WOMEN’S VULNERABILITY AND COPING STRATEGIES IN CYCLONE PRONE COASTAL AREAS OF BARGUNA DISTRICT

Saadi Islam
Hafiza Khatun

Abstract: The study is an attempt to evaluate the vulnerability and coping strategies against cyclones among women of Barguna District. Five Upazilas of Barguna District have been selected for this study. The questionnaire survey on randomly selected samples was followed for data collection. Both primary and secondary data have been used in the study. Most of the women have faced at least one cyclone in last one decade. Even though they are not alert, they do not have enough resources or savings to overcome the damage from a disaster. They did not have opportunity to participate in any sort of training related to a cyclone risk assessment. However, the women of the study area have been adopting different coping strategies over time to combat cyclone disaster on their own. The study also shows that women used to collect and store vegetables from farmland before cyclone, arrange materials for house repairing after the cyclone, preserve dry food and sell jewelries in case of emergencies to accumulate funds in order to recover cyclone damages.

Keywords: Cyclone, Vulnerability, Women, Coping Strategy, Barguna

INTRODUCTION

Bangladesh, a disaster prone country faces almost every year a number of natural disasters including tropical cyclones, floods, riverbank erosion, tornadoes, droughts, tidal surge, etc. and are badly affecting the livelihood of the people of the country especially in the coastal zone (Islam 2011; Alam, 2005). It is a low lying delta with very gentle slopes and is located at the lowest end of the Ganges, Brahmaputra and Meghan Basin (Roy et al., 2009). Due to the climatic factor, Bangladesh is the worst victimized country of cyclones, having the highest number at loss of lives and properties (Nizamuddin, 2001). The coastal areas of Bangladesh with a total of 19 districts accommodating around 40 million people are vulnerable to devastating cyclones and facing one or two cyclones every year (CPD, 2000; Banglapedia, 2012). Meanwhile, the country has experienced some massive cyclones (e.g. cyclones of 1970, 1991, Aila, Sidr etc.). In 1970 cyclone, around 300,000 people died while nearly 140,000 were killed in cyclone 1991. Cyclone Sidr killed about 3,447 people while 423 people died in Barguna in 2007. In 2009 cyclone Aila killed 190 people and 2,90,327 were affected. Cyclone Mohasen occurred in 2013 and approximately 1.2 million people were affected but death toll was very insignificant. Cyclone Mora occurred in 2017 in which, at least 20,000 houses were damaged and 9 people were killed across Bangladesh (BMD 2017).

* Saadi Islam, Postgraduate Student, Department of Geography and Environment, University of Dhaka 1000, Bangladesh
** Hafiza Khatun, PhD, Professor, Department of Geography and Environment, University of Dhaka 1000, Bangladesh
Women are the most vulnerable to disaster for many reasons, their physical attributes, social issues, mental attitude are among many others. There are a lot of problems and lackings in this backward and outdated disaster management systems of these areas. Even though these vulnerable women did not get the proper support and opportunity to receive any training on disaster management from the Bangladesh government and non-government authorities, their indigenous coping capacities are truly impressive and appreciable. As a victim of cyclone, sometimes women are compelled to migrate from their village home to different metropolitan cities as member of a family or head of a family (Islam 2011). Most of the time, they become part of floating population. It triggers different sorts of problems in urban areas like unemployment, criminal activities, traffic jam, etc. (DMB, 2009). Though disasters do not discriminate but socially constructed role of women makes them the vulnerable group during a disaster. Because women have less access to resources, they become the victims of the gendered division of labor. They are primarily responsible for domestic duties and they do not have the liberty of migrating to look for work following a disaster (World Bank, 2005). The differentiated impact of cyclones on men and women is primarily caused by the existing gender inequalities. In Bangladesh, women tend to have more limited access to physical, financial, human, social and natural capital such as land, credit, agricultural inputs, decision making bodies, technology, extension and training services which would all enhance their capacity to adopt (Islam, 2011). And in the coastal areas of Bangladesh, the situation is worst (Soussan and Anjan, 2002). Over the last decade, the disaster management sector in Bangladesh has experienced an influx of new concepts and approaches. The government took a number of significant steps during the last few years for building up institutional arrangements from the national to the union levels for effective and systematic disaster managements, facilitating mitigation to the sufferings of cyclone victims (Islam 2011). Studies show that 80-90% of global losses and 53% of total cyclone-related deaths worldwide occur in Bangladesh (Ali 1999; World Bank 2013). About 40% of deaths related to cyclone have been recorded in Bangladesh in the last two centuries (Nicholls, 1995). In addition to the geophysical characteristics of the Bangladesh coastlines, the poor socioeconomic conditions of coastal inhabitants also contribute to increasing the vulnerability of inhabitants to cyclones and storm surge (Paul, 2009). The livelihoods of coastal populations are highly dependent on ecosystems linked with agriculture, forestry, fishery and salt farming etc. Therefore, the increasing trend of cyclones will certainly affect the livelihoods of vulnerable populations living in low lying coastal Bangladesh (Mian, 2005; Islam, 2008). The present study aimed at assessing the vulnerability of women and their coping strategies during cyclone in one of the cyclone prone coastal areas of the country and highlights some suggestions for the policy makers to address women’s vulnerabilities (Khatun and Islam 2015).

