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Surviving the Apocalypse:
A Case Study of Cyclone Disaster Management in Sandwip, 1991

Md. Soyeb Uddin Haider*

This paper is an attempt towards exploration of the coping mechanisms of a devastated off-shore island like Sandwip. The sample was chosen comprising 150 victim households and the study area was divided into three parts: Severely Affected Area (SAA), Moderately Affected Area (MAA) and Less Affected Area (LAA). The data show that majority of the respondents (94 per cent) took food on the first day after cyclone. In severely affected area, roots and fruits played a vital role as food. A much larger proportion of the islanders' (96.67 per cent) houses were damaged. Relatives and educational institutions (used as government gruel kitchen) played a crucial role as the source of shelter immediately after cyclone. The study indicates that most of the respondents in severely and moderately affected area (70 per cent and 60 per cent respectively) were affected by diseases in the post-cyclone period. Quack, the Bangladesh Red Crescent Society, the CARITAS, and government hospital were the main sources of treatment. To tackle the agricultural problems, relatives and NGOs served as vital sources of assistance. It is important to note that, of the victims in severely affected area, majority of the respondents (86.67 per cent) changed their occupation within five years of cyclone.

Introduction

Bangladesh, a small country, situated on the tropic of cancer, bears a tropical nature with monsoon-type climate. Its small size, about 1, 47,570 sq. km., and large population, about 130 million, make it one of the most densely populated countries of the world. It is located in the funnel, to the north, of the conically-shaped Bay of Bengal. The country is particularly affected by cyclonic storms that originate in the Bay of Bengal and which are normally accompanied by a tidal surge (BDRCS 2002).

Natural disasters have become an integral part of human lives. Floods, cyclones, tidal surge, etc. visit almost regularly the vast majority of the

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world's population living in the disaster prone areas of South Asia, South East Asia, Latin America, and Africa. They cause of colossal loss of lives and properties and bring in their wake diseases, famines and pauperisation. All these frustrate the attempts of many developing countries to break the vicious circle of poverty (BPATC 1992).

Disasters pose a serious threat to all aspects of development. Disasters result in death; and they cause physical, environmental and economic damage. Disasters challenge development by destroying social stability, and diverting already scarce resources to emergency responses. Huge amounts of money are spent by governments, businesses and communities to deal with the consequences of disasters. Global economic costs related to disaster events average around US$ 880 billion per year (Ariyabandu & Wickramasinghe 2003).

Bangladesh is a tropical country with the funnel shaped coast touching the Bay of Bengal in the South. Because of its geographical and climatic factors natural calamities such as flood, cyclone, tidal bores, etc. are regular phenomena in Bangladesh. Of the cyclones and other disasters that have hit Bangladesh so far, the cyclone of 1991will remain in the saddest memory of the people of Bangladesh for years to come (BPATC 1992). In addition, in an off-shore island like Sandwip, it was almost impossible to launch rescue and relief operations immediately after a cyclone due to the severe lack of transportation facilities. In this context, the present study will attempt to gain an in-depth understanding of the coping mechanisms of the victims during the post-cyclone period.

Methodology

Selection of the Study Area

The study was conducted in all the areas of Sandwip which is one of the thanas of Chittagong district. Sandwip was purposively selected because the area falls within the high risk zone in terms of wind speed and surge height. The areas of Sandwip are familiar to the present researcher and he himself a victim of 1991 cyclone. The study area was divided into three parts according to the surge height of 1991 cyclone. These parts are: (a). Less Affected Area (LAA) which was inundated by 0 - 5 feet surge height; (b). Moderately Affected Area (MAA) was inundated by 6 - 10 feet; and (c). Severely Affected Area (SAA) was inundated by more than 11 feet surge height.

Sample Size

All the households that were affected on 29th April 1991 are the population for this study. The total affected households were 49,599, of which 28,757 were in Severely Affected Area (SAA); 13,158 are in Moderately Affected Area (MAA); and 7,684 were in Less Affected Area (LAA) (GoB 1991).

In this study, we have used the non-probability sampling procedure. Respondents have been categorised into three parts according to the surge height in their respective area. Samples have been chosen purposively from those parts. The sample size for this study is 150 (Table 1, 2 & 3). This sample size is logical in this sense that it is suitable enough to apply different statistical techniques analysing the data that were generated through fieldwork.

Table 1. Composition of Sample Respondents in Less Affected Area (LAA)

Sex / Areas	Male	Female	Total
North, South and East Musapur	3	3	6
North and East Maitbanga	2	2	4
North, South and East Haramia	2	2	4
North and South Bauria	2	2	4
South Gasua	1	1	2
Total	**10**	**10**	**20**

Source: Fieldwork 2006.

