

Quick Response Report

Cross-Cultural Analysis of Responses to Mass Fatalities following 2009 Cyclone Aila in Bangladesh and India

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Key Words: Quick Response Report, Mass Fatalities Management, Cyclone Aila, Char, Embankment-cum-road

ABSTRACT

Cyclone Aila had land fall in Bangladesh and India on May 25 and 26, 2009. In the aftermath of Aila, minimum 327 people died, 190 in Bangladesh and 137 in India. It caused wide spread destruction to property, eco system, and shut down many areas, including Kolkata megacity of India. This paper is based on Quick Response Research conducted from beginning of June till July in the places representing 78% mortalities in Bangladesh, and 71% mortalities in India. Apart from field observations, and other methods, 88 personal interviews were conducted in both the countries with governmental officials, elected representatives, non-profit organizations representatives, researchers, armed force commandants, hospital superintends, and most importantly family members of the deceased.

The findings reveal that most deaths occurred due to drowning, crushing under the collapsing houses, and trees. The dead bodies were mostly recovered by the family members, neighbors, and community members. There were no morgues or other body preservation facilities. Communications about the human remains were largely made by the word of mouth. The bodies were identified by the local people. The burial and cremation were done mostly by the family members after Aila, as is normally done. There was very little intervention of the administration. In Bangladesh and India there is no institution of funeral home. In case of a major mass fatalities event in USA, if the government resources are stretched to the limit, handling of dead bodies by the families may be thought of. Further research is needed to understand how to deal with unidentified bodies following a mass fatalities disaster.

INTRODUCTION

Disasters causing mass fatalities are increasing in intensity and number, and may even become worse in the future. In 2008, Cyclone Nargis killed 138,366 people in Myanmar. The Sichuan earthquake caused the deaths of 87,476 people in China. In 2005, an earthquake killed 74,151 people in Pakistan and 1,309 in India (EM-DAT 2009). The 2004 earthquake-induced Indian Ocean tsunami resulted in the death of 223,492 persons, including 40,320 who are still missing. The death of people from 55 nationalities occurred in 12 countries: Indonesia, Sri Lanka, India, Thailand, Somalia, Myanmar, Maldives, Malaysia, Tanzania, Bangladesh, Kenya, and Seychelles (The UN Office of the Special Envoy for Tsunami Recovery 2005).

Disasters produce significant social and economic problems for the world. Decades of economic development gets wiped out in a few minutes or hours due to disasters. Disasters have significant political implications, and sometimes even lead to the formation of an entirely new country (e.g. Bangladesh) (Oliver-Smith and Hoffmann 1999).

Mass fatalities after a disaster is an international contemporary issue. However, the focus remains on providing immediate relief to surviving people. The dead are largely ignored and forgotten by the administration, and non-profit organizations. Mass fatalities management (MFM) has not received the attention it deserves, probably because talking about death is a taboo (Bertman 1974, 334). However, we do need to understand and provide the opportunity for dialogue / discussions. The dead bodies need to be dealt with in a way befitting the ritualistic and religious beliefs of the families; otherwise it leaves lasting unfinished closure for the surviving family members and the community. Ekici, McEntire, and Afedzie (2009, 517) emphasize a careful handling and proper deference to the religious ceremonies of the people. If not properly and strategically removed, the handling of the deceased can impact the lives of other survivors as well. "Religious matters are so sensitive that even unknowingly one may harm another one"(Ekici, McEntire, and Afedzie 2009, 517). Insensitivity in this regard may create lifelong stress, hampering quality of life, and may even reduce lifespan of surviving family members. The way dead bodies are dealt with reflects the way the living ones are treated and respected.

Those responding to mass fatalities need procedures to ensure a sense of closure for the next of kin, administrative efficacy in determining the identity of the dead, and information of culturally and religiously appropriate rituals. Unfortunately, there is a dearth of literature on MFM outside of the United States.

This Quick Response Research Report tries to fill that gap for India and Bangladesh. The paper studies the emergency response to Cyclone Aila that struck Bangladesh and India in May 2009. In this report, response to mass fatalities means how the bodies were recovered, preserved, identified, communicated to the next of kin, and last rites performed. The literature review leads to research questions, following which context of Aila is provided. This is followed by a description of research methodology, findings, discussions, and conclusions.

LITERATURE REVIEW

McEntire (2007, 159) writes, "A mass fatality incident is any situation where there are more bodies than can be handled using local resources . . . Mass fatality incidents often create management problems for those involved in disaster response operations."

According to Hershiser (1974), the handling of the dead bodies following disasters is organized and subdivided into three distinct but coordinated tasks – missing persons, search and recovery, and identification. The process of management of dead bodies from three categories of Hershiser was developed into a more elaborate model containing 11 elements by Blanshan (1977). These elements are search, recovery, transportation, clean-up, ID, embalming, storage, positive ID, death certificate, distribution, and presentation. Phillip et al. (2008) say that several studies suggest stages for dealing with fatalities associated with the 1976 Big Thompson Flood (Blanshan 1977, Blanshan and Quarantelli 1981): search and recovery, stockpiling bodies, transportation to a makeshift morgue, cleaning bodies to aid in identification, embalming and storing the remains, identification procedures, issuing death certificates, distributing bodies to funeral directors, and presenting the deceased for viewing. They seem to combine Blanshan (1977) stages of search, and recovery into one category; and also ID, and positive ID, into one category, reducing 11 stages to 9.

The research evidence suggests that the stages differ depending on the nature, location / site, number of dead, and availability of support services. Oyola-Yemaiel and Gupta (2006) simplified the body handling to seven elements in the case of the 2004 tsunami:

1. body recovery,
2. transportation,
3. preservation,
4. identification,
5. communication to next of kin,
6. return of bodies to family members, and
7. disposal of unidentified bodies.