**STUDY AREA**

Barguna District is situated in the southwestern part of Bangladesh, on the south bounded by the Bay of Bengal with the total area of approximately 1831.31 km². It is located within latitude 21°48’ N - 22°29’ N and the longitudes 89°52’ E - 90°22’ E. It is bounded on the north by the districts of Jhalkathi, Barisal, Pirojpur and Patuakhali. In the east, it
borders the Patuakhali District. On the south, Barguna is bounded by the Patuakhali District, and the Bay of Bengal. On the western side, it borders Pirojpur and Bagerhat districts. Important rivers of Barguna district include the Payra River, Bishkhali River and the Baleshwar River. The Barguna District has six upazilas. They are Amtali, Bamna, Barguna Sadar, Betagi, and Taltali. Barguna’s economy is primarily dependent on agriculture. Being a coastal district, Barguna has a thriving fishing industry. As of 2011 Barguna District had an overall population of 892,781 with a population density of 488 persons/km². Females constitute a majority of the population with 455,368 (51%) while males constitute 437,413 (49%) (BBS, 2012). Figure 1 shows the study area and women population 2011 in Barguna District.
AIM AND OBJECTIVE

The primary aim of this study is to assess the vulnerability and coping strategies adopted by women in cyclone disaster. Cyclones are not an unfamiliar scenario in Barguna but over time the severity of this problem is increasing. The present study is factored upon the following objectives in order to achieve the broader goals mentioned below.

- To explore women’s vulnerability in cyclone disaster in Barguna district.
- To assess different coping strategies of women in cyclone disaster.

MATERIALS AND METHODS

Five upazilas of Barguna District have been considered for this study. To assess the vulnerability and coping strategy of the cyclone among the women of Barguna, a questionnaire survey has been conducted in January to March 2016. The questionnaire was designed with a series of open and close ended questions. Both quantitative and qualitative data have been collected and have been used to achieve a better understanding of the vulnerability and formulate a few coping strategies adopted by women of Barguna district. A simple stratified random sampling technique has been adopted for selecting the respondents from the population of the study area. The required data and information were collected from the study based on the results of a questionnaire survey of 100 randomly selected women. In five study upazilas, 13 women from Betagi, 9 from Bamna, 31 from Amtali, 29 from Barguna and 18 from Pathargata were selected. FGD and a few case studies have been conducted for better understanding of the vulnerability and coping strategy. The respondents were from different ages and occupations which enabled the study to facilitate comparison of the perceptions of women from diverse backgrounds. Secondary data were also collected in the form of qualitative and quantitative information. Collected data from the questionnaire survey were encoded digitally and statistical analysis was done by the Statistical Package for the Social Science (SPSS). Finally the analyzed data were integrated and presented as qualitative text.

Women’s Vulnerability and Coping Strategies in Cyclone

A vast majority of the population who are victimized by the cyclone in Bangladesh are women. The prime reason behind this situation is deeply rooted in the societal, cultural and economic environment of the country. Women are dependent on men in all aspects of life as a result they are unable to make decisions on their own.

Early Warning of Cyclone

From the survey, it is found that almost all of the respondents faced cyclone of different intensity in Barguna District. However, women’s current access to the cyclone early warning system is crucial because of their high fatality rate during cyclone. Majority (80%) of them received the warning signal through radio followed by neighbors, local volunteers and others. Which means some of the women did not get warning signals of the cyclones. This is mainly due to the lack of modern weather forecasting technology, likely radio, TV and so on. Hence, they are pushed into facing a natural disaster like a cyclone in a totally vulnerable position.
Availability and Use of Cyclone Shelters

As a strategy to provide a safe place during the cyclone, the Government has constructed cyclone shelters all along the coastal area to provide a safety net to the cyclone affected people. These cyclone shelters provide a vital first line of defense against a natural disaster. Table 1 presents the points endorsed by the study of women when they have been asked about the distance of nearest cyclone shelter.

<table>
<thead>
<tr>
<th>Distance to Nearest Cyclone Shelter (km)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1</td>
<td>58.0</td>
</tr>
<tr>
<td>1 - 3</td>
<td>26.0</td>
</tr>
<tr>
<td>3 - 6</td>
<td>6.0</td>
</tr>
<tr>
<td>6 - 9</td>
<td>5.0</td>
</tr>
<tr>
<td>9 - 12</td>
<td>1.0</td>
</tr>
<tr>
<td>&gt; 12</td>
<td>4.0</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Field Study, 2015

About 58% women said that nearest cyclone shelter is located less than 1 km from their house, about 26% women said 1-3 km and only about 4% said more than 12 km. These results are showing that most of the cyclone shelters are not very far from regular households.