Table 2. Composition of Sample Respondents in Moderately Affected Area (MAA)

Sex / Areas	Male	Female	Total
West Musapur	2	2	4
West and South Maitbanga	2	2	4
East Azimpur	2	2	4
East Rahamatpur	2	2	4
West Mogdhara	2	2	4
East Harishpur	2	2	4
West Bauria	2	2	4

complications life threatening are reported as 23.8 per cent and high risk complications are reported as 28.1 per cent. Findings showed that rural Bangladeshi women do not seek care in the case of post partum complications due to poor socio-economic status, lack of consciousness about their reproductive health and non-availability of health care facilities and providers. It is evident that different socio-economic factors significantly affect the care seeking behavior in the case of postpartum complications of the mothers. Findings reveal that care seeking behaviors against the postpartum complications are statistically significant in terms of education, occupation, ownership of land and nutritional status of the women. It may, therefore, be concluded that care seeking behavior against the postpartum complications of the women in rural Bangladesh is positively related to their socio-economic status. After all, inadequate treatment and management of postpartum complications may lead to high rate of maternal mortality and other diseases of women in rural Bangladesh. Immediate measures should be taken to reduce postpartum complications and proper care to improve the maternal health.

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Natural disasters have become an integral part of human lives. Floods, cyclones, tidal surge, etc. visit almost regularly the vast majority of the

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Table 2. *(Continued)*

North and West Gasua	2	2	4
North Sarikait	2	2	4
East Kalapania	2	2	4
Total	**20**	**20**	**40**

Source: Fieldwork 2006.

Table 3. Composition of Sample Respondents in Severely Affected Area (SAA)

Sex / Areas	Male	Female	Total
North, South and West Azimpur	4	4	8
Neyamosti	4	4	8
North, South and West Rahamatpur	4	4	8
North, South and West Harishpur	4	4	8
East Bauria	2	2	4
North, South and West Kalapania	4	4	8
East Gasua	4	4	8
Amanullh	3	3	6
North, South and West Sarikait	4	4	8
North, South and East Mogdhara	4	4	8
Sontoshpur	3	3	6
Urirchar	5	5	10
Total	**45**	**45**	**90**

Source: Fieldwork 2006.

Data Collection Technique

Both qualitative and quantitative approaches have been followed for this study. Data were collected from the respondents by administering an interview schedule which contained mainly unstructured questions. The interviewer asked the questions and recorded their answers. The secondary data were mainly compiled through searching the available literatures and mostly used as the supporting materials in consideration of better presentation of the study.

Data collection was conducted from December 28, 2006 to January 25, 2007. The interview schedule was pre-tested from October 25 to October 30, 2006. The interview schedule was pre-tested on 15 respondents in three parts of the affected area. Subsequently, necessary correction, revision and addition were done in the light of the experiences gathered from these interviews to make the interview schedule more effective and suitable.

A team of five interviewers was selected to collect information for this study. Proper orientation, training and directions were given to the data collectors to elicit maximum responses. Supervision and co-ordination of field work has been undertaken by the present researcher himself. The data for this study have gathered secured equally from the elderly males or females of the households. Participant observation was a key technique through which the present researcher has surveyed the respondents of the study area.

Data Processing and Analysis

All the questionnaires were carefully scrutinised and necessary editing was made after the completion of fieldwork. Data were processed manually and many tables have been made keeping in mind the study objectives. Various statistical techniques were used to analyse the collected data. Frequency distributions were used mainly to describe responses.

Results and Discussion

Food and Drinking Water

Severely affected people on 29th April 1991 suffered much for food. The immediate need was for food. Since people had neither fuel nor pots to cook with, food was eaten without preparation. Again, all sources of water were contaminated with saline water. In this part, an attempt has been made to highlight the food and drinking water related information.

Whether Respondents Took Food on the First Day after Cyclone

Table 4. Whether Respondents Took Food on the First Day after Cyclone

Areas / Response	SAA		MAA		LAA		Total	%
	Fq.	%	Fq.	%	Fq.	%		
Yes	87	96.67	40	100.00	20	100.00	147	98.00
No	3	3.33	-	-	-	-	3	2.00
Total	**90.00**	**100.00**	**40**	**100.00**	**20**	**100**	**150**	**100.00**

Source: Fieldwork 2006.

Table 4 reveals that majority of the respondents (98%) took food on the first day after cyclone.

Respondents' Types of Food on the First Day after Cyclone (For severely affected area and moderately affected area)

Table 5. Respondents' Types of Food on the First Day after Cyclone* (% of the respondents)

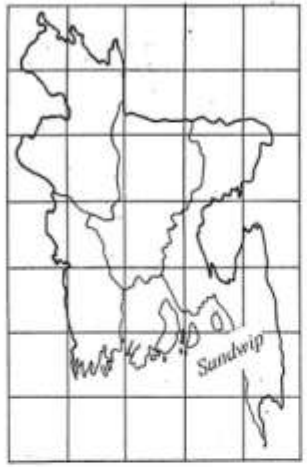
Nature of Food	Areas		Total
	SAA	MAA	
Coconut	71.26	45.00	63.78
Green banana	47.13	32.50	42.52
Green mango	63.22	72.50	66.14
Green papaw	52.87	52.50	52.76
Pulp of banana tree	22.29	17.50	22.83
Cone of the banana	2.30	-	1.57
Sweet potato	17.24	10.00	14.96
Wet unboiled rice	13.79	-	9.45
Boiled rice	-	2.50	0.79
Biscuit	8.05	37.50	17.32
Bread	4.60	15.00	7.87

Source: Fieldwork 2006.

