

# Effectiveness of Cyclone Shelter in Disaster Risk Reduction: Perspectives from Two Union Parishads of Coastal Satkhira

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## Abstract

A cyclone shelter is basically a solid building, an elevated construction that provides security from the cyclones and associated storm surges. When specific warnings for cyclone and tidal surges are announced by the appropriate authorities, the building would be open for safe shelters of local communities and cattle. During the time of natural disaster, the cyclone shelters have to ensure easy access of women, children, aged and severely ill persons along with people with disabilities. Although, the cyclone shelter provides sufficient food, pure water, primary treatment and separate toilet facilities for the pregnant women during disaster but, the aforementioned facilities are not enough for the large number of vulnerable communities in cyclone shelter during emergency. However, the research is conducted at the most affected disaster-prone Gabura and Padma Pukur Union under the Shyamnagar Upazila under Satkhira district. It adopted a mixed methodology combining both qualitative and quantitative techniques of data collection. Finally, the study revealed that the existing cyclone shelter is inadequate in number and near about five million people who are living in the coastal belt of Bangladesh.

**Keywords:** Disaster, Cyclone Shelter, Community, Hazard, Risk, Vulnerability

## Introduction

Coastal belts of the world are vulnerable to natural hazards at short or long term with severe loss of lives, livelihoods and wealth (White, 1974). Of all the developing nations affected by coastal storms, Bangladesh is the worst affected and possesses least preparedness to cope with such disaster (Ansary, Sutradhar, & Saha, 2008). In 15 November, 2007 a severe cyclone SIDR – a category 4 storm struck the coastal and central areas of Bangladesh and the damage was mainly concentrated in the southwestern part of Bangladesh, killing about 3,347 (CDMP, 2007) people. The poor people have the least capacity to absorb shocks and adapt to the adverse impacts of climate change. Thus, the poor are the most vulnerable to climate change impacts and disaster risks (Rahman, 2009). It is predicted that by the year 2030, an additional 14% of the country will become extremely vulnerable to floods, cyclone, earthquake, and currently vulnerable areas will experience higher levels of natural disaster (WorldBank, 2006).

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The Bangladesh government with the support of different foreign agencies has been building multi-purpose cyclone shelters so that these can also be used as primary schools during the normal period of time. According to Local Government Engineering Department, in 2006 there were about 2500 cyclone shelters in the country (Islam, 2006). Bangladesh has developed a GIS-based information system for all existing cyclone shelters. Quite a number of cyclone shelters have been neglected, others have been abandoned altogether.

Cyclone shelters help to reduce the losses greatly. There are 2133 cyclone shelters along the coastal regions of Bangladesh. Cyclone shelters have been established in the 60's for the first time. 449 cyclone shelters have been built in 1990 and in 1996, the figure stood in 1816. The majority number of shelters is located far from the cyclone prone areas, for that reason they are not adequate to provide shelter to the affected people during the hit of cyclone (Quader & Mahbub, 2012).

The aim of the study is to understand the effectiveness of the cyclone shelters in disaster risk reduction and their management located along the coast of Bangladesh. Water and sanitation problems were identified as two major problems, with a lack of environmental health knowledge observed among affected people and the health service providers. Rahman and Bennish indicated in their study that health relief and rehabilitation after the 1991 cyclone were appropriate and effective (Rahman, M, O , M, Bennish, 1993). As such, despite limitations, it was possible to control the spread of post-cyclone communicable diseases and mortality. Women and children are more vulnerable to cyclone. In many areas, there is no embankment. Furthermore, mangroves that offered some shelter have been removed to make way for shrimp- and salt-farming enterprises. Such levels of direct exposure to cyclone hazards mean that the shelters are all the more crucial as an intervention, as one of a few ways in which people can gain protection.

In addition, people resist moving to the cyclone shelters during an event. Their use during non-disaster periods demonstrates an excellent dual disaster and development function. However, Shyamnagar is the worst affected region during disaster and the underlying causes of non-use of shelters have not always been fully identified. One element of the present study was an effort to understand the role of cyclone shelter of the coastal people during cyclone hazard periods, including why they are not able to reach the shelter center in time.