However, there is no agreement in the literature on the different stages of dealing with the dead bodies.

The research describing handling of bodies is limited and comparisons are available for Western world countries only (Blanshan 1977, Pine 1974, Quarantelli 1979). A criticism of the research literature continues to be the inability to generalize to populations beyond western cultures (Fischer 1998). Scanlon et al. (2007) reviewed mass death literature but did not mention dealing with unidentified bodies. This shows that hardly any research has been done on dealing with unidentified bodies after mass fatalities disasters.

More than a month after the 1995 Chicago heat wave, nobody came to claim the bodies of forty-one victims. There were twenty-seven other bodies accumulated over a month without any claimant. On August 25, the county buried the cadavers. "...the death of Chicagoans for whom no one came only reinforced and perpetuated the degradation of their lives" (Klinenberg 2002, 237).

There is enormous pressure in society for bodies to be given individual funerals (Blanshan and Quarantelli, 1981). Pan America Health Organization (PAHO 2004, 171) recommends burying the corpse in a way that may allow later exhumation. PAHO also recommends avoidance of common graves or mass cremations in all circumstances, since it is a violation of the human rights of the surviving family members. However, it is not practiced, including after the tsunami.

There is hardly any study, before the 2004 Tsunami research, on handling of mass fatalities in the eastern world. The 2004 Tsunami mass fatalities have been researched by Fischer (2005; 2008, 175-182), Gupta (2005a, 2005b, 2006), Oyola-Yemaiel and Gupta (2005, 2006), Morgen et al. (2006), Perera (2006), Phillips et al. (2008), Scanlon (2006a, 2006b), Swedish Tsunami Commission (2005), and some others.

The management of the deceased was exceptionally deficient in Sri Lanka following the tsunami (Perera 2006). The main issue was the utilization of untrained personnel to dispose of the dead. Most mass burials were conducted in a ways that inhibits any possibility of proper identification and leaves thousands of mourning survivors in misery. Many form of mass burial often has a negative psychological impact on the individual and the community. Sri Lanka and Thailand buried bodies in mass graves, but reopened them after receiving pressures from foreign governments for identification. Conflicting cultural norms have presented problematic sets of challenges relating to culturally accepted methods of dealing with unidentified dead. Decision-making, communication and responses based upon the pressing needs and limited resources should be enumerated and studied for the benefit of other regions that may face such problems, particularly when cultural norms must be forfeited, modified, negotiated, or changed in the aftermath of a calamity (Phillips, 1993).

In the 2004 Indian Ocean tsunami 250,000-300,000 people were killed. However, only 5,000-6,000 of the bodies have been formally identified, most of which were foreigners (Scanlon 2006a, 2006b). Scanlon asks, should individuals only from rich countries be identified while others are buried in mass graves? Phua (2006) stated that even 30 years after the ending of the

Vietnam War, some families are still searching for their loved ones missing in action. This indicates the importance of proper closer by performing list rites.

A team of forensic medical experts from the UK, Thailand, and Sri Lanka with experts from WHO and PAHO conducted three descriptive research case studies to systematically document how the dead bodies were dealt with in Thailand, Indonesia, and Sri Lanka following the tsunami. They found that “No technical guidelines currently exist for managing mass fatalities following large natural disasters...Furthermore; no information is currently available about post-disaster management of the dead following previous large natural disasters (Morgan et al., 2006)”. The statement that *no* information is available is an over-generalization. But they are right when they conclude that MFM following natural disasters needs to be informed by further field research.

After mass fatality catastrophic disasters, public administrators are under false threat of epidemics if the dead bodies are kept for long periods (PAHO 2004). There are societal pressures for quick disposal, and there are shortages of resources for individual disposal of bodies.

The ways cadavers are handled have potentially serious mental, social, financial and legal consequences, such as compensation and insurance claims. Families pay respect and honour their lost relatives by suitable handling of cadavers. Identifying the dead and ritual burial is essential for grieving in most cultures. Summarily, disposing bodies without identification in mass graves violates the human rights of the next-of-kin (PAHO 2004) and has long- term psychological effects.

RESEARCH QUESTIONS

This Quick Response Research addressed the following questions:

- How were the bodies recovered? This question seeks to understand who recovered the bodies, where the bodies were found, and how long it took for bodies to be found.
- How were the bodies preserved? This question seeks to understand the method used for preserving bodies, whether morgue or other preservation facilities (ice or cold storage places) were available, whether bodies embalmed, or temporarily buried with markings for proper funeral later.
- How were communications about bodies made? This question seeks to understand how the deaths were communicated to the community for identification, whether formal or informal methods were used, and which media was used.
- How were bodies identified? This question seeks to understand the methods used for identification of bodies, by visual, identification marks, personal items, or forensic methods.
- How were last rites performed of identified, and unidentified remains? This question seeks to understand whether bodies were buried or cremated, single or mass burial / cremation, how much time elapsed between performing last rites and body recovery, and who performed the last rites. In case of unidentified bodies, how long the bodies were preserved before the last rites. In absence of knowing the religion of the dead, what types of rites were performed?

CONTEXT OF CYCLONE AILA IN BANGLADESH AND INDIA

Bangladesh, along with Pakistan, was part of India before the independence from British rule in 1947. At the time of independence, India was divided between India and Pakistan. Pakistan had two parts: East and West Pakistan on either side of India at a distance of about 1,250 miles. At the time of independence of India, Bengal was divided in West Bengal (WB) state,

part of India, and East Bengal, which became part of Pakistan, then known as East Pakistan. It was the severe 1970 floods disaster that led to an estimated 500,000 fatalities, wide-spread destruction, mass migration of refugees to India, civil turmoil, and the Pakistan and India war that led to the birth of Bangladesh in 1971. Bangladesh is a country born out of a disaster and is one of the most disaster-prone countries of the world along with India. It is particularly prone to floods and cyclones. Earlier major natural disasters in Bangladesh were in 1991, killing more than 300,000 people. More recent disasters include the Sidr cyclone of 2007, killing over 3,000. Many improvements have taken place over the years in Bangladesh in the field of disaster management.

