho, Yong-Sik; Shon, Dae-Hee and Ha, Tae-Min. Field Survey of 2004 Tsunami in Andaman and Nicobar Islands, Asia Oceania geosciences Society, Singapore, 2006.

Mohanty, Ashotosh. Impact of Tsunami in India from report of Tsunami, NCAR, USA.

Thakkar, M.G and Goyal, Bhanu. Historic submergence and tsunami destruction of nancowrie, Kamorta, Katchall and Trinket Islands of Nicorbar district: Consequences of 26 December 2004 Sumatra-Andaman earthquake. Current Science Vo. 90, No.7 10 April 2006.

Post Trunami Relief, Rehabilitation and reconstrution measures in Andaman and Nicorbar Islands. <http://www.and.nic.in/post-tsunami.pdf> accessed on 17-01-2011.

Prawaini Zora and Daniel Woreck. 2006. Tsunami survivors left to suffer on Andaman and Nicobar Islands. www.wsws.org/articles/2006/jan2006/anda-i04.shtml accessed on 17-01-2011.

Stan Kachnowski and Ryan Blum. A survey of the E-governance Response to the December 26, 2004 Tsunami in South India. Website: http://www.iceg.net/2007/books/1/18_337.pdf accessed on 17-01-2011.

Government of India. Ministry of Home Affairs, National Disaster Management Division. Disaster Management in India – A Status Report. 2004. Website: <http://ndmindia.nic.in/GolUNDP/ReportPub/DM-Statu-%20Report.pdf> accessed on 17-01-2011.

Committees. <http://ndmindia.nic.in/committee/Committee.htm> accessed on 17-01-2011.

Source: *RHS Bulletin*, March 2008, Min of health and Family Welfare, GOI

Detailed situation report on the impact of Earthquake/Tsunami in Indonesia, A & N Islands and other coastal States- Relief, rehabilitation and other follow-up measures according to GOI No. 32-5/2004- NDM -1 Situation Report 20 – 1800 hrs 04.01.2005.
<http://www.ndmindia.nic.in/Tsunami2004/sitrep20.htm> accessed on 17-01-2011.

Indonesia References

Crisis Center (2007). *Report review on health crisis management in disaster 2006*. MOH RI

Crisis Center (2008). *Profile of health crisis management in disaster 2007*. MOH RI

Crisis Center (2008). *Report review on health crisis management in disaster 2007*. MOH RI

Crisis Center (2009). *Review on health problem due to disaster*. MOH RI

MOH RI (2007). *Technical guideline for health crisis response on disaster*. MOH RI

Crisis Center (2010). *Disaster data*. [Online] available at: <http://www.ppk-depkes.org/info-bencana/data-bencana.html> . CC MOH RI

Kimin, Amelia (2006). *The Power of Emergency Nursing at the Time of Disaster: Aceh Earthquake and Tsunami*. UI-WHO

Kimin, Amelia (2008), *Nursing Competencies Required in Handling the Disaster: Aceh, Yogyakarta, Padang, Jakarta*. UI-Hyogo University

Maldives References

Adam, L.M. (2008).Comprehensive Vulnerability Management: The Road to Effective Disaster Planning with the community. *The Journal of Theory Construction and Theory Testing*, 12(1), 25-27.

Anderson, K.M. (2007). Charting a Course into the Unknown: Banda Aceh, Indonesia, Tsunami, 2004. *Perspectives in Psychiatric Care*, 43(1), 47-51.

Baggerly, J. & Exum, H. A. (2008). Counseling children after natural disasters: guidance for family therapists. *The American Journal of Family Therapy*, 36, 79-93.

Becker, S.M. (2007). Psychosocial care for adult and child survivors of the tsunami disaster in India. *Journal of Child and Adolescent Psychiatric Nursing* 20(3), 148-155.

Bjorn Ove, S. & Haljamae, H. (1997). Acting at a disaster site: experiences expressed by Swedish nurses. *Journal of Advanced Nursing*, 25, 155-162.

Brown, L.M., Bruce, M.L. Hyer, K., Mills, W.L., Vongxaiburan, E. & Polivka-West, L. (2009). A Pilot Study Evaluating the Feasibility of Psychological First Aid for Nursing Home Residents. *Clinical Gerontologist*, 32, 293-308.