### **Objectives of the Study**

The broader objective of the study was to explore the role of cyclone shelter

during disaster in the coastal zone of Bangladesh. To accomplish the broader objective, the study outlined the following specific objectives for exploring the reality from the field:

- i. To explore the status and amenities available in cyclone shelter
- ii. To investigate the coverage of benefits received by the community
- iii. To identify the major difficulties in cyclone shelters faced by the community
- iv. To reveal the reasons behind the apathies of communities in going to cyclone shelters during the emergency

## **Methodology**

### ***Study Location***

The present study has been conducted in four rural villages under two Union Councils (UC) namely Padma Pukur and Gabura under the Shyamnagar Upazila of Satkhira district located in Southwestern part of Bangladesh. These UCs have been selected due to the importance as one of the vulnerability prone zone in the county. Actually the field is very nearby (below 6 kilometer) of the mangrove forest Sunderban. According to online birth registration up to August 14, 2015, the population of the Padma Pukur UC is 22,858 having 14 villages, of which 2 villages (Jhapa and Chandipur) were purposively selected for the study. On the other hand, Gabura UC has 10 villages, consisting of 29,453 populations where 2 villages were selected- Chadnimukha and Gabura under Shyamnagar Upazila. The first reason behind selecting the fields purposively is their closeness to the cyclone shelters. Secondly, most of the villagers live on unprotected levee, river strand and open space. Thirdly, these villagers experienced extreme disastrous situations than other villages of the coastal zone of Bangladesh. The livelihood of the villagers is mostly dependant on agricultural production. Besides this, there are few people depending on in other occupations like livestock rearing, poultry farming, fishing, making furniture etc. So, their mode of living along with the geographical vulnerability related to disaster convinced the study for considering the areas for research data collection.

### ***Sampling Procedure & Sample Size***

The method of sampling for the research was purposive due to the nature of the research. Aligned with the objectives of the study, the respondents were the inhabitants from Padma Pukur and Gabura UCs since they have intensive and extensive experience with cyclone shelters. The target population represents two villages from each UCs. The unit of analysis in the study was 'house hold'. The respondents included both men and women. The researcher conducted case studies of five households along with four focus group discussions (FGD). There was no religious reservation for selecting any respondent in the study.

### ***Data Collection Tools & Techniques of Analysis***

Since this research is based on both primary and secondary data, each survey interview was based on a structured questionnaire with open and close ended questions. It was supplemented with semi-structure and unstructured questions in order to explore more information. An open-ended unstructured question supports in gaining of more in-depth responses from respondents about their opinion, experience, knowledge and feeling on resources. Interview schedules are the most productive choice when it comes to data collection from large numbers of respondents and multiple locations. The interview schedule for this research was constructed based on the study objective. Secondary data helped to analyze the reality from a comparative perspective. Sources of secondary data were relevant departments of the government, agencies, and offices along with various kinds of recently published journals, articles, dissertations, books and newspapers. The four FGDs were conducted consisting of eight participants in each and they were selected after a discussion with the people's representatives, aged and experienced persons of the villages. The participants were homogeneous in the context of their experience with disaster situations but had diversified occupational backgrounds (e.g., fisherman, businessmen, teachers, farmers, housewife, workers and students etc.).

All survey quantitative data were analyzed by SPSS version 16.00. For qualitative data, axial coding techniques were applied for data analysis because it simplified to condense voluminous qualitative data and arrange a large number of subcategories. Audio recordings of group sessions were transcribed verbatim. Based on written transcripts, collected data were processed categorically. Findings in different sub-categories were complimented by the field-notes and observation by the field data collector.

For having an in-depth understanding of the reality, four households in two categories of households were selected for case study- (i) households located within one kilometer of the cyclone shelter and (ii) households distancing more than one kilometer from the cyclone shelter. The final findings of the study were a combination of understanding based on the data collected through survey questionnaire, FGD and case study.

### **Review of Relevant Literatures**

There are a large number of reports and theoretical works on cyclone shelter preparatory study and cyclone shelter capacity and vulnerability analysis. In many of them, research scholars have identified different views on the issue of cyclone shelter and its advantage and disadvantage factors. However, a very limited amount of empirical work is available on this particular issue in the case of cyclone shelter.

Previous studies show that (Jahan, 1991), to prevent or mitigation the loss of human lives probably livestock and poultry, the cyclone shelters can play the most vital role. After the cyclone of 1971, a number of cyclone shelters were constructed in the coastal areas. These are not sufficient in number and are not properly designed and located. It has been reported that during the cyclone of April 29-30, 1991 some shelters were used by several thousand people who would not have otherwise survived. Others were nearly empty throughout the storm even though they are located in areas with substantial mortality. People could not use these shelters because the access roads were flooded and water flow currents made them difficult to reach.