Bangladesh has about 160 million people, making it the seventh largest populated country in the world. It has one of the highest density populations along with poverty. The country has 6 administrative divisions, subdivided in 64 districts, which are further divided into 490 Upzila. Each Upzila has few Unions that have an elected Union Council with President and Members. A Union has generally 9 wards (blocks), and all wards send one elected representative to the Union. Each block is of 2 or 3 villages, and total number of villages is about 164,000. Some of the villages are called *char*. Char in Bangladesh is the term used for land area recovered within the river forming an island, and very poor people live in chars.

India has a population of over a billion, and it is the second most populated country after China. India is the largest democracy in the world and is a secular state. Administratively, India is divided into 35 states and Union Territories (federally administered). The states are divided into districts. There are around 605 districts in India. Each district is administered by an Indian Administrative Service official designated as Collector and District Magistrate. Districts are further divided into blocks, and villages. India has suffered one of the worst disasters in the world in all categories of disasters. The worst cyclone in recent India was the Orissa Super Cyclone of 1999, killing about 10,000 people. For history of disasters in India, please see Gupta (2009).

The disturbance that became Cyclone Aila originated on May 21, 2009, about 600 miles south of Kolkata. Cyclone Aila made landfall on May 25, 2009, in Southern parts of WB and Orissa states of India and Bangladesh, and on May 26, 2009, in Northern parts of WB and other states. Aila had up to 128 kmph (80 mph) wind speed. The cyclone Aila caused a minimum 327 mortalities, wide spread devastation, and disruption of life. About a million people were evacuated before and after landfall of Aila in Bangladesh and India. The normal life in Kolkata, a city of 5 million population, was severely affected including non-availability of transportation and electricity for days. The Ecosystem of the Sunderbans encompassing Bangladesh and India was degraded with the deaths of about a dozen Bengal tigers. The Government of India sanctioned Rs 10 billion (more than \$ 200 million) for relief, while the Government of West Bengal spent Rs 4.7 billion (nearly \$ 100 million) on relief following Aila.

In Bangladesh the aftermath of cyclone Aila resulted in:

- Total death: 190,
- People injured: 7,103
- Family affected: 948,621
- People affected: 3,928,238
- Houses damaged: 613,778, and
- Crops damaged: 323,454 acre (Disaster Management Bureau 2009a)

In India, the aftermath of cyclone Aila resulted in:

- Minimum human deaths: 137

- Total animal deaths: 49,994
- Population affected: 6,753,203
- Houses damaged: 724,552
 - of which Pucca (masonry) fully damaged: 26,492
 - Kutchcha (bamboo and hay) fully damaged: 291,888
 - Partially damaged: 406,172
- Cropped area affected: 447,000 hectares
- Estimated loss of crop: Rs 857 million (Department of Disaster Management 2009)

The cyclone warnings were not received by the affected people, as most of them live in remote places. Cyclone Aila affected a vast stretch of area, many of them remote among the archipelago in Bangladesh. In the Indian side of the Sunderbans, there are 114 islands of which one was fully inundated, while many were partially inundated. Dhomakhali island, in the Bagua forest near Kumeenmandi got fully inundated.

Bangladesh and India have *embankment-cum-roads* which are at the high plinth (ground level) compared to surrounding houses in the areas hit by Aila. In the river delta of both the countries, for prevention of water inundation, embankments are built in such a way that they are also used as roads at raised level. In Bangladesh these embankment-cum-roads were built in the 1960s and were not well maintained. Due to Aila the embankment-cum-roads broke down at many places. Most of the affected areas have no experience of Aila type of cyclone in last 30 to 50 years.

Sandeskhali II in India was the worst affected. The Block Development Office was gushed with water within 15 minutes and people had no time to evacuate. For the first 3 or 4 days, there was no way to rescue anyone. The Block Development Officer himself was stranded for 3 days on the roof top of his office building. All anchored boats and launches went to different places. Three launches and 12 boats of the district administration could not be found for 15 days. Response was helped by the National Disaster Response Force of India. NDRF deployed 60 boats in Hingalgunj of the Sundeshkali block.

Most deaths in Bangladesh and India occurred due to drowning, collapsing houses, or trees falling on people. In some cases, old people could not continue to hold the support places (like tree or wall) under the pressure of water and were carried away. Some children slipped from the hands of mothers under the force of water. In one case, a mother was trying to salvage the household effects, and in the process, the child drowned and died. In Darjeeling, WB, India, 27 people died due to landslides due to continuous rains for two days and two nights. One female in Bangladesh was cut on her chin and legs by the tin roof of the house when water came gushing. Some old people died while going to a cyclone shelter in a boat, while some others died even when in cyclone shelters. Many people in Bangladesh died due to overturning and sinking of boats. In a major tragedy of this kind, 10 people from one family died in this manner. There were 7 family members of another family who died. There were many cases of two or more family members dying.

Following Aila, there were many cases of diarrhea sufferings and deaths in both Bangladesh and India (41), as potable drinking water was not available.