Burnett, J., Carmel, B. & Pickins, S. (2007-2008 Winter). Rapid needs assessment for older adults. *Generations*, 31 (4), 10-15.

Castledine, G. (1993). First-aid management of psychological emergencies: 2. *British Journal of Nursing*, 2(21), (1079-1083).

Chan, E. Y.Y., Gao, Y., & Griffiths, S. M. (2009). Literature review of health impact postearthquakes in China 1906–2007. *Journal of Public Health*, 32(1), 56-61.

Cox, E. & Briggs, S. (2004). Disaster Nursing: New frontiers for Critical Care. *Critical Care Nurse*, 24(3), 16-22.

Davies, K. (2005).Disaster preparedness and response: more than major incident Initiation. *British Journal of Nursing*, 14(16), 868-871.

Department of National Planning . (2010).Statistical Year Book of The Maldives. Maldives : Department of National Planning .

Eldridge, D. & Tenkate, T. D. (2008). The Role of Environmental Health in Disaster Management: A Qualitative Study of Australian Experiences. *Journal of Environmental Health*, 71(2), 31-36.

Eyer, A. (2008). Public Information and support after disaster: a research project. *Journal of Public Mental Health* 7(2), 25-28.

Faculty of Health Sciences. (1999). Diploma in Nursing Curriculum. Maldives: Faculty of Health Sciences.

Faculty of Health Sciences. (2001). Diploma in Midwifery Curriculum. Maldives: Faculty of Health Sciences.

Faculty of Health Sciences. (2007). Critical Care Course Curriculum. Maldives: Faculty of Health Sciences.

Frank, D.I., Karioth, S.P. (2006). Measuring compassion fatigue in Public Health Nurses providing assistance to hurricane victims. *Southern Online Journal of Nursing Research*, 4(7), 2-13.

Forthergill, A., Palumbo, M.V., Rambur, B., Reinier, K. & McIntosh, B. (2005). The volunteer potential for inactive nurses for disaster preparedness. *Public Health Nursing*, 22(5), 414-421.

Frankenberg, E., Friedman, J., Gillespie, T., Ingwersen, N., Pynoos, R., Rifai, L. U., Fulhu, Mohamed I, (2010) *Sihhee Khidhumathugai Dhivehi Rajjeyge Iyye aai Ihah Dhuvaa*, Print-N-Gard, Sri Lanka.

Fung, O.W.M., Loke, A.Y. Lai, C. K. Y. (2008). Disaster preparedness among Hong Kong nurses. *Journal of Advanced Nursing*, 62 (6): 698-703.

Goodhue, C.J., Burke, R.V., Chambers, S., Ferrer R. R. & Upperman. J. S. (2010). Disaster Olympics. A unique nursing emergency preparedness exercise. *Journal of Trauma Nursing*, 17(1), 5-10.

International Council of Nurses. (2009). ICN Framework of Disaster Nursing Competencies. Retrieved October 15,2010 from <http://www.icn.ch/publications/free-publications/>

Jaffer, A. K. , Campo, R. E., Gaski, G., Reyes, M., Gebhard, R., Ginzburg, E., Kolber, M. A., Macdonald, J., Falcone, S., Green, B. A., Lazara Barreras-Pagan, L. & O'Neill, W. W. et al.(2010). An Academic Center's delivery of care after the Haitian earthquake. *Annals of Internal Medicine*, 153,262-265.

Joint Need Assessment World Bank, Asian Development Bank, UN systems. (2005). *Tsunami Impact and Recovery*. Maldives.

Kane-Urrabazo, C. (2007). Duty in a time of disaster: A concept analysis. *Nursing Forum*, 42(2), 56- 64.

Kreiss, Y., Merin, O. Peleg, K. , , G. Vinker, S., Sagi, R., Abargel, A., Bartal, C., Lin, G., Bar, A., Bar-On, E., Schwaber, M.J., & Ash, N. (2010). Early Disaster Response in Haiti: The Israeli Field Hospital Experience. *Annals of Internal Medicine*,153, 45-48.

Liebergall, M. H., Braverman, N., Shapira, S. C. Rotem, O. P. Soudry I. & Mor-Yosef, S. M. et al.(2007). Role of nurse in a university Hospital during mass casualty events. *American Journal of Critical Care*, 16(5), 480-484.