The severity of cyclones, a lack of cautiousness and an improper disaster management system act as the major determining factors delineating the extent of cyclone damage. In addition, people resist moving to the cyclone shelters during an event. The reasons are thought to be disbelief of warnings among coastal dwellers, the utilization of incorrect methods in the warning system, the distance of cyclone shelters from settlements, mismanagement of weather forecasts and a lack of proper management of the cyclone shelters (Haider, Ahsan, & Eusuf, 1992).

For effective employment and management of cyclone shelters, multi-purpose versions have been built in carefully selected locations, identifying uses for both normal and disaster periods (BUET & BIDS, 1993). Their use during non-disaster periods demonstrates an excellent dual disaster and development function. However, the underlying causes of non-use of shelters have not always been fully identified. One element of the present study was to try to understand the behavior of the coastal people during cyclone hazard periods, including why they are not able to reach the shelter center in time. In general, households close to the coastal region of Bangladesh are not disaster resistant. Some sort of defense is provided by artificial embankments somewhere, but those are not sufficient to protect the spread of housing in this zone. In many areas, there is no embankment. Furthermore, mangroves that offered some shelter have been removed to make way for shrimp cultivation and salt-farming enterprises (Alam & Reader, 2010). Such levels of direct exposure to cyclone hazards mean that the shelters are all the more crucial as an intervention, as one of a few ways in which people can gain protection.

According to the response from 1991 cyclone affected people and health personnel of the concerned areas, water and sanitation problems were identified as the most two crucial issues (Hoque, 1993). Previous studies also found that there is a lack of environmental health knowledge among the affected people and the health service providers in the coastal zones of Bangladesh (Ohiduzzaman, 1993).

According to the Ministry of Food and Disaster Management's Comprehen

sive Disaster Management Program (CDMP), cyclone shelters are meant to provide shelter and reduce the number of casualties in the coastal area during cyclone and tsunami (CDMP, 2009). However, due to the lack of adequate management, these shelters have gradually lost the utilities (Custers, 1992). As cyclone shelters are the only safe places for the coastal population during cyclone and tsunami, existing shelters should be managed properly to ensure life-time use.

The zoning of coastal area based on storm surge hazard and vulnerability factors can be helpful to identifying priority areas for shelter allocation (Mallick, 2014). Using risk-based criterion, another study illustrated how budget constraint, political constraint, minimizing global risk and maximizing equity can be incorporated in decision making for shelter allocation (Choudhury, 1998).

The Multipurpose Cyclone Shelter Programmed attempted to delineate the catchment area of a cyclone shelter (or *killa* in local dialect), which is the area where people (or livestock) come to take shelter during the cyclonic storms and surges. The size and shape of a catchment area was determined based on the following factors: (a) the distance which most families were willing to move when winds pick up gale speed; (b) the density of habitations, settlement pattern and the number of people for which the shelter was designed to serve and (c) access to the shelter. The distance, which most families were willing to move, was determined by topographic features, overall security situation (e.g. risk of looting), communication network and the direction of the main storm. One observation was that most families move only when winds picked up gale speed. Other important factors in catchment area delineation were road network and topography. People were generally unwilling to cross-waterways once the winds picked up gale speed (MoFDM, 2007).

## Findings of the Study

### *Respondent's demographic characteristics*

The present study is conducted among the people of four villages Jhapa, Chandipur, Chadnimukha and Gabura of Padma Pukur and Gabura Union respectively under the Shyamnagar Upazila of Shatkhira district. In total, 150 respondents ranging from age 15 to 75 years of age were interviewed where 65.3% were male and 34.7% were female respondents. The 'Table 1' reveals the demographic profiles of the respondents. The table shows that the majority of the respondents (43.3%) were 15-30 years old; on the incompatible, a considerable number of respondents (23.3%) are 31-45 years old. And those in the 46-60 years group comprised about 20.0 percent. Table also demonstrates the pattern of respondents where they are in different professions. It shows that majority of the respondents (19.3%) are students and farmers. On the contrary, a considerable number of respondents (17.3%) are

fishermen. It is also clearly evident that (10%) of total respondents are day laborers. Beside these occupational groups, there were village doctors (4.7%). It is further observed that as part of patriarchal society, 20 percent adult female respondents were completely engaged in household activities. A good number of students (19.3percent including both boys and girls) also participated in the study as valuable respondents.