N = 127 (For severely affected area and moderately affected area).

N.B.: Multiple responses were allowed.

Figure 1. Map of the Study Area Showing the Sample Sites



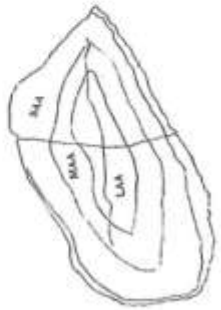


Table 5 reveals that the highest number of the respondents (71.26%) in severerely affected area took coconut. The second highest number of the respondents (63.22%) took green mango and 52.87 per cent of the respondents took green papaw that constitutes the third highest percentage. On the other hand, the highest number of the respondents (72.5%) in moderately affected area took green mango. The second highest number of the respondents (52.50%) took green papaw and 45 per cent of the respondents took coconut that constitute the third highest percentage. It is found that roots and fruits of the tree played a vital role as food in severely and moderately affected area on the first day after cyclone.

Respondents' Sources of Food on the First Day after Cyclone (For severely affected area and moderately affected area)

Table 6. Respondents' Sources of Food on the First Day after Cyclone

Sources	Areas		Total
	SAA	MAA	
Neighbour	13.79	27.5	18.11
Picking up	97.70	80.00	92.13
Own family	-	70.00	22.05
Local market	3.45	30.00	11.81
Relatives	16.09	57.50	29.13
NGOs	12.64	7.50	11.02

Source: Fieldwork 2006.

N = 127 (For severely affected area and moderately affected area).

N.B: Multiple responses were allowed.

Table 6 shows that the highest number of the respondents (97.70% and 80%) in severely affected area and moderately affected area respectively picked up their food as the source of food on the first day after cyclone. The second highest number of the respondents (16.09% and 70%) in severely affected area and moderately affected area respectively received food from relatives. It is found that "picking up" and "relatives" were the main sources of food on the first day after cyclone of the islanders in severely affected area and moderately affected area.

Whether Respondents Received Food Relief

Table 7. Whether Respondents Received Food Relief

Areas / Response	SAA		MAA		LAA		Total	%
	Fq.	%	Fq.	%	Fq.	%		
Yes	82	91.11	29	72.50	8	40.00	119	79.33
No	8	8.89	11	27.50	12	60.00	31	20.67
Total	**90**	**100.00**	**40**	**100.00**	**20**	**100.00**	**150**	**100.00**

Source: Fieldwork 2006.

Table 7 reveals that majority of the respondents (91.11% and 72.50%) in severely affected area and moderately affected area received food relief. On the Contrary, majority of the respondents in less affected area did not receive food relief. But it is observed from the interview that almost all the people of less affected area received food relief.

Respondents' Sources of Food Relief/Help

Table 8. Respondents' Sources of Food Relief/Help (% of the respondents)

Sources of Food Relief	Areas		
	SAA	MAA	LAA
Bangladesh Red Crescent Society	71.95	41.38	-
Local relief committee	51.22	41.38	62.50
Political parties	15.85	10.34	25.00
Member of the parliament of Sandwip	19.51	17.24	25.00
Government (Armed forces)	63.41	51.72	-
CARITAS	82.93	75.86	-
CARE	45.12	34.48	-
Relatives	76.83	72.41	62.50
Local wealthy people residing outside Sandwip	31.70	17.24	12.50
Nijera Kori	58.54	-	-

Source: Fieldwork 2006.

N = 119.

N.B: Multiple responses were allowed.

Table 8 indicates that the highest number of the respondents (82.93%) received food relief from CARITAS. The second highest number of the respondents (76.83%) received food help from relatives and 71.95 per cent of the respondents received food relief from Bangladesh Red Crescent Society that constitute the third highest percentage. Similiarly, the highest number of the respondents (75.86%) in moderately affected area received food relief from CARITAS. The second highest number of the respondents (72.41%) received food relief from relatives. On the other hand, the highest number of the respondents (62.50%) in less affected area received food relief from relatives and local relief committee. It is clear from the relief distribution that NGOs emphasized severely affected area and respondents praised the endeavour of NGOs in the case of distributing food relief. It is found that CARITAS, Bangladesh Red Crescent Society and relatives played a vital role to distribute food relief/help in severely affected area of the island immediately after cyclone.

Sources of Drinking and Cooking Water after Cyclone (For severely affected area and moderately affected area)

Table 9. Sources of Drinking and Cooking Water after Cyclone

Sources	Areas	
	SAA	MAA
Milk	73.33	70.00
Deep tubewell	13.33	25.00
Shallow tubewell	63.33	90.00
Rain water	34.44	10.00
Pond	24.44	5.00
Purified water received from GoB and NGOs	41.11	2.50
Digi (Lake)	53.33	7.50
River	3.33	-

Source: Fieldwork 2006.

N = 130.

N.B.: Multiple responses were allowed.