Litchfield, S.M. (2010). How to help when disaster strike. *AAHON Journal*, 58(3), 85-87.

Rural ED Nurses treat 14 gunshot victims in one day: Teamwork in key. *ED Nursing* (2007, June), 85-87.

Maldives Nursing Council. (1999). *Maldives Nursing Council Regulations*. Maldives: Ministry of Health.

Maldives Tsunami: Impact and Recovery. Joint Needs Assessment by World Bank-ADB-UN System.

Marres, G. Bemelman, M, Eijk, J. V. & Luke, L. Major Incident Hospital: Development of a Permanent Facility for Management of Incident Casualties. *European Journal of Trauma and Emergency Surgery*, 3, 203-210.

Ministry of Health. (2009). Maldives Demographic and Health Survey: preliminary report. Maldives: Ministry of Health. Retrieved October 27, 2010 from <http://www.health.gov.mv/>

Ministry of Health. (2006). Strategic Plan; disaster preparedness and emergency response. Maldives: Ministry of Health (unpublished).

Ministry of Health. (2006). Quality Health Care, Bridging the Gaps: Health Master Plan 2006-2015. Ministry of Health. 2006, Male', Maldives.

National Disaster Management Centre (NDMC), Maldives – gov. Retrieved October 25, 2010 from <http://www.preventionweb.net/english/professional/contacts/profile.php?id=2808>

O'Boyle, C. Robertson, C. & Secor-Turner, M. (2006). Public Health Emergencies: Nurses' Recommendations for Effective Actions. *AAO HN Journal* 54(8), 347-353.

Potter P.A., Perry A.G. (2008) *Fundamentals of Nursing*, 7th ed., Mosby, St Louis.

Robbins, I. (1999). The psychological impact of working in emergencies and the role of debriefing. *Journal of Clinical Nursing*, 8, 263-268.

Saliba, D, Buchanan, J.& Kingston, S.R (2004). Function and response of nursing facilities during community disaster. *American Journal of Public Health*, 94(8), 1436-1441.

Sikoki. A. B., Steinberg. A., Sumantri, C., Wayan Suriastini, W., Thomas, D. (2008). Mental health in Sumatra after the tsunami. *American Journal of Public Health*, 98(9), 1671-1677.

Stodart, K. (2005). Caring for tsunami victims in the ruins of Banda Aceh. *Kai Tiaki Nursing New Zealand*, February, 10-11.

Tomczyk, D., Alvarez, D., Borgman, P., Cartier, M.J., Caulum, L., Galloway, Groves, C. Faust, & Meske, D. (2008). Caring for Those Who Care: The Role of the Occupational Health Nurse in Disasters. *AAHON Journal*, 56(6), 243-250.

Trossman, S. (2008). Working under extremes: Nurses need to be prepared to provide care during major disasters. *American Nurse*, 40 (2), 1,6,12.

Tsunami Australian Nurses Reach out. (2005). *Australian Nursing Journal*, 12(7), 10-11.

Turale, S. (2008). How prepared are nurses and other health professionals to cope in and manage disaster situation? *Nursing and Health Sciences*, 10, 165-166.

UNEP. (2005). Maldives: Post Tsunami Environmental Assessment. United Nations Environment Programme.

UNEP. (2005). National Rapid Environmental Assessment- The Maldives. United Nations Environment Programme.

Veenama, T. G. (2006). Expanding educational opportunities in disaster response and emergency preparedness for Nurses, *Nursing Education Perspective*, 27(2), 93-99.

Walsh, S. D. (2009). Interventions to reduce psychosocial disturbance following humanitarian relief efforts involving natural disasters: An integrative review. *International Journal of Nursing Practice*, 15, 231-240.

WHO. (2005). The Tsunami and After: WHO role. World Health Organization, Regional Office for the South East Asia: Delhi.

Yates, M. (2005). Medical Surgical Nurses Volunteer to aid tsunami victims. *Military Nursing*, 14(5), 331-334.

Yomamoto, A. (2004). Centre of excellence Program: Disaster Nursing in ubiquitous society. *Japan Journal of Nursing Science* 1, 57-63.