Mortality statistics

BANGLADESH

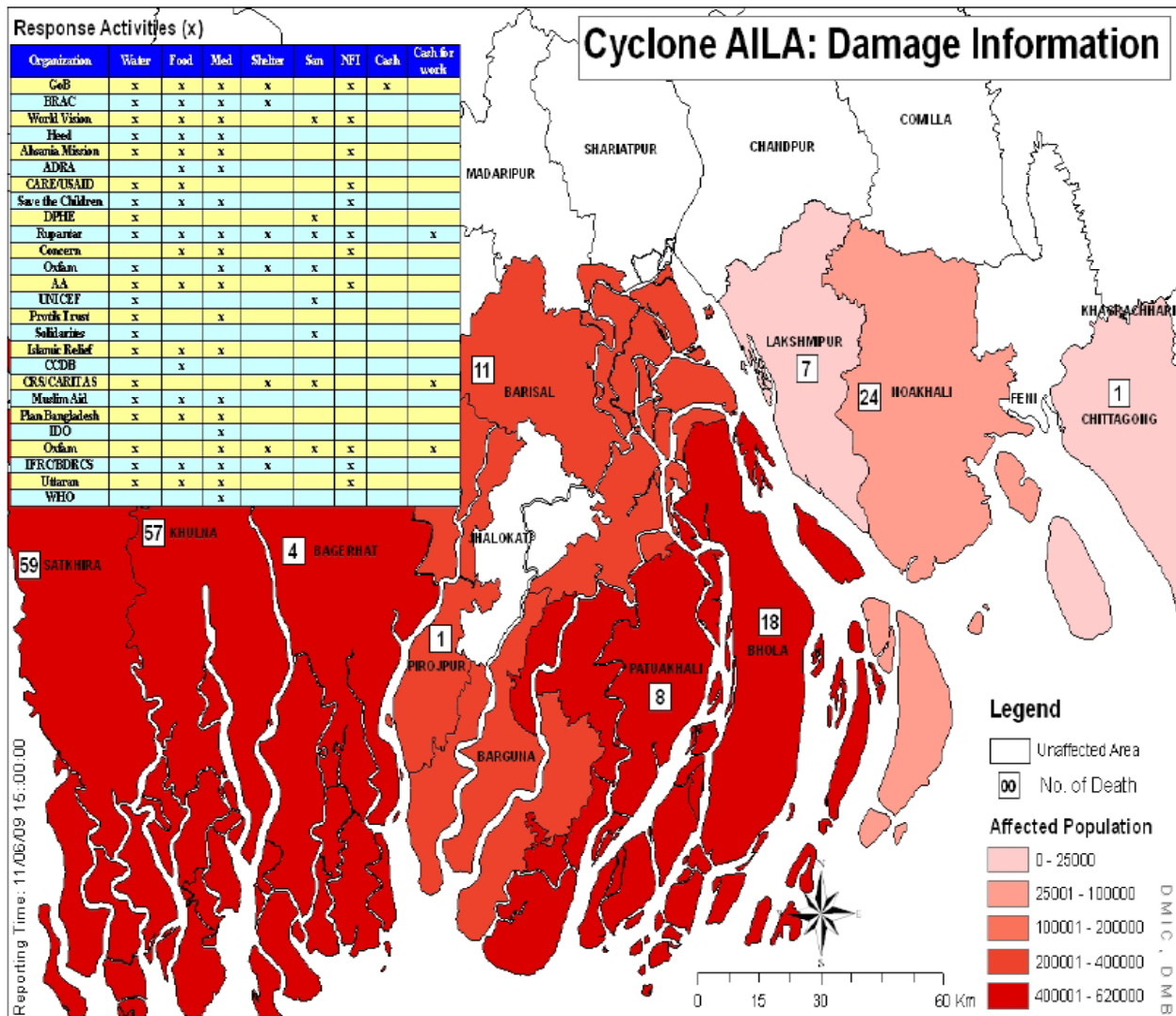
According to the Disaster Management Bureau (2009a), 190 deaths occurred due to cyclone Aila in Bangladesh. The Disaster Management Bureau (2009b) provides a break down to Upazila level for the mortalities in each district. Table 1 gives break down of mortalities by districts and Upzila.

Table 1: Mortalities in Bangladesh due to Cyclone Aila by District and Upzila

Mortalities in Bangladesh due to Cyclone Aila		
Total	190	
District / Upzila Name	In District	In Upzila of the District
Satkhira	59	
of which in Shyamnagar		55
Ashashuni		3
Debhata		1
Khulna	57	
of which in Koyra		41
Dakop		8
Other upzila		8
Noakhali	24	
of which in Hatiya		24
Bhola	18	
of which in Charfesson		6
Bhola Sadar		5
Tajumuddin		3
Lalmohan		2
Monpura		2
Bansal	11	
Other Districts	21	

The maximum number of deaths in a district, 59, occurred in Satkhira, followed by 57 in Khulna district, and 24 in Noakhali district. In a Upzila, the maximum deaths of 55 people occurred in Shyamnagar Upzila of Satkhira district, followed by 41 deaths in Koyra Upzila of Khulna district, and all of the 24 deaths of a district occurring in a Upzila were in Hatiya Upzila of Noakhali district. The Map 1 depicts deaths in Bangladesh according to districts.

Map 1: Depicting Deaths in Bangladesh according to districts



Source: Aila Situation Report dated June 11, 2009 by Disaster Management Information Centre, Disaster Management Bureau (DMB), Ministry of Food and Disaster Management, Government of Bangladesh at <http://www.cdmp.org.bd/SituationReport/200906/SitRep-090611.pdf>

Within Haitya Upzila, all the deaths occurred in Nijundwip Island, with 4 deaths in each of Boyar char, and Noler char; 3 in Karing char; and 1 in Sukh char. In Noler char, and Karing char, there were no embankments. Boyar char had partial embankment. Out of 24 deaths, 13 were male, and 11 female, 14 of the deceased were children between 3 and 12 years, and 10 adults (4 of which were above 50 years). The people who died were day labourers, and very poor.

In Charfession of Bhola district, 3 died due to high tidal waves, and another 3 died in the cyclone shelter. One 86 year old female was sent to a hospital and after 2-3 days died, possibly

due to old age. Two people got hurt and died. One 85 year old male in a cyclone shelter also died. Within Koyra Upzila, 28 died in Dakin Bedkashi Union, 8 in Koyra Union, one each in Uttar Bedkashi and Bagali Union, and 3 in other Unions. Out of the 41 people who died in Koyra Upzila, 38 bodies were recovered, but 3 remained untraceable.