**Table-1: Socio-demographic profile of the respondents**

Characteristics	No. of respondents	Percent (%)
<b>Age</b>		
15-30	65	43.3
31-45	35	23.3
46-60	30	20.0
61-75	20	13.3
<b>Sex</b>		
Male	98	65.3
Female	52	34.7
<b>Occupation</b>		
Farmer	29	19.3
Day labor	15	10
Fisherman	26	17.3
Micro & Small Business	5	2
Teacher	4	1.3
Village doctor	7	4.7
Govt. employer	5	3.3
Housewife	30	20
Student	29	19.3
<b>Total</b>	150	100

Source: Field survey

**Table-2: Source of receiving cyclone forecast**

Answer	N0. Of respondents	Percent (%)
Radio	45	30
Television	8	5.3
Hand mike Announcement	56	37.33
Poster	4	2.7
Mobile	10	6.7
Neighbor	27	18
<b>Total</b>	150	100%

Source: Field survey



As the Table-2 reveals that, 30 % respondents received warning forecast from radio on disaster preparedness access to cyclone shelter. The table also shows, the hand mike announcement plays a vital role to prevent the villagers said almost 37.33% as well. On the other hand, a considerable number of respondents 5.3% got information by television. Beside, 2.7% of total respondents were conscious to see hand writing poster which was organized by the local organization while 18% had taken information by the nearest neighbors. However, 6.7 % respondents received warning alarm by via-mobile technology.

*Apathies of communities in going cyclone shelters during emergency*

**Table-3: Distance of nearest cyclone shelter and duration of reaching at cyclone shelter during emergence**

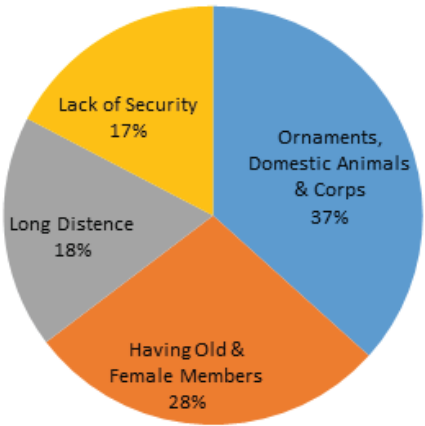
Distance of cyclone shelter	Duration of reaching at cyclone shelter						Total
	Characteristic	1-20 (Minute)	21-40 (Minute)	41-60 (Minute)	More than 1 hour	More than 1.30hour	
	Half kilometer	6	22	20	4	0	
	One kilometer	2	29	27	5	4	
	Two kilometer	0	0	19	6	2	
	More than two kilometer	0	0	0	3	1	
Total		8	51	66	18	7	150

Source: Field survey

Cyclone shelter is indispensable public facilities in the cyclone prone areas to save people during cyclone hazard event. The distance of cyclone shelter is an important factor to shelter access during the cyclone. The Table-3 shows that majority of respondent's report that the apathies of communities in going to cyclone shelter during emergency due to long distance and poor transportation system. Therefore, a significant number (52) of respondents reported that the distance of cyclone shelter is half k.m from their house and the duration is 1-20 minutes to reach the cyclone shelter. On the other hand, majority number (67) of respondents reports that they have to pass one k.m with 21-40 minutes to reach cyclone shelter. The table 2 also focuses that a considerable number (27) of respondents are not eager go to cyclone shelter because it is two k.m from their house where (4) members report that it is more than two k.m and have to reach more than 1.30 hours. Status and amenities of cyclone shelter are not adequate for the vulnerable people. People are not able to reach shelter due to long distance.



**Figure-1: Causes for aversion for going to cyclone shelter**



Source: Field survey

Cyclone shelters are located outside storm tide or flood inundation evacuation zones and will be prioritized for use by residents directed to evacuate from storm tide or flood inundation areas. But the study finds four specific reasons for which people do not want to go to the cyclone shelters. The figure-1 shows that 18% of respondents said that they are not interested to go cyclone shelter because of long distance from their house. Furthermore, it is also evident that 28% of respondents said that they have aversion to go cyclone shelter due to having old and female members in their house. On the other hand, majority number of respondents (37%) mentioned that they do not go because they think that their ornaments, domestic animals and crops are unsecured at the cyclone shelter. Moreover, a considerable number of respondents (17%) reported that cyclone shelter is not safe for the large number of people during disaster.