Nepal References

M.B. Poudyal An overview of disaster, country report, ministry of home affairs, Nepal 1999.

Jinan call to action, nurse and midwives, health partners address emergency and disaster priorities for safer and resilient communities, APNDNN, 2009-02-05.

D. Schmitt, Disaster nursing and management, [www. nursing schools.com](http://www.nursing schools.com).

M. Rijal, Road accidents in Nepal, Failed governance indices, the Himalayan times December 28, 2010.

GR Chitrakar, B Piya, D Nepali, SP Manandhar, Some notable disasters in Nepal and their mitigation, journal of Nepal geological society, [vol. 36, 2007](#).

Health sector emergency preparedness and disaster response plan, disaster analysis and management framework and planning guidelines, ministry of health, department of health services, epidemiology and disease control division, kathmandu Nepal, 2006.

Disaster management framework , institutional mechanism and legislation in Nepal, A report presented in BIMITEC countries for disaster reduction and management 30-31, Oct 2006.

Emergency and humanitarian action country report, WHO, South East Asia Region 2011.

M. Rijal, road accidents in Nepal: failed governance indices, himalayan times, Dec 28, 2010.

Hospital Preparedness for Emergencies (HOPE) training manual, institute of medicine, tu, 2006.

N. Jha*, C.S. Agrawal, Epidemiological study of road traffic accident cases: a study from eastern nepal, regional health forum – vol.8, no1, 2004.

Joshi A. “Critical analysis of disaster management on 5th January 2008 in Tribhuvan University Teaching Hospital, maharajgunj, kathmandu, Nepal” Nepal disaster and emergency medicine center, newshealth, NADEM, vol 1, no.2, Jan 2008.

WHO: <http://www.who.int/>

G. Shrestha, S. Dahal, D. Rai, D. Adhikari, Keeping health facilities safe from disasters, presentation from Nepal team, government of Nepal, ministry of health and population in New Delhi, India, 15-17 April 2008.

Disaster management plan of TU Teaching Hospital, maharajgunj, kathmandu, Nepal. 2006.

Disaster management plan of Bir Hospital, ratnapark, kathmandu, Nepal, 2008.

Thai References

ADRC, Thailand Country Report 2008. available at :
<http://www.adrc.asia/countryreport/THA/2008/thailand2008.pdf>

Department of Disaster Prevention and Mitigation, Ministry of Interior, Bangkok, Thailand, 20 Years Flood Report. 2009, available at : <http://www.disaster.go.th/bpm>.

Information Base for Disaster Nursing Knowledge and Skills to Protect Lives, Core Competencies Required for Disaster Nursing. 2010 , available at : http://www.coe-cn.as.jp/english/group_education/core_competencies_list.html

International Council of Nurse and World Health Organization, ICN Framework of Disaster Nursing Competencies. 2009, Page 50-60

Siripan, P. Country Report on Information and Communication Technology (ICT). Thailand. 2007. available at
www.unescobkk.org/...country_report/THAILAND_Country_Report_-_APIN.doc

Soralump, S. Geotechnical Approach for the Warning of Rainfall Triggered Landslide. Geotechnical Engineering Research and Development Center (GERD), Civil Engineering Department, Faculty of Engineering. Kasetsart University, Thailand. 2009.

Thomalla, F. and Others. Disaster Risk Reduction and Tsunami Early Warning Systems in Thailand: a case study on Krabi Province. Stockholm Environment Institute, Project Report. 2009

Unhasut, K. Core Competencies of Emergency Nurses. Faculty of Nursing, Mahidol University, Bangkok, Thailand. 2007.

Urban Disaster Risk Management, Rapid Assessment : Flashflood and Landslide Disaster in the Provinces of Uttaradit and Sukhothai Northern Thailand. Asian Disaster Preparedness Center. 2006.

Wanaratna, L. 120 Days After Tsunami : Experiences and Lesson Learn of Thailand. The Bureau of Policy and Strategy, Office of Permanent Secretary, Ministry of Public Health, Thailand. 2005

Thai newspapers during 10 April 2009 – 17 May 2010; Thairath, Dailynews, Thaipost, Manager, Matichon, Kao-sod, and Komchadluk. News hours on Thai television channel during 10 April 2009 – 17 May 2010 ; CH3, CH7, NBT, MCOT1, MCOT2, TNN24, and TPBS. Website of Thai medias;

<http://www.thairath.co.th>.