Table 9 indicates that the highest number of the respondents used milk as the source of drinking water. The second highest number of the respondents (63.33%) used shallow tubewell and 53.33 per cent of the respondents used "*digi*" that constitute the third highest percentage. On the contrary, the highest number of the respondents (90%) used shallow tubewell. The second highest number of the respondents (70%) used "milk" as the source of drinking water. It is interesting to note that respondents collected water of shallow tubewell, deep tubewell and *digi* from very distant places. It is found that shallow tubewell and milk played a vital role as sources of drinking and cooking water of the most of the islanders immediately after '91 cyclone.

Clothing

In this part, an attempt has been made to highlight the clothing related information. Clothing related information of the respondents includes condition of clothing, time taken to receive clothing relief, sources of clothing relief, dependency on clothing relief, use of clothing relief, and improper distribution of clothing relief.

Respondents' Condition of Clothing on the First Day after Cyclone

Table 10. Respondents' Condition of Clothing on the First Day after Cyclone

Condition of Clothing	Areas								
	SAA			MAA			LAA		
	M	F	%	M	F	%	M	F	%
Full clothing	1	-	1.11	18	19	92.50	10	10	100
Half clothing	'2	7	21.11	2	1	7.50	-	-	-
Very scant clothing covering only privates)	17	27	48.89	-	-	-	-	-	-
Without clothing	15	9	26.67	-	-	-	-	-	-
No response	-	2	2.22	-	-	-	-	-	-
Total	**45**	**45**	**100.00**	**20**	**20**	**100.00**	**10**	**10**	**100.00**

Source: Fieldwork 2006.

Table 10 reveals that the highest number of the respondents (48.89%) in severely affected area mentioned about their very scant clothing covering only privates as the condition of their clothing on the first after cyclone. The second highest number of the respondents (26.67%) mentioned that they were nacked. Very scant clothing covering only privates and naked condition of the respondents in the severely affected area clearly shows the terrible struggle for survival of the islanders. It is interesting to note that 1.11 per cent of the respondents who had full clothing in the severely affected area, he was at the top of the coconut tree and he was surrounded by the coconut leaves. Majority of the respondents (92.50%) in moderately affected area had full clothing. Some 7.50 per cent of the respondents who had half clothing in moderately affected area, they lost their half clothing by the whirling of wind after the damage of their house. On the other hand, all the respondents in less affected area had full clothing after cyclone. This may be due to the fact that they were not affected by sea surge.

Whether Respondents Received Clothing Relief

Table 11. Whether Respondents Received Clothing Relief

Areas / Response	SAA			MAA			LAA			Total	%
	M	F	%	M	F	%	M	F	%		
Yes	42	26	75.56	20	11	77.50	1	4	25.00	104	69.33
No	3	19	24.44	-	9	22.5	9	6	75.00	46	30.67
Total	**45**	**45**	**100.00**	**20**	**20**	**100.00**	**10**	**10**	**100.00**	**150**	**100.00**

Source: Fieldwork 2006.

Table 11 indicates that majority of the respondents (75.56% and 77.50%) in severely affected area and moderately affected area respectively received clothing relief. On the contrary, majority of the respondents (75%) in less affected area told us that they did not receive any clothing relief. But, it is observed from the interview that most of the people of the less affected area received clothing relief. It is notable in severely affected area that out of 68 respondents who received clothing relief, only 26 respondents (38.24%) are female. This may be due to the fact that women are to maintain *purdah* outside their house despite their vulnerable condition and it is very difficult for a woman to stand in a line for long hours and quarrel for clothing relief.

Respondents' Sources of Clothing Relief/Help

Table 12. Respondents' Sources of Clothing Relief/Help

Sources	Areas		
	SAA	MAA	LAA
CARITAS	83.82	90.32	-
Local relief committee	22.06	22.58	80.00
Political party leaders	19.12	22.58	20.00
Member of the parliament of Sandwip	17.65	12.90	20.00
Government (Armed forces)	27.94	25.81	-
Bangladesh Red Crescent Society	45.59	29.03	-
Relatives	60.29	67.74	60.00
Local wealthy people residing outside Sandwip	67.65	77.42	-
Nijera Kori	16.18	9.68	-
Nari Progoti Sangha	8.82	9.68	-

Source: Fieldwork 2006.

N = 104.

N.B.: Multiple responses were allowed.

Table 12 reveals that the highest number of the respondents (83.82%) in severely affected area received clothing relief from CARITAS. The second highest number of the respondents (67.65%) received clothing relief from local wealthy people residing outside Sandwip and 60.29 per cent of the respondents received clothing relief from relatives that constitute the third highest percentage. Similarly, the highest number of the respondents (90.32%) in moderately affected area received clothing relief from CARITAS. The second highest number of the respondents (77.42%) received clothing relief from local wealthy people residing outside Sandwip and 67.74 per cent of the respondents received clothing relief from relatives that constitute the third highest percentage. It is found that CARITAS, local wealthy people residing outside Sandwip and relatives played a vital role as the sources of clothing relief/help for the islanders immediately after cyclone.

Housing

House is the safe place for shelter. The people of fully damaged house suffered much for shelter. In this part, an attempt has been made to highlight the housing related information. Hosing related information includes damage of house, source of shelter, help for house reconstruction/repairing, and time taken to make a complete house.