***Capacity and security of cyclone shelter***

As we know women, children, disabled and elderly people are more vulnerable to the impact of cyclones than others. The shelters need to provide necessary and adequate facilities (separate space and toilet for women, and access facilities for the disabled) so that they are willing to come to the shelters during cyclones, but most of the shelters fail to provide accommodation, sanitation, water supply and security facilities for women. It also regarded that the capacity of shelter is not sufficient for a large number of vulnerable people who live in coastal zone. Most of the time men and women stay together in night and sometime women faced sexual harassment, rape, eve-teasing, mental torture and so on (shown in Table-4).

Table-4: Male and female Cohabitation and Type of Abuse

Male and female Cohabitation	Type of abuse/torture						Total
	Answer	Rape	Sexual harassment	Eve-teasing	Torture by husband	Mental torture	
	Yes	17	25	47	14	38	
	No	-	2	2	-	1	
	Unknown	1	-	3	-	-	
Total		18	27	52	14	39	150

Source: Field survey

The male-female cohabitation related responses projected a gendered dimension of the bitter experiences of the women in the coastal area. Actually, women are more vulnerable in cyclone shelter and they are forced to face dangerous situations like sexual assaults and theft, eve- teasing, rape, mental torture during the disasters. The table-4 shows- 141 of the total respondents reported that women are affected directly or indirectly in different ways. A significant number (17) of respondents said that women are raped by acrid males. Other than that, overall they feel unsecure since other 25 respondents added the experience of sexual harassment while staying at the shelters. It is found that majority of the respondent (47) reported that women face Eve- teasing during disaster in the cyclone shelter. On the other hand, a considerable number of women (14 out of 150) faced tortures by their husbands and whereas more 38 respondents added that they faced various types of mental tortures by their neighbors at the cyclone shelters.

*Major difficulties in cyclone shelter*

Table-5 illustrates the human accommodation practices at cyclone shelters and relevant challenges faced by men and women during the period of disaster. It is evident that 13.33% respondents said that 25-30 member stay together in a single room. A significant portion of respondents (21.33%) opines, 31-35 number of people passing their time with each other where 34% said that the number was 36-40 for them. Besides, 15.33% referred that a number of 41-45 people had to stay in one room during emergency at the cyclone shelter. Moreover, some time the number of population exceeds 45 in a single hall room (16% respondents opined).

**Table 5: Human Accommodation Practices per Room at Cyclone Shelters & Relevant Challenges**

Accommodation Capacity during last emergency	Answer	No. Of respondents	Percent (%)
	25-30 members	20	13.33
	31-35 members	32	21.33
	36-40 members	51	34
	41-45 members	23	15.33
	More than 45 members	24	16
<b>Total</b>		150	100.0
Challenges faced due to the crowd	Insecurity of goods and ornaments	35	23.33
	Congested Environment	32	21.33
	Lack of Food and pure water	25	16.66
	Unavailability of Medical Services	11	7.33
	Continuing Education	13	8.66
	Absence of Sanitary Latrine	34	22.66
<b>Total</b>		150	100.0

Source: Field survey

At the same time, people have to face different type of problem in cyclone shelter. The majority (23.33%) realized the insecurity of goods and ornaments during the period of disaster at cyclone shelter. The study also found that the food and pure water supply are also limited for the large number of people who take shelter during the emergency. On the whole, 7.33% of total respondents said that medical facilities are not adequate for the vulnerable people. Nevertheless, a considerable number of respondents (22.66 %) reported that the sanitary latrines at the cyclone shelters are inadequate and to some extent very dirty or unusable. Among the 150 respondents, 8.66% said that education facility was totally absent during disaster at cyclone shelter.