INDIA

In WB there were minimum 137 mortalities due to Aila. The maximum mortalities were:

- 37 in South 24 Parganas district,
- 33 in North 24 Parganas district,
- 27 in Darjeeling district, and
- 41 in other districts (Department of Disaster Management 2009).

The Map 2 depicts districts of WB state of India.

Map 2: Districts of West Bengal, India



Source: www.mapsofindia.com

Following Aila, there were 41 deaths due to diarrhea, of which 23 were in South 24 Parganas, and 18 were in North 24 Parganas districts.

As stated above there were 137 deaths in WB (Department of Disaster Management 2009). However, another document gives 145 deaths in North 24 Parganas District alone (North 24 Parganas 2009). This document contains names of the deceased, father's or husband's name, address, gender, age, cause of death, and date of death. It is surprising that the state government accepts total deaths as 137, while there were 145 deaths in one district alone. This discrepancy needs to be researched further and resolved. The media, non-profit organizations, and the civil society invariably give higher death figures for the dead in most of the disasters. However, this is a glaring example of vast variation of death figures in government records. This research reinforces statement of Stallings (2006, 62) that "Ideally, one would like access to organizational informants from different levels in the chain of command and from different subdivisions, the precious determination of which being dictated by the circumstances of the disaster."

Darjeeling is a hilly area. There were deaths due to landslide in Darjeeling. This researcher's taxi driver from Badgotara airport to Darjeeling said, "The two days and two nights of continuous rain caused landslide. I never heard such a rain and never heard such a landslide." A person who died in the landslide used to work in a tea garden. One of his colleagues came for the help, unfortunately he also died in the landslide.

RESEARCH METHODOLOGY

Michaels (2009, 41) defines Quick Response Research by information collection phase occurring during or immediately after a damaging event. The data collection began from May 27 when the magnitude of the disaster became apparent for doing the Quick Response Research (QRR). Along with the data collection, preparation for deployment in the field for research was also initiated. The WB State Inter-Agency Group of Unified Response Strategy was activated following Aila and had its first meeting on May 26, 2009, in Kolkata. On May 31, this researcher participated in the SPHERE India Cyclone Aila Coordination Meeting in Delhi. SPHERE India is a National Coalition of Humanitarian Agencies in India, promoting quality and accountability in humanitarian action. There were representatives from about 30 organizations present in the meeting. Participation in the meeting helped this researcher in understanding what is going on at the grass roots level and getting leads and contacts with Indian non-profit organizations working in Aila-affected areas.

This author also met high-level officials of the National Disaster Management Authority of India for help in field research. The researcher reached Bangladesh on June 06, 2009. The field research was conducted in Bangladesh until June 17, 2009, and in India from July 06 to July 12, 2009. The period between May 25 and May 30, and June 18 and July 05 was utilized for 1) deployment logistics and 2) research background information.

The research for this project is qualitative in design, including participant observation, interviewing, and document analysis. Data regarding mass fatalities responses were primarily collected through fieldwork (Stallings 2007, 56-65; Michaels 2003, 20-22). This principal investigator conducted 88 interviews to gather data. In addition, the researcher documented the field activities and findings regarding the effect of mortalities from the cyclone Aila. One hundred seventy digital photographs were also taken. Selected photographs are presented here.

Cyclone Aila Photographs



Picture 1: Volunteers manually digging the earth on July 11, 2009 at Haridas Hatta, Darjeeling, India to recover two dead bodies lost in the landslide due to Aila on May 26, 2009



Picture 2: A house at Haridas Hatta, Darjeeling, which collapsed due to landslide following Aila killing two people



Picture 3: Water inundation still there as on July 08, 2009 near Basanti, South 24 Paraganas District, West Bengal, India



Picture 4: A house that collapsed killing a female 3 year old child at Nizzumpdwip (dwip = island), Hatiya Upzila, Noakhali District, Bangladesh



Picture 5: Water inundation near the Koyra Upzila Office, Khulna District, Bangladesh as on June 15, 2009



Picture 6: A desperate look. Location is Sora-ten village (island), Gabura Union, Shyamnagar Upzila, Satkhira District, Bangladesh. There were 14 mortalities in this island due to Aila.

As another source of data, PI gathered relevant documents to supplement observation and interview data. Documents such as organizational reports, media accounts and other potentially useful materials were gathered. Official documents regarding the list of mortalities at district, and Upzila / Block level in Bangladesh and India were also obtained.

Selection of field research areas

The Principal Investigator utilized larger mortality criteria to determine which jurisdictions need to be visited in terms of logistics of field research. The PI visited the districts that experienced the higher numbers of mortalities.

In Bangladesh the higher mortalities occurred in Satkhira, Khulna, Noakhali, and Bhola districts. These four districts accounted for 148, or 78% of all mortalities in Bangladesh due to cyclone Aila. It was decided to do field research in these four districts. Within the districts, the Upzilas having maximum mortalities were researched.

In WB state of India, there were 137 mortalities due to Aila. The maximum mortalities were in South 24 Parganas, North 24 Parganas, and Darjeeling districts, accounting for 97 or 71% of all the mortalities. It was decided to do field research in these three districts. It was only during the field research in North 24 Parganas that the investigator found 145 deaths in this district alone, although the WB state government data mention only 33 deaths.

Sample size and characteristics

The researcher conducted 88 formal and informal interviews, of which 50 were in Bangladesh, and 38 were in India. The interview subjects included government officials, elected representatives, representatives of local and international non-profit organizations, researchers, armed force commandants, medical hospital superintendents, and most importantly family members of the tsunami deceased. The characteristics of interview subjects are given in Table 2.