<http://www.dailynews.co.th>.

<http://www.thaipost.co.th>.

<http://www.manager.co.th>.

<http://www.matichon.co.th>.

<http://www.kao-sod.co.th>.

<http://www.komchadluk.co.th>.

<http://www.bangkokpost.co.th>.

<http://www.oknation.co.th>.

Sri Lanka References

Boothby N., Garfield R., Roberts K., Samaranayake M. & Hettitantri N. (2010) Save the children's tsunami response program 2005-2009 final report columbia group for children in adversity. Available at: www.savethechildren.lk

Carballo M., Daita S. & Hernandez M. (2005) Impact o the Tsunami on healthcare systems, *Journal of the royal society of Medicine*, 98(9), pp.390-395.

Fernando D., Jayatilleka A. & Karunaratna V., (2003) Pregnancy—reducing maternal deaths and disability in Sri Lanka: national strategies, *British Medical Bulletin*, 67, (1), pp. 85-98.

de Silva J.K.M. & Wickramasuriya K. Maternal Child and Family Planning Services in Sri Lanka. Health Education Bureau, Available at: <http://www.healthedu.gov.lk>

Government of Sri Lanka, The official government news portal of Sri Lanka. Available at; <http://www.news.lk>

World Health Organization, Improving Maternal, Newborn and Child Health in the South-East Asia Region Available at: www.searo.who.int/LinkFiles

Ministry of Health Sri Lanka (2006) Annual health bulletin. Available at: <http://www.health.gov.lk>

National Disaster Management Centre, Sri Lanka. Available at: <http://www.ndmc.gov.lk>.

Nagai M., Abrahamb S., Okamotoa M., Kita E. & Aoyamaa A. (2007) Reconstruction of health service systems in the post-conflict Northern Province in Sri Lanka, *Health Policy*, 83, (1), pp. 84-93.

National Institute of Health Sciences (2004/2005) Public Health Nursing Diploma Programme, Evaluation of skills, Planning and Management Unit, Kalutara.

National Institute of Health Sciences (2004/2005) Public Health Nursing Diploma Programme, Field Training, Evaluation of skills, Family Health Teaching Unit, Kalutara.

World Health Organization, Reproductive, Maternal and Child Health issues – post tsunami experiences in Sri Lanka, Available at: <http://www.who.int/hac/events/tsunamiconf/presentations>

World Health Organization, Health a key to prosperity, Success stories in developing countries. Available at: <http://www.who.int>

Ministry of Disaster Management and Human Rights (2007) Sri Lanka National Disaster Management Plan, Disaster Management Center.

WorldBank(2010)Availableat:

http://http://www.google.com/publicdata?ds=wbwdi&met=sp_pop_totl&idim=country:LKA&dl=en&hl=en&q=population+sri+lanka

Annex I ICN Disaster Nursing Competencies

I. Prevention /Mitigation

Risk Reduction, Disease Prevention and Health Promotion

1.1 Risk Reduction and Disease Prevention

- (1) Using epidemiological data evaluates the risks and effects of specific disasters on the community and the population and determines the implications for nursing.
- (2) Collaborates with other health care professionals, community organizations, government and community leaders to develop risk reduction measures to reduce the vulnerability of the populations.
- (3) Participates in planning to meet health care needs in a disaster.
- (4) Identifies challenges to the health care system and works with the multidisciplinary team to mitigate the challenges.
- (5) Identifies vulnerable populations and coordinates activities to reduce risk.
- (6) Understands the principles and process of isolation, quarantine, containment and decontamination and assists in developing a plan for implementation in the community.
- (7) Collaborates with organizations and governments to build the capacity of the community to prepare for and respond to a disaster.

1.2 Health Promotion

- (1) Participates in community education activities related to disaster preparedness.
- (2) Assesses the community to determine pre-existing health issues, prevalence of disease, chronic illness and disability and the health care resources in the community.
- (3) Partners with others to implement measures that will reduce risks related to person-to-person transmission of disease, sanitation and foodborne illness.
- (4) Participates in planning to meet the health care needs of the community such as, mass immunization and medication administration programmes.
- (5) Works with the community to strengthen the health care system's ability to respond to and recover from a disaster.