Respondents' Damage of Houses

Table 13. Whether Respondents' Houses was Damaged

Areas / Response	SAA			MAA			LAA			Total	%
	M	F	%	M	F	%	M	F	%		
Damage	45	45	100	19	18	92.50	8	10	90.00	145	96.67
Not damage	-	-	-	1	2	7.50	2	-	10.00	5	3.33
Total	**45**	**45**	**100.00**	**20**	**20**	**100.00**	**10**	**10**	**100.00**	**150**	**100.00**

Source: Fieldwork 2006.

Table 13 reveals that majority of the respondents' (96.67%) houses were damaged. It is apparent that the devastation was of gigantic proportion.

Nature of Damage of Respondents' Houses

Table 14. Nature of Damage of Respondents' Houses

Nature of Damage	Areas					
	SAA		MAA		LAA	
	Fq.	%	Fq.	%	Fq.	%
Only plinth (no housing repairing materias were found)	76	84.44	-	-	-	-
Full damage (Some housing repairing materials were found)	14	15.56	33	82.50	4	20.00
Scant damage	-	-	7	17.50	16	80.00
Total	**90**	**100.00**	**40**	**100.00**	**20**	**100.00**

Source: Fieldwork 2006.

Table 14 shows that the highest number of the respondents' (84.44%) damage of houses in severely affected area was only plinth (no housing repairing materias were found). This damage may cause from both violent wind and sea surge (height above the house). It is apparent that this group of people have suffered much after cyclone because of not having any housing repairing materials. Conversely, the second highest number of the respondents' (82.50%) damage of houses in moderately affected area were full damage (housing repairing materials were found). This damage may cause from both violent wind and sea surge (height below five feet). It is clear that this group of people have been able to build a house like slum after cyclone to protect only their head and picking up goods. On ther other hand, the highest number of the respondents' (80%) damage of houses in less affected area were scant damage. This may cause only from violent wind. It is notable that 20 per cent of the respondents whose houses were fully damaged in less affected area, house structure were fence/thatch (hut) and they were chronic poor before '91 cyclone.

Respondents' Sources of Shelter Immediately after Cyclone [For only plinth (no housing repairing materials were found) and fully damaged house (Some housing repairing materials were found)]

Table 15. Respondents' Sources of Shelter Immediately after Cyclone

Sources of Shelter	Areas						Total	%
	SAA		MAA		LAA			
	Fq.	%	Fq.	%	Fq.	%		
Educational institutions (used as gruel kitchen)	16	17.78	-	-	-	-	16	12.60
Relatives	33	36.67	4	12.12	-	-	37	29.13
Neighbour	5	5.56	1	3.03	1	25.00	7	5.51
Building a house like slum	14	15.56	28	84.85	3	75.00	45	35.43
Living on open plinth	15	16.67	-	-	-	-	15	11.81
Tent	7	7.78	-	-	-	-	7	5.51
Total	**90**	**100.00**	**33**	**100.00**	**4**	**100.00**	**127**	**100.00**

Source: Fieldwork 2006.

Table 15 indicates that the highest number of respondents (36.67%) in severely affected area took the resort in their relatives' house immediately after cyclone. It is clear that relatives played a vital role as the source of shelter immediately after cyclone. The second highest percentage (17.78%) in severely affected area took the resort in the educational institutions (used as gruel kitchen). It is observed from the interview that they had no any relatives as the source of resort. Out of 16 respondents, 7 were fisherman and 3 were the wife of fisherman. Conversely, the highest number of respondents (84.85%) in moderately affected area took the resort making a house like slum immediately after cyclone. It is interesting to note that the islanders emphasized selp help than the pity of others when they possessed some housing repairing materials.

Help Received for House Reconstruction/Repairing

Table 16. Help Received for House Reconstruction/Repairing

Areas / Response	SAA		MAA		LAA		Total	%
	Fq.	%	Fq.	%	Fq.	%		
Yes	79	87.78	14	37.84	4	22.22	97	66.90
No	11	12.22	23	62.16	14	77.78	48	33.10
Total	**90**	**100.00**	**37**	**100.00**	**18**	**100.00**	**145**	**100.00**

Source: Fieldwork 2006.

Table 16 shows that majority of the respondents (87.78%) received help for house reconstruction/repairing. This may be from the fact that they had no alternatives without receiving help for house reconstruction/repairing. While, majority of the respondents (62.16%) in moderately affected area did not receive any help due to the fact that they are able to build house like slum using their picked up housing repairing materials.

Nature of Help Obtained for House Reconstruction/Repairing

Table 17. Respondents' Nature of Help Obtained for House Reconstruction/ Repairing (% of the respondents)

Nature of Help	Areas		
	SAA	MAA	LAA
Tin	46.84	78.57	-
Cash money	73.42	57.14	75.00

Table 17. *(Continued)*

Sack	29.11	-	-
Full house	21.52	-	-
Tent	62.03	-	-
Labour cost	32.91	50.00	-
Wood/Bamboo	13.92	7.14	75.00
Straw	17.72	21.43	100

Source: Fieldwork 2006.

N = 97.

N.B.: Multiple responses were allowed.