***Food and Other facilities at cyclone shelter***

Cyclone shelters should have storage facilities for the valuable goods of people who take shelter at those during the cyclones. However, this facility is not available in many shelters. It was also clearly observed that, food scarcity is a common phenomenon in any disaster. People have to suffer food crisis for long time due to natural disaster. As a result, the insecurity of food impacts the life of cyclone affected people through high price of food and lower supply of food in the market. Even the businessmen creates artificial crisis of food in the market. They fix more profit in the market specifically for the price of rice, meat, egg, oil, vegetables, ready meal and so on. As a result the poor suffer a lot and sometimes they have to starve due to the high price of rice and lack of work facilities. Table-6 shows the food facilities at the cyclone centers during the emergencies:

Table-6: Food facilities at cyclone shelter during emergence

Food facilities at cyclone shelter	Answer	Dry food	Hotchpotch	Fruits	Fasting (not received any food)	Total
	Yes	32	19	-	12	63
	No	-	-	-	17	17
	Not adequate	44	26	-	-	70
Total		76	45	-	29	150

Source: Field survey

As food crisis is a frequent problem of the study area so the respondents have seen to adopt different strategies to combat food crisis. It is seen that the maximum respondents in almost all age group said that food facilities are not enough for those people stay in cyclone shelter. Nearly 63 numbers of total people said that, people get some little amount of food supply as aid. The given table (Table-6) provides the types of food distributed among the people who were at the cyclone shelter. Moreover, 32 and 19 out of 150 people said that they got dry and hotchpotch respectively where 12 respondents said that they did not get any food facilities at the cyclone shelter.

When around 29 out of 150 people claims that they do not get food during the disaster situation (either supplied or not supplied) at the shelters, reflects that there is a hidden mechanism or power relation within the process of resource mobilization resulting in inequality in service delivery to the cyclone victims.

Table-7: Overall advantages given by cyclone shelter

Answer	No. of respondents	Percent (%)
Accommodation facilities for men and domestic animals	47	31.33
Food and supply of pure water	32	21.33
Primary Health Care	23	15.33
Security for pregnant women, children and aged people	37	24.66
No advantage	11	7.33
Total	150	100%

Source: Field survey

In the context of disaster recovery in Bangladesh, cyclone shelters are built for safe accommodation of people for temporary period at the community level. In this context, the study finds- 31.33 % respondents opined that cyclone shelter gave accommodation facilities for both men, women and domestic animals. It shows that an overwhelming majority of the study respondents 21.33 % said that food and pure water supplied among the helpless people. In addition, there was a little security for pregnant women, children and aged people approximately 24.66%. Compared to it, only 7.33 % respondents said that there were no facilities in cyclone shelter. However, a large number of respondents (15.33%) said that there was a primary health care facility at the cyclone shelter.

Table-8: Adaptation strategies of the respondents before going to cyclone shelter

Answer	N0. Of respondents	Percent (%)
Preserving dry foods	45	30
Preserving seeds for agricultural land	12	8
Saving money and ornaments	52	34.66
Saving domestic animals and crops	23	15.33
Storing medicine	18	12
<b>Total</b>	150	100%

Source: Field survey

The present study finds that nearly 30% respondents have access to stock dry food for food security during the period of disaster. Without proper awareness and financial support some people cannot save food for disaster period. Besides, a little number of respondents (8%) preserved seeds for agricultural land. At the same time, a significant portion- 34.66 % saved money and ornaments before going to cyclone shelter. On the other hand, 15.33 % respondents tried to save their domestic animals and crops. Moreover, some people reserve important medicine for first aid and combating various diseases during disasters like cyclone.

### Findings & Discussion

From the study, several generalizations can be made. It is evident that disaster is a recurrent feature in Bangladesh. Disaster brings different types of vulnerabilities in the study area. The people of the study area take various adaptation strategies to combat the disaster induced vulnerabilities. The sample of the study area consists of 150 respondents of which 65.3 percent are men and 34.7 percent are women. A major portion of the respondents are literate (about 42%) in which male outnumbered their female counterparts. In case of illiteracy about 29% are male while the share of the female is about 25%. A significant number of the

respondents (more than 20%) are engaged in household activities. Besides this, more than 29% of respondents are day laborers. Along with these activities the respondents of this area are involved in agricultural activities (46.6%) and earn their livelihoods as farmer, fishermen, day laborers and small businessman.

People are not susceptible to reach cyclone shelter do to various reasons. In this study a considerable number of respondents 52% reported that, they have to pass half- kilometers to reach cyclone shelter, while majority 67% of them reported that, it was long distance (one or more than two k.m) from their house. Furthermore, it is also evident that, 28%t of respondents said that, they have aversion to go cyclone shelter due to having old and female members in their house and others respondents avoid shelter because of their ornaments, domestic animals and various crops.