Table 2: Characteristic of Interview Subjects

Total interviews	88	
	In Bangladesh	In India
of which	50	38
Government officials	12	11
Elected representatives	3	1
Nonprofit representative	6	9
International nonprofit representative	6	
Researchers	4	4
Unattached volunteers	3	3
Armed force commandants	1	2
Medical Hospital Superintend	1	1
Family members of deceased	14	7

The sample of informants with whom the author conducted interviews were selected by non-random purposive sample, using snowballing and other methods. The informants were: 1) knowledgeable about the cultural arena or situation or experience being studied, 2) willing to talk or participate, and 3) representative of a wide range of points of view.

RESEARCH FINDINGS

The research findings are presented based on the classification of body recovery, body preservation, communicating fatalities, identification, and disposal of bodies.

Body recovery

In both Bangladesh and India, the bodies were mostly recovered by the family members, neighbors, or local community. Police recovered bodies only in a few cases in both the countries. After cyclone Aila, the water current and wind speed were very strong and the weather did not permit even the Bangladesh Navy or Coast Guard to engage in search and rescue work. In rare cases, the coast guard and navy recovered a few bodies. In India, the NDRF, also helped in body recovery.

Many bodies were recovered in a day or two after the Aila landfall. Some bodies were found inside the houses as they were trapped. Other bodies were found near the houses or the embankment or near the small dams. Bodies were also found at varying distances up to 12 km from the places the person originally was. Only when the water level came down was it possible

to recover the floating bodies. In India, all the bodies were found intact.

In some cases, bodies were not recovered. The body of a civilian male, and a defense person killed in the landslide in Darjeeling, India, could not be found. The government stopped the search after a month. The Gorkha Land movement, who are fighting for separate Gorkhaland state within India, deployed 30 volunteers for searching for the dead bodies on July 9 and planned to continue digging by manual hands and basic hand tools, but no machinery, for 10 days (Photograph attached).

Body preservation

The body preservation morgue facilities were not available in Bangladesh and India. Other cold storage facilities were also not available. Even no ice was available, since ice mills were closed due to electricity failure. Bodies were brought to an embankment-cum-road which was generally at the high plinth level compared to surrounding houses. For the first two days, bodies were not buried due to water inundation in Bangladesh. The bodies in Bangladesh were buried in mosques, houses, near the small dams, or any convenient place. In Bangladesh Muslim culture, it is acceptable to bury the bodies in the houses. Some people, who recovered the bodies, buried them in their own houses. In India, a body was kept in a school, another body was kept on the embankment cum road for preservation. In Nazat II *Gram Panchayat* of Sandeshkhali I Block of 24-North Parganas District, WB state of India, bodies were kept for 3 or 4 days and then buried or cremated. The researcher did not come across any case of embalment, or temporarily buried with markings for proper funeral later.

Communicating fatalities

There was no official modern system of communicating about the fatalities. As the deaths in both Bangladesh and India occurred in widespread areas, and bodies were often recovered by local people, word of mouth was the main method of communication of the fatalities and informing the family members. Due to the failure of normal communication systems, the Government of WB requested amateur radio operators to help in restoring communications. The HAM operators using both HF and VHF communication facilities were deployed in remote places. They provided communications, including about fatalities.

Identification

Most of the bodies were identified by the family members or the local people. People identified bodies mostly by visual means, including personal items, and the clothing. In Darjeeling district of WB, India 27 people died due to landslide. Sixteen of the death occurred in the Darjeeling City Police Station jurisdiction. Fourteen bodies were found and for the two definite deaths due to landslide, the search for bodies was going on at the time of field visit. All the bodies were identified, except one. Post-mortem of all the bodies was done and a report prepared in Form No. 55 under Rule 284 of the Police Regulations of Bengal. A record of all the bodies was kept in the Unnatural Death Register under section 174 of the Indian Criminal Procedure Code, along with the post-mortem report. The DNA sample of the unidentified body was sent for its identification.

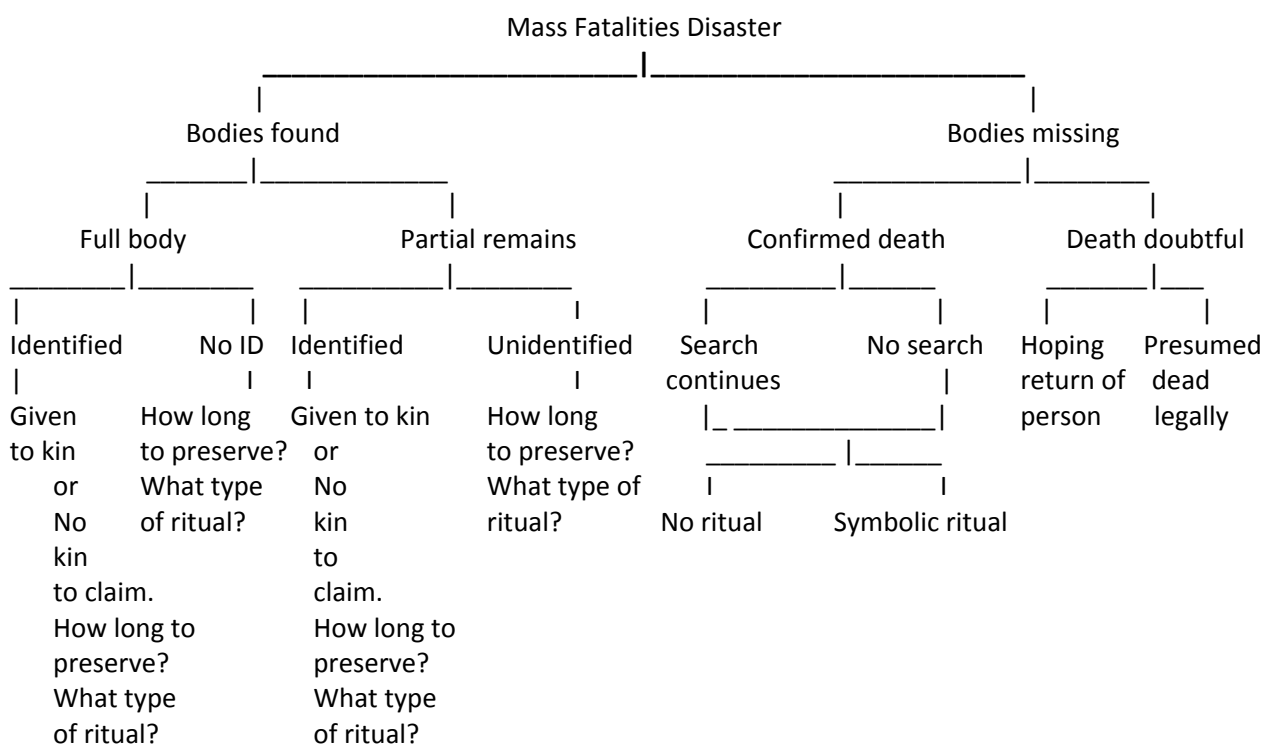
In Bangladesh, unidentified bodies were generally kept for two days for identification, but then buried. In Shyamnagar, 14 to 17 bodies remained unidentified. These bodies were kept for