Table 17 presents that majority of the respondents (73.42%) in severely affected area received cash money as the nature of help. The second highest number of respondents (62.03%) received tent in severely affected area. Some 46.84% of the respondents in severely affected area received tin that constitute the third highest percentage. On the other hand, the highest number of respondents (78.57%) in moderately affected area received tin as the nature of help. The second highest number of respondents (57.14%) received cash money . It is apparent that the islanders got tin, cash money and tent as the nature of help obtained for house reconstruction/repairing immediately after cyclone.

Sources of House Reconstruction/ Repairing Help

Table 18. Respondents' Sources of Help Obtained by the Respondents for House Reconstruction/ Repairing (% of the respondents)

Sources of Help	Areas		
	SAA	MAA	LAA
Bangladesh Red Crescent Society	46.84	21.43	-
Local relief committee	17.72	25.00	-
Political party leaders	11.39	14.29	-
Member of the parliament of Sandwip	12.66	35.71	-
Government (Armed forces)	7.60	14.29	-
Neighbour	22.78	14.29	50.00
CARITAS	82.28	57.14	-
Relatives	67.09	64.29	50.00

Table 18. *(Continued)*

Local wealthy people residing outside Sandwip	16.46	28.57	25.00
Nijera Kori	35.44	25.00	25.00

Source: Fieldwork 2006.

N = 97.

N.B.: Multiple responses were allowed.

Table 18 indicates that majority of the respondents (82.28%) received help from CARITAS. The second highest number of respondents (67.09%) received help from relatives. On the other hand, the highest number of respondents (64.29%) in moderately affected area received help from relatives. The second highest number of respondents (57.14%) in moderately affected area received help from CARITAS. It is clear that CARITAS and relatives played an important role as the sources of help obtained for house reconstruction/repairing.

Disease, Medical Treatment and Health

Various health related problems emerged immediately after cyclone. No sanitary facilities were available. The human bodies were rotten and caused water pollution. These also caused air pollution. Contaminated water, air pollution and unattended injuries were the most urgent health problems in the first few days after cyclone. In this section, an attempt has been made to highlight the disease, treatment and health related information.

Whether Respondents were Affected by Disease

Table 19. Whether Respondents were Affected by Disease

Areas / Response	SAA		MAA		LAA		Total	%
	Fq.	%	Fq.	%	Fq.	%		
Yes	63	70.00	24	60.00	3	15.00	90	60.00
No	27	30.00	16	40.00	17	85.00	60	40.00
Total	**90**	**100.00**	**40**	**100.00**	**20**	**100.00**	**150**	**100.00**

Source: Fieldwork 2006.

Table 19. reveals that majority of the respondents (70% in severely affected area and 60% in moderately affected area) were affected by disease in the post-cyclone period. Corpse and carcasses, and salinity of drinking and cooking water may be identified as the causes of disease.

Nature of Respondents' Disease

Table 20. Nature of Respondents' Disease (% of the respondents)

Nature of Disease	Areas		
	SAA	MAA	LAA
Diarrhoea	87.30	79.17	66.67
Fever	49.21	45.83	33.33
Hypertension	11.11	-	-
Mental trouble	84.13	54.17	-
Dyspepsia	3.17	-	-
Dysentery	23.81	20.83	-
Headache	42.86	4.17	33.33
Bellyache	28.57	-	-
Gastric acidity	3.17	-	-
Pregnancy related problems	3.17	4.17	-

Source: Fieldwork 2006.

N = 90.

N.B.: Multiple responses were allowed.

Table 20 presents that the highest number of respondents (87.30%, 79.17% and 66.67%) in severely affected area, moderately affected area and less affected area respectively were affected by diarrhoea. It is found that diarrhoea was broken out in large-scale immediately after cyclone in the island. It is notable that most of the respondents in severely affected area and moderately affected area felt mental trouble. This may be due to the fury of '91 cyclone.

Whether Respondents Received Treatment

Table 21. Whether Respondents Received Treatment

Areas / Response	SAA		MAA		LAA		Total	%
	Fq.	%	Fq.	%	Fq.	%		
Yes	58	92.06	21	87.50	3	100	82	91.11
No	5	7.94	3	12.5	-	-	8	8.89
Total	**63**	**100.00**	**24**	**100.00**	**3**	**100.00**	**90**	**100.00**

Source: Fieldwork 2006.

Table 21 indicates that majority of the respondents (92.06% in severely affected area and 87.50% in moderately affected area) received treatment after being affected by disease.

Respondents' Sources of Treatment

Table 22. Respondents' Sources of Treatment (% of the respondents)

Sources of Treatment	Areas		
	SAA	MAA	LAA
Quack	65.08	66.67	66.67
Govt. hospital	36.51	50.00	33.33
Indigenous knowledge	30.16	20.83	66.67
MBBS Doctor	17.46	8.33	-
Homeopath	23.81	8.33	33.33
Volunteer medical team	31.74	12.50	-
Foreign medical team	17.46	4.17	-
Magical/Religious treatment	12.70	25	-
Bangladesh Red Crescent Society	58.73	41.67	-
CARITAS	49.21	29.17	-
CARE	7.94	1.59	-
Armed forces	26.98	20.83	-

Source: Fieldwork 2006.