2. Policy Development and Planning

- (1) Demonstrates an understanding of relevant disaster terminology.
- (2) Describes the phases of disaster management continuum: prevention/mitigation, preparedness, response and recovery/ rehabilitation.
- (3) Describes the role of government and organizations in disaster planning and response.
- (4) Understands the community disaster plan and how it relates to the national and international response plans.
- (5) Recognizes the disaster plan in the workplace and one's role in the workplace at the time of a disaster.
- (6) Participates in disaster planning and policy development.
- (7) Contributes to the development, evaluation and modification of the community disaster plan.
- (8) Ensures that the needs of vulnerable populations are included in the community disaster plan (including children, women, pregnant women, individuals with mental or physical disabilities, older people and other vulnerable persons/households).
- (9) Interprets role(s) of nurses in relation to other members of the team.
- (10) Participates politically and legislatively in the development of policies related to disaster preparedness and response.
- (11) Describes the role of public health in disaster and how it relates to the nurse's role.

II. Preparedness

3. Ethical Practice, Legal Practice and Accountability

3.1 Ethical Practice

- (1) Collaborates with others to identify and address ethical challenges.
- (2) Applies the national approved ethical framework to support decision-making and prioritizing.
- (3) Protects the rights, values and dignity of individuals and communities.
- (4) Practises in accordance with the cultural, social and spiritual beliefs of individuals and communities.
- (5) Maintains confidentiality in communication and documentation.
- (6) Understands one's own personal beliefs and how those beliefs impact on disaster response.
- (7) Describes how security issues and ethics may conflict.

3.2 Legal Practice

- (1) Practises in accordance with local, state, national and international applicable laws.
- (2) Understands how laws and regulations specific to disaster impact on nursing practices and disaster survivors.
- (3) Recognizes the legal role of public health to protect the community in a disaster.
- (4) Understands the legal implications of disasters and emergency events (e.g. security, maintaining evidence, confidentiality).
- (5) Describes the legal and regulatory issues related to issues such as:
working as a volunteer;
roles and responsibilities of volunteers;
abandonment of patients;
adaptation of standards of care;
role and responsibility to an employer; and
delegation.

3.3 Accountability

- (1) Accepts accountability and responsibility for one's own actions.
- (2) Delegates to others in accordance with professional practice, applicable laws and regulations and the disaster situation.

(3) Identifies the limits of one's own knowledge, skills and abilities in disaster and practises in accordance with them.

(4) Practises in accordance with the laws and regulations governing nurses and nursing practice.

(5) Advocates for the provision of safe and appropriate care.

4. Communication and Information Sharing

(1) Describes the chain of command and the nurse's role within the system.

(2) Communicates in a manner that reflects sensitivity to the diversity of the population.

(3) Describes the principles of crisis communication in crisis intervention and risk management.

(4) Identifies and communicates important information immediately to appropriate authorities.

(5) Utilizes a variety of communication tools to reduce language barriers.

(6) Coordinates information with other members of the disaster response team.

(7) Provides up-to-date information to the disaster response team regarding the health care issues and resource needs.

(8) Works with the disaster response team to determine the nurse's role in working with the media and others interested in the disaster.

(9) Understands the process of health information management in a disaster.

(10) Demonstrates an ability to use specialized communication equipment.

(11) Maintains records and documentation and provides reports as required.

(12) Communicates identified or suspected health and/or environment risks to appropriate authorities (i.e. Public Health).

5. Education and Preparedness

(1) Maintains knowledge in areas relevant to disaster and disaster nursing.

(2) Participates in drills in the workplace and community.

(3) Seeks to acquire new knowledge and maintain expertise in disaster nursing.

(4) Facilitates research in disaster.

(5) Evaluates the need for additional training and obtains required training.

(6) Develops and maintains a personal and family preparedness plan.

(7) Describes the nurse's role in various disaster assignments (e.g. shelters, emergency care sites, temporary health care settings,

disaster coordination and management units).

(8) Maintains a personal disaster/emergency kit (e.g. identification card, appropriate clothing, insect repellent, water bottle) in the event of deployment to a disaster.