In general, women face theft, robbery, eve teasing, murder and sexual harassment in cyclone shelter. It is evident that the situation of the women in shelter is more vulnerable than men. They not only encounter social problems but also suffer from human covetousness during disaster in cyclone shelter. In the study area 141 of total respondents said that, women were torture mentally or physically. Sometimes they are rape said 17 people and they also faced sexual harassment and Eve- teasing said 25 and 47 people respectively. As a vulnerable people they also suffered from mental torture in cyclone shelter. Such kinds of violence enhance women's depression, stress, and emotional strain in future. Besides these, divorce and separation are seen in the locality. As a social being women are to stay together in cyclone shelter. They suffered from insecurity and health problem regarding these difficulties. The people of the study area are living shelter with short and long time. Since they are experiencing to live with shelter, they adopt some strategies before going to shelter they cope with the shelter related vulnerable situations. It is evident from the study area that, for the adaptation strategies the community people are involved in preserving dry foods, preserving seeds for agricultural land and storing medicine.

Food crisis is the most visible in the study area due to recurrent feature of disaster in cyclone shelter. As they are habituated with the situation for a long time so to adapt with the food crisis the community people take some actions such as preserving dry food, preserving seeds for agricultural land, taking relief from government and different NGO'S and selling domestic animals.

**Figure-2:**

**Key Finding at a glance**

- The closer the cyclone center is located from the household, the higher the probability of accessing the facility during disaster
- Absence of arrangements of aged and female members of the community creates apathy about the cyclone shelters
- There are uncertainties of safety and security of the females, livestock and other valuable properties at cyclone shelters during the disaster period
- The accommodation capacity of the existing cyclone shelters are inadequate
- The cohabitation of male and female in a common space at the cyclone shelter is contradictory to the gender ideology of our society
- There is no special arrangement for pregnant women and seriously ill individuals at the cyclone shelter
- Food and pure water supply facilities are inadequate at the shelters
- There are disparities in terms of distribution of resources during the disaster situation
- Deviant behavior, specially targeting the women, becomes more frequent due to lax in monitoring by the local authority or community leaders

Overall, we would like to conclude by saying that cyclone shelter gives lot facilities like protect human life, saves valuable asset, Domestic animals, and so on but these opportunities were very less. Because, the large number of people are living in the vulnerable disaster prone area. Capacity of cyclone shelter is very less. There are, however, women in cyclone shelter tolerated from various problems of sexual harassment, eve-teasing, husband beating, rape, and sometimes they also suffered from mental torture. Apart from these, sanitation and other facilities were not so good at all. Government also forwarded relief assistance to the disaster affected people after disaster. The relief materials that they received from the government are seeds, fertilizers, loan without interest and food. Except from providing these relief materials, the government ensures them tin, cement and pillars for their rehabilitation. The study digs out that, the respondents encounter different problems including nepotism, donation, procrastination, harassment, politicization and localization to received rehabilitation facilities.



## Recommendations

Based on the field experience, the study identifies few scopes for further development of the situation of the cyclone centers as following;

- Cyclone center should be built within one kilometer from the residence of the cyclone victims
- Cyclone shelter should be designed keeping contact with the cultural and gender ideology of the local community
- Amenities like locker/volt, sick room, kitchens, toilets, bathrooms etc. should be increased
- Coordinated monitoring by local community leaders and government agencies is required for controlling deviant behavior during disaster period
- Arranging more awareness and training programs for accessing and utilizing the cyclone center facilities
- Increasing the accommodation capacity of the cyclone centers including human and livestock

## Conclusion

Natural disaster like cyclone is a common phenomenon to the life and people of coastal zone of Bangladesh. Historically, people of this region have developed a substantial level of resilience from their cultural traditions. But, the effect of climate change is frequently challenging their capacities to combat with natural disasters nowadays. In this regard, government interventions like cyclone shelter facilities have no alternatives since the local communities cannot construct those by themselves due to their economic insolvency. But, without connecting the local communities, building those shelters may not benefit the target group up to the maximum level. The present study showed some micro perspectives of this aspect where they faced many problems after availing the facilities of the existing cyclone shelters. The challenges found in the study may not be the same in other disaster prone areas but the differences would not be so much since the people of the coastal zone of Bangladesh belong to very similar cultural geography. Definitely there are huge scopes for further studies in the respective field to grasp macro level data for having generalization from the larger population that may have direct policy impact at the state level. In fact, that is very urgent since the people of the coastal region of Bangladesh are becoming more vulnerable day by day due the effect of climate change.

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