N = 90.

N.B.: Multiple responses were allowed.

Table 22 shows that the highest number of respondents (65.08%) in severely affected area received treatment from quack. The second highest number of respondents (58.73%) received treatment from Bangladesh Red Crescent Society and 49.21% of the respondents in severely affected area received treatment from CARITAS. Similarly, the highest number of respondents (66.67%) in moderately affected area received treatment from quack. On the other hand, the second highest number of respondents (50%) in moderately affected area received treatment from government hospital. Some 41.67 per cent of the respondents in moderately affected area received treatment from Bangladesh Red Crescent Society. It is apparent that quack, CARITAS, Bangladesh Red Crescent Society and government hospital played a vital role as the source of treatment in the post-cyclone period in the island.

Agriculture

Agriculture was the main occupation of the most of the people living in Sandwip. Agriculture was severely affected by cyclone. In this section, an attempt has been made to highlight the agriculture related information of the respondents.

Whether Respondents Experienced Agricultural Problem(s)

Table 23. Whether Respondents Experienced Agricultural Problem(s)

Areas / Response	SAA		MAA		LAA		Total	%
	Fq.	%	Fq.	%	Fq.	%		
Yes	87	96.67	38	95.00	-	-	125	83.33
No	-	-	-	-	18	90.00	18	12.00
Not applicable	3	3.33	2	5.00	2	10.00	7	4.67
Total	**90**	**100.00**	**40**	**100.00**	**20**	**100.00**	**150**	**100.00**

Source: Fieldwork 2006.

Table 23 shows that the highest number of respondents (96.67% in severely affected area and 95% in moderately affected area) experienced agricultural problem(s). It is found that most of the islanders were involved with agriculture before '91 cyclone.

Nature of Agricultural Problem(s) of the Respondents

Table 24. Respondents' Nature of Agricultural Problem(s) (% of the respondents)

Nature	Areas		Total
	SAA	MAA	
Lack of agricultural materials	100	63.16	88.80
Lack of seed	100	71.02	91.20
Lack of cattle for cultivation	100	97.37	99.20
Lack of fodder for cattle	37.93	31.58	36.00
Salinity of land	100	100	100
Lack of fertilizer and insecticide	100.00	63.16	88.80

Source: Fieldwork 2006.

N = 125.

N.B.: Multiple responses were allowed.

Table 24 reveals that the highest number of respondents (100%) in severely affected area (SAA) mentioned the lack of agricultural materials, lack of cattle for cultivation, salinity of land and lack of fertiliser and insecticide as the nature of agricultural problems immediately after cyclone. Conversely, the highest number of respondents (100%) in moderately affected area mentioned the salinity of land. The second highest number of respondents (97.37%) in moderately affected area mentioned the lack of cattle for cultivation as the nature of agricultural problem . It is found that the islanders of severely affected area and moderately affected area faced severe problem in agriculture.

Sources Availed by the Respondents to Overcome Agricultural Problem(s)

Table 25. Respondents' Sources to Overcome Agricultural Problem(s) (% of the respondents)

Sources	Areas		Total
	SAA	MAA	
Government	48.28	28.95	42.40
NGOs	58.62	44.74	54.40

Table 25. *(Continued)*

Neighbour	4.60	34.21	13.60
Relatives	81.61	76.32	80.00
Own family	-	26.32	8.00
Local Relief Committee	24.14	18.42	22.4

Source: Fieldwork 2006.

N = 125.

N.B.: Multiple responses were allowed.

Table 25 reveals that the highest number of respondents (81.61%) in severely affected area received help from relatives. The second highest number of respondents (58.62%) received help from NGOs. It is apparent that relatives and NGOs served as vital sources to face agricultural problems immediately after cyclone.

Credit and Occupational Change

Whether Respondents Received Credit

Table 26. Whether Respondents Received Credit

Areas / Response	SAA			MAA			LAA			Total	%
	M	F	%	M	F	%	M	F	%		
Yes	23	15	42.22	7	4	27.5	13	4	20	53	35.33
No	22	30	57.78	13	16	72.5	9	7	80	97	64.67
Total	**45**	**45**	**100.00**	**20**	**20**	**100.00**	**10**	**10**	**100.00**	**150**	**100.00**

Source: Fieldwork 2006.

Table 26 reveals that majority of the respondents(64.67%) did not receive any credit to overcome the problems caused by the fury of cyclone. This may result from their incapability to pay credit and the creditors did not believe them to pay credit for their extreme vulnerability, and their relatives, friends and neighbours were also vulnerable like them.

Respondents' Sources of Receiving Credit Immediately after Cyclone

Table 27. Respondents' Sources of Receiving Credit Immediately after Cyclone (% of the respondents)

Sources of Credit	Areas			Total
	SAA	MAA	LAA	
Relatives	57.90	63.64	50.00	58.49
Neighbour	18.42	27.27	-	18.87
Bank	15.80	2.00	-	15.09
Usurer	55.26	45.45	2.00	52.83
NGOs	21.05	9.09	25.00	18.87
Association	21.05	18.18	-	18.87

Source: Fieldwork 2006.