7-8 days for identification and then buried. In Goshaba, South 24 Parganas, India an unidentified body was presumed to be Hindu and was cremated.

Disposal

The disposal of dead bodies after a mass fatalities disaster is a serious problem. The dead bodies may be found or missing. The bodies may be found intact or only partial remains may be found. Then bodies may be identified or not. How long unidentified bodies are to be preserved? If the administration is to perform last rites of the unidentified bodies, what rites to be performed? These questions need to be researched. Chart 1 graphically depicts different types of human remains.

Chart 1: Graphical Depiction of Different Types of Human Remains



Both in Bangladesh and India, the burial or cremation was performed by family members mostly without the help of the administration. In Bangladesh bodies were buried in graveyards, mosques, near the small dams, besides the houses, in the houses, or any other convenient place. In one incident, no land was available for five days after the body was found due to inundation; only after water receded burial could take place. The six bodies of the Gohrilal village in Koyala, Bangladesh, were buried besides the dam at different places by the people. A boy who found the body of a child buried the body in his own home. At Nilumuth, 13 dead bodies were buried in a graveyard. In Hatiya, all dead were Muslims and family members directly buried them without involvement of the government. Police was present only at some places. Union Parishad elected chairperson, members, and teachers, were present only at some places to console family members. In Nizamdwip of Hatiya Upzila, bodies were buried in the mosque and there was no police or government representative. Some of the bodies were taken by army 20 km away to

Bankispur as there was no place to bury the bodies nearby due to water inundation. A volunteer said he saw 12 bodies kept on the road, including 9 members of his neighbor's family. These bodies were buried in Bangshipur Shasi Mosque, which is a historical mosque. The volunteer said burying the bodies in the mosque gives salvation to the soul. The Student League of the Awami ruling political party helped in dealing with the bodies.

In Goshaba, South 24 Parganas, the identified bodies were all of Hindus and were cremated. In some cases, bodies in North 24 Parganas were disposed of after 15 days of Aila landfall due to water inundation all around. Sometimes a body was taken by road to a faraway place due to water logging. The body of a 58 years old male was brought to embankment-cum-road and kept for a day and was afterwards cremated. This researcher did not come across any case where the body was identified, but there was no kin to claim.

In Bangladesh, unidentified bodies were generally kept for two days then buried. In Shyamnagar, 14 to 17 bodies remained unidentified. These bodies were kept for 7-8 days and then buried. In Goshaba, South 24-Pargana, India an unidentified body was presumed to be Hindu and was cremated. A SPHERE India representative said that In the case of unidentified bodies, if the religion could not be determined, a multicultural ritual needs to be performed. He further said "body should be properly covered to preserve human dignity. Dignity in death is to be ensured. Life with dignity, and dignity in death."

Two persons were seen by family members, and others caving in the landslide in Darjeeling, India. The administration did search for the bodies, but after one month gave up the search effort. One of the family members waited for 13 days for the body to be recovered. On the 14th day of the landslide they prepared a symbolic body of *kush* grass and cremated the body.

DISCUSSION

In both Bangladesh and India, proper warning systems were lacking. Many people said that they did not receive any warnings. In Bangladesh, the warning signal was suddenly raised to 7 from 3, giving very little time for the people to respond to immediate situation. The cyclone Aila-affected areas by and large had no prior experience of such a cyclone in the last 30 to 50 years, and were ill prepared.

It appears that most of the governmental resources were used for search and rescue, evacuation, and relief and recovery. Dead bodies did not receive the attention they deserve from the government. None of the non-profit organizations were directly helping in MFM. The only exceptions were (a) the Student League of the ruling political party Awami League in Bangladesh helping to take bodies to the mosques, and (b) volunteers of the Gorkha Land searching the dead bodies by manually digging to recover the two bodies under the landslide in Darjeeling. These may also be probably public relations efforts to get political mileage. Both in Bangladesh and India, the burial or cremation of the Aila deceased was performed by family members mostly without the help of the administration. Even during normal, non-disaster, deaths, it is the family members who perform all the last rites with the help of religious priests. Unlike in USA, in Bangladesh and India there is no institution of funeral homes. In case of a major mass fatalities event in USA, if the government resources are stretched to the limit, handling of dead bodies by the families may be thought of.

In India, although the defense forces and state government officials claim that the teams were deployed immediately, a lower level official who had requested for military help on or before May 25 said that the concerned personnel actually reached on May 29 only.