(9) Implements preparedness activities as part of a multidisciplinary team.

(10) Assists in developing systems to address nursing and health care personnel capacity-building for disaster response.

(11) Takes on a leadership role in the development and implementation of training programmes for nurses and other health care providers.

(12) Evaluates community readiness and takes actions to increase readiness where needed.

III. Response

6. Care of Communities

(1) Describes the phases of community response to disaster and the implications for nursing interventions.

(2) Collects data regarding injuries and illnesses as required.

(3) Evaluates health needs and available resources in the disaster-affected area to meet basic needs of the population.

(4) Collaborates with the disaster response team to reduce hazards and risks in the disaster-affected area.

(5) Understands how to prioritize care and manage multiple situations.

(6) Participates in preventive strategies such as mass immunization activities.

(7) Collaborates with relief organizations to address basic needs of the community (e.g. shelter, food, water, health care).

(8) Provides community-based education regarding health implications of the disaster.

(9) Evaluates the impact of nursing interventions on different populations and cultures and uses evaluation results to make evidence-based decisions.

(10) Manages resources and supplies required to provide care in the community.

(11) Effectively participates as part of a multidisciplinary team.

7. Care of Individuals and Families

7.1 Assessment

- (1) Performs a rapid assessment of the disaster situation and nursing care needs.
- (2) Conducts a health history and age appropriate assessment that includes physical and psychological responses to the disaster.
- (3) Recognizes symptoms of communicable disease and takes measures to reduce exposure to survivors.
- (4) Describes the signs and symptoms of exposure to chemical, biological, radiological, nuclear and explosive agents.
- (5) Identifies unusual patterns or clustering of illnesses and injuries that may indicate exposure to biological or other substances related to the disaster.
- (6) Determines need for decontamination, isolation or quarantine and takes appropriate action.
- (7) Recognizes health and mental health needs of responders and makes appropriate referrals.

7.2 Implementation

- (1) Implements appropriate nursing interventions including emergency and trauma care in accordance with accepted scientific principles.
- (2) Applies critical, flexible and creative thinking to create solutions in providing nursing care to meet the identified and anticipated patient care needs resulting from the disaster.
- (3) Applies accepted triage principles when establishing care based on the disaster situation and available resources.
- (4) Adapts standards of nursing practice, as required, based on resources available and patient care needs.
- (5) Creates a safe patient care environment.
- (6) Prepares patients for transport and provides for patient safety during transport.
- (7) Demonstrates safe administration of medication, vaccines and immunizations.
- (8) Implements principles of infection control to prevent the spread of disease.
- (9) Evaluates outcomes of nursing actions and revises care as required.
- (10) Provides care in a non-judgmental manner.
- (11) Maintains personal safety and the safety of others at the scene of a disaster
- (12) Documents care in accordance with disaster procedures.

(13) Provides care in a manner that reflects cultural, social, spiritual and diverse background of the individual.

(14) Manages the care of the deceased in a manner that respects the cultural, social and spiritual beliefs of the population as situation permits.

(15) Manages health care activities provided by others.

(16) Works with appropriate individuals and agencies to assist survivors in reconnecting with family members and loved ones.

(17) Advocates for survivors and responders to assure access to care.

(18) Refers survivors to other groups or agencies as needed.

8. Psychological Care

(1) Describes the phases of psychological response to disaster and expected behavioural responses.

(2) Understands the psychological impact of disasters on adults, children, families, vulnerable populations and communities.

(3) Provides appropriate psychological support for survivors and responders.

(4) Uses therapeutic relationships effectively in a disaster situation.

(5) Identifies an individual's behavioural responses to the disaster and provides appropriate interventions as required (e.g. psychological first aid).

(6) Differentiates between adaptive responses to the disaster and maladaptive responses.

(7) Applies appropriate mental health interventions and initiates referrals as required.

(8) Identifies appropriate coping strategies for survivors, families and responders.

(9) Identifies survivors and responders requiring additional mental health nursing support and refers to appropriate resources.

9. Care of Vulnerable Populations (Special Needs Populations)

(1) Describes vulnerable populations at risk as a result of a disaster (e.g. older persons, pregnant women, children, and individuals with a disability or chronic conditions requiring continued care) and identifies implications for nursing, including:

(a) physical and psychological responses to the disaster of vulnerable populations; and

(b) unique needs and high risks of vulnerable populations associated with the disaster.