N=53.

N.B.: Multiple responses were allowed.

Table 27 shows that the highest number of respondents (58.49%) received credit from relatives. The second highest number of respondents (52.83%) received credit from usurer. It is apparent that relatives and usurer played a vital role as the sources of credit of victims.

Whether Respondents Changed Their Occupation within Five Years after Cyclone (For male respondents)

Table 28. Whether Respondents Changed Their Occupation after Cyclone

Areas / Response	SAA		MAA		LAA	
	Fq.	%	Fq.	%	Fq.	%
Yes	39	86.67	9	45.00	2	20.00
No	6	13.33	11	55.00	8	80.00
Total	**45**	**100.00**	**20**	**100.00**	**10**	**100.00**

Source: Fieldwork 2006.

Table 28 reveals that majority of the respondents (86.67%) changed their occupation within five years after cyclone. Conversely, a low proportion of the respondents (45% & 20%) in moderately affected area and less affected area respectively changed their occupation within five years after cyclone. This may result from their degree of vulnerability caused by the fury of '91 cyclone. It is found that the respondents changed their occupation to overcome the immediate loss caused from '91 cyclone.

Nature of Occupational Change by the Respondents within Five Years after Cyclone

Table 29. Respondents' Nature of Occupational Change within Five Years after Cyclone

Nature of Occupational Change	Areas						Total	%
	SAA		MAA		LAA			
	Fq.	%	Fq.	%	Fq.	%		
From agriculture to small Business	8	20.51	2	22.22	1	50.00	11	22.00
From agricultur to working in foreign country	13	33.33	4	44.44	1	50.00	18	36.00
From agriculture to rickshaw-pulling	2	5.13	1	11.11	-	-	5	10.00
From agriculture to labour	1	2.56	-	-	-	-	1	2.00
From labour to rickshawpulling	1	2.56	-	-	-	-	1	2.00
From business to working in foreign country	4	10.26	1	11.11	-	-	5	10.00
From fishing to labour	1	2.56	-	-	-	-	1	2.00
From fishing to agriculture	1	2.56	-	-	-	-	1	2.00
From agriculture to fishing	1	2.56	-	-	-	-	1	2.00
From labour to working in foreign country	2	5.13	-	-	-	-	2	4.00

Table 29. *(Continued)*

From service to working in foreign country	3	7.69	1	11.11	-	-	4	8.00
From service to small business	2	5.13	-	-	-	-	2	4.00
Total	**39**	**100.00**	**9**	**100.00**	**2**	**100.00**	**50**	**100.00**

Source: Fieldwork 2006.

Table 29 indicates that the highest number of respondents (33.33%) in severely affected area changed their occupation from agriculture to working in foreign country. The second highest number of respondents (20.51%) changed their occupation from agriculture to small business and 10.26 per cent of the respondents changed their occupation from business to working in foreign country. On the other hand, the highest number of respondents (44.44%) in moderately affected area changed their occupation from agriculture to working in foreign country. The second highest number of respondents (22.22%) changed their occupation from agriculture to small business. It may be due to the fact that the islanders learnt to redefine the life and knew that occupation based on the pity of nature will be threatened in any time. That means, non-agricultural occupations got priority to the islanders after '91 cyclone. It is found that working in foreign country and business were the main alternatives to the islanders to overcome the immediate loss of '91 cyclone.

Conclusion

Cyclone is fortunately short-lived, but its power of destruction is awesome. The people who working hard to earn a square meal in the unprotected areas may not have any complaint against the nature. But the question remains, whether the deaths are inevitable or could be avoided. Based on the existing technological expertise of the humankind, it is farely logical to argue that many of these lives could have been saved if we were a little more careful about them.

The study found that there was an acute shortage of drinking water immediately after the cyclone. Trees helped people survive in more than one way. Coconut tree played a vital role in more than one way for the islanders. It served as life saving technique during cyclone. It also served as the source of food and drinking water immediately after cyclone. So the study recommends that there is need to plant coconut sapling along the coast in the vulnerable area.

The study shows that the islanders considered food, drinking water and clothing are the most essential items immediately needed after the cyclone. Most of them opined that a small number of people and organisations came foreward to help them with relief goods and services. People in vulnerable condition came to each other's help. CARITAS, Bangladesh Red Crescent Society and relatives played an important role to provide relief goods and services to the respondents. From the findings it is apparent that most of the islanders were affected by disease. In particular, diarrhoea broke out in large-scale causing serious health problem for the islanders. The study findings clearly show that majority of the respondents did not receive any credit to overcome their problems caused by the fury of cyclone due to their extreme vulnerability. It is significant to be mentioned that majority of the respondents in severely affected area changed their occupation within five years after cyclone and it is found that non-agricultural occcupations (such as, working in foreign country and small business) got priority to the islanders to overcome the immediate loss of '91 cyclone.

The study has simply presented the survival stories of the respondents. These stories remind us the age-old adage that man can be destroyed but they will not be defeated. With incurable optimism the islanders are rebuilding their lives after the apocalypse of 1991.

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