In Bangladesh, embankment-cum-roads were built in the 1960s and they were not

maintained. In many chars, there were no embankments. Failure of embankments due to Aila resulted in water gushing to houses with more force, and this led to numerous mortalities. Houses in rural areas of Bengal (West and East-rather Bangladesh) are generally built of mud walls, bamboo as pillars, and hay stake as roof. Due to Aila, these houses crumbled. Many interview respondents suggested for early rebuilding of more embankment-cum-roads and repair of damaged embankments. This finding is corroborated with the failures of levees in Katrina.

The May 24-25, 2009, night was *amavaysa*, or no moon night, making high tide. Generally there is high tide on *amavaysa* or *poornima* (*full moon night*), which combined with cyclone or heavy rains causes bigger devastation. Aila water came with high velocity due to *amavaysa* compared to what velocity it would have got if it were not *amavaysa*. We have seen this phenomenon earlier during Mumbai heavy rains combined with full moon flooding in July 2005, shutting down the city and killing over 1,000 people. Full moon and no moon nights come with predictable regularity. This may suggest that when a hurricane or cyclone or thunder storm or heavy rains are predicted to combine with high tide, disaster responders need to be extra cautious. This phenomenon also needs further research.

It was surprising to know that even when people were in cyclone shelters, some people died. This calls for further research on design and uses of cyclone shelters. After Aila, temporary shelters and temporary houses were built on the roads in Bangladesh, which were at higher altitude and the only places having no water inundation.

Some bodies were buried, but came out, and were buried again.

Four platoons of the WB armed police force will be trained by NDRF in search and rescue and posted in three places for quick deployment. This was in pipe line, but following Aila this is going to be expedited. In the WB disaster management plan, MFM is not mentioned. WB is preparing a Disaster Management Manual in which MFM will be included and the manual will be published. The functions of the Disaster Management Department of WB at the time of writing of this report on its web site state as follows:

Main functions of this Department are to provide relief to the people who are :

- 1) *Indigent and destitute because of poverty, sickness, age and other causes.*
- 2) *Rendered helpless by natural calamities like flood, cyclone, landslides, earthquakes or accidental fire etc.*
- 3) *Victimized of manmade disaster like arson, riots, bomb blast etc. (WB 2009)*

The WB government still thinks that its job is to provide relief after the disasters; and preparedness and mitigation is not in its agenda. Unless and until there are changes in thinking from post-disaster relief to pre-disaster preparedness and mitigation, things are unlikely to improve.

How the last rites of the unidentified bodies were performed, what notice was given to the community for last rites, who were present during the last rites, which religious procedure (burial or cremation) was performed on what basis of the unidentified bodies, and other questions related to the unidentified bodies could not be researched. Further research is needed to understand how to deal with unidentified bodies. For example, if an unidentified body was cremated (which was done after Aila), there will be no possibility of identifying the body in future. Similarly if an unidentified body is buried without markings, same problem would arise.

CONCLUSION

Disasters causing mass fatalities are increasing in intensity and numbers. After a disaster, the dead are largely ignored and forgotten by the administration and non-profit organizations. Dealing with dead bodies in a way not befitting the ritualistic and religious beliefs leave lasting unfinished closure on the surviving family members and the community. The psychological stress caused due to unfinished closure may hamper the quality of life of the surviving family members. The way dead bodies are dealt with reflects the way living are treated and respected.

The cyclone Aila caused minimum 327 mortalities, wide spread devastation, and disrupted life. Embankments should be repaired at the earliest. In both Bangladesh and India the bodies were mostly recovered by the family members, neighbors, or local community. The body preservation morgue or other facilities were neither available in Bangladesh nor in India. As the deaths in both Bangladesh and India occurred in wide spread areas, and bodies were recovered mainly by the local people, the word of mouth was the main method of communication of the fatalities and informing the family members. In Bangladesh Muslim culture it is acceptable to bury the dead bodies in the house. In a case where dead body from landslide was not found, a symbolic body of *kush* grass was prepared and cremated to perform symbolic last rites.

Further research is needed to reconcile the death figures of India where the state government accepts total 137 deaths while official records of North 24 Parganas district alone show 145 deaths. This has implications in receiving compensation for the victim's families. Research is needed to find the confounding effect of high tide with hydrological disasters. Why people in cyclone shelters died is another area of future research. In Bangladesh and India there is no institution of funeral home. In case of a major mass fatalities event in USA, if the government resources are stretched to the limit, handling of dead bodies by the families may be thought of. Further research is needed to understand how to deal with unidentified bodies following a mass fatalities disaster.

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DISCLAIMER

The views expressed in this report are of the author, and University of North Texas; or Natural Hazard Center, University of Colorado; or National Science Foundation may not agree

with the views contained in this paper.

ANNEX

Table 1: Mortalities in Bangladesh due to Cyclone Aila by District and Upzila

Table 2: Characteristic of Interview Subjects

Chart 1: Graphical Depiction of Different Types of Human Remains

Map 1: Depicting Deaths in Bangladesh according to districts

Map 2: Districts of West Bengal, India

Picture 1: Volunteers manually digging the earth on July 11, 2009 at Haridas Hatta, Darjeeling, India to recover two dead bodies lost in the landslide due to Aila on May 26, 2009

Picture 2: A house at Haridas Hatta, Darjeeling, which collapsed due to landslide following Aila killing two people

Picture 3: Water inundation still there as on July 08, 2009 near Basanti, South 24 Paraganas District, West Bengal, India

Picture 4: A house that collapsed killing a female 3 year old child at Nizzumpdwip (dwip = island), Hatiya Upzila, Noakhali District, Bangladesh

Picture 5: Water inundation near the Koyra Upzila Office, Khulna District, Bangladesh as on June 15, 2009

Picture 6: A desperate look. Location is Sora-ten village (island), Gabura Union, Shyamnagar Upzila, Satkhira District, Bangladesh. There were 14 mortalities in this island due to Aila.

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