(2) Creates living environments that allow vulnerable populations to function as independently as possible.

(3) Advocates for the needs of the vulnerable populations.

(4) Identifies available resources, makes appropriate referrals and collaborates with organizations serving vulnerable populations in meeting resource needs.

(5) Implements nursing care that reflects the needs of vulnerable populations impacted by a disaster.

(6) Consults with members of the health care team to assure continued care in meeting special care needs.

IV. Recovery/Rehabilitation

10. Long-term Care Needs

10.1 Individual and Family Recovery

(1) Develops plans to meet short- and long-term physical and psychological nursing needs of survivors.

(2) Identifies the changing needs of survivors and revises plan of care as required.

(3) Refers survivors with additional needs to appropriate organizations or specialists.

(4) Teaches survivors strategies for prevention of disease and injury.

(5) Assists local health care facilities in recovery.

(6) Collaborates with the existing health care community for health maintenance and health care.

(7) Serves as an advocate for survivors in meeting long-term needs.

10.2 Community Recovery

(1) Collects data related to the disaster response for evaluation.

(2) Evaluates nursing response and practices during the disaster and collaborates with nursing organizations to resolve issues and improve response.

(3) Participates in analysis of data focusing on improvement of response.

(4) Identifies areas of needed improvement and communicates those areas to appropriate personnel.

(5) Assists the community in transitioning from the response phase of the disaster/emergency through recovery and rehabilitation to normal functions.

- (6) Shares information about referral sources and resources used in the disaster.
- (7) Assists in developing recovery strategies that improve the quality of life for the community.
- (8) Collaborates with appropriate groups and agencies to re-establish health care services within the community

Annex II Guide/Template for Case Studies



and disasters

Guide/Template for case studies in countries in the South-East Asia Region

Earthquake/Tsunami	: INO, THA, IND
Cyclone/Floods	: MMR, BAN, IND
Conflict	: SRL/THA

The template below serves as a guide and the purposes of which are : 1) acquiring a minimum information set; and 2) apply a common structure to cases for comparative analysis as appropriate. It is not meant to be an exhaustive list of questions/sections. Please feel free to address other issues that may not have been specified in the questions and sections.

1. Background:

- Description of the geographical area of the study ;
- Health facilities/services in the area;
- Scope of responsibilities/duties of nurses/midwives in general and in emergencies and disasters
- Past history of disaster/emergency situations in the country/area ;
- Past experience of nurses and midwives in disaster/emergency;

2. Emergencies and disasters :

- Description of the event of the disaster/emergency
- Impact of emergency/disaster: deaths, injuries, properties, communications, roads, buildings especially health facilities, livestock, etc

3. Preparedness

- Have you been prepared to deal with the above event ? How ?
- Did you have enough time to be prepared before the event occurred?
- Describe your preparedness activities (if any)

4. Immediate response:

- Describe what happened ? Population affected? Where were you? What was your first reaction?
- Continuity of health services; what was your role as nurse/midwife?
- Any management role with the local authorities?
- Any coordination role within the health team of the facility, health sector and/or other sectors ?;
- Call for external assistance- did you initiate the call? if not, were you consulted? how were your requests (if any) addressed ? how long did it take for your request (if any)
- Any difficulty in performing your role? Did you feel you had adequate knowledge and skills?

5. Role of nurses/midwives when external assistance arrived;

- Did your original role change?
- How did external assistance help (or not)?

6. Role of nurses/midwives during the recovery phase?

- How did you support the client/victim and their family or community as a whole? What was the common issues/concern?

- Did you coordinate/ask for assistance with any other organizations ?

7. Conclusions:

- How has this experience with a disaster/emergency affected your personal, professional life, relations with the local authorities and the local communities?
- What were the issues and challenges experienced by nurses/midwives during the crises? What did they do to overcome such challenges?
- What are the lessons you learnt - whether personal, professional, or in terms of relations with the local authorities and the local communities?
- What could be done to improve the capacity of the local communities to manage the situation?
- What could be done to improve the capacity of nurses and midwives to manage the situation?