On the other hand, the survey data explored that about 81% women admitted to having a cyclone shelter in their area and the rest did not have any. The term “their area” means close to, within walking distance, from their houses. It indicates that about one fifth of the women of Barguna district do not have or they do not feel like having an opportunity to go to cyclone shelter for survival. It is also observed that even with the availability of cyclone shelter in the vicinity usually women tend to go to the cyclone shelters at the last possible moment because of lack of security, proper toilet facilities and other problems. Despite all these facts highest percentage (40%) of the women took shelter in cyclone shelter followed by other safe place and educational institutions, more specifically schools. Figure 1 presents the places where women usually take shelter for safety during cyclone.

The result shows that most of the women prefer to go to cyclone shelters and other safest places like educational institution during cyclone. However, absence of a cyclone shelter in the vicinity and lack of appropriate facilities in the shelters push significant percentage of them in vulnerable situations during cyclone where they take up other options of safety. However, Rezwana (2018) observed that the cyclone victims remain in dilemma and confusion and do not leave their houses until they can survive and that enhanced their vulnerability during the disaster.
The local people, afraid of theft, postpone their movement to the shelter to the eleventh hour, mainly to when they have no other options left. The survey data identified that only 2% women admitted that they received every available facility such as medicine, relief, first aid, sanitation, water, food like other male members at the shelter and about 98% women did not get all the facilities equally. Socioeconomic status seems to be the determining factor in getting facilities in the cyclone shelter, even during the time of cyclone. For obvious reasons majority of the women felt discourage about to go to cyclone shelter until the last moment. As a result they remain vulnerable even when they have the opportunity to rush to the cyclone shelter situated in a short distance.

Women’s Safety Issues
Unsafe means lacking in security or safety. The survey data reveals that, only about one fifth of the women population did not face any unexpected situations at the time of the cyclone but majority of them felt unsafe during the cyclone at home or in any other place. They faced various kinds of unexpected events at the time of crisis such as robbery, sexual harassment and mental harassment. As a coping strategy, sometimes groups of women provided security to younger ones in the community.

Health and Sanitation Status
A disease is a particular abnormal, pathological condition that affects a biological organism. The survey data explored that, about 89% women suffered from many different diseases in the study area. It is observed that, almost all the women have been attacked by various diseases during and after disaster. About 68% women suffered from fever, about 12.4% from various skin disease and about 4.5% from many other forms of diseases. Lack of medical care, malnutrition, contaminated drinking water and proper sanitation were the most common scenario during and after the disaster.
Medicine is the science behind the diagnosis, treatment, and prevention of all sorts of diseases. The survey data pointed out that, about 18% women got first aid only after cyclone and the rest 82% women left out to deal with it by themselves. The results clearly show that most of these women were deprived of medicine after cyclone. The mentioned facts were endorsed by the lucky 18% women when they were asked about the source of their medicine after cyclone (Table 2).

<table>
<thead>
<tr>
<th>Source of Medicine after Cyclone</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>33.3</td>
</tr>
<tr>
<td>NGOs</td>
<td>16.7</td>
</tr>
<tr>
<td>Government and NGOs</td>
<td>5.5</td>
</tr>
<tr>
<td>Local Organization</td>
<td>27.8</td>
</tr>
<tr>
<td>Others</td>
<td>16.7</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 2 shows that about 33.3% of medicines came from the government, about 16.7% from NGOs and about 27.8% from local organizations. These results are showing that highest percentage of the medicine after cyclone comes from government which is closely followed by local organizations. These local organizations can be government, non-government or local volunteer organizations.

First aid is the immediate first response of medical assistance given to a person suffering a sudden illness or injury, with care provided to preserve life, prevent the condition from worsening and initiate recovery. The survey data stated that, about only 14% women get some sort of first aid after cyclone while the rest 86% women does not get any type of first aid, which means most of the women do not get any type of first aid. The survey data also explored that, about 35% women receive their medical treatment sponsored by the Government, about 42% from NGOs and about 21% women get from local organizations. Latrine refers to a toilet or a simple facility which is used as a toilet within a sanitation system. The survey data explored that, an about 88% woman had access to a proper sanitary toilet and about 12 % women had not. There are no separate latrine facilities for women in public cyclone shelters. It clearly indicates just how vulnerable the situation of women is. Women and adolescent girls suffer the most from cyclone affected, broken sanitary systems.

**Access to Post Disaster Support**

Poor single women, who were unable to leave their houses or the cyclone shelters, failed to collect their portions of relief goods. Most of the women also mentioned that they faced unexpected events during relief collection such as theft, robbery, sexual harassment and discrimination. Despite all these difficulties, some women went to collect their relief goods. The survey data reveals that, only about 40% women get some type of relief and 60% women are deprived of relief after the disaster. Relief is available to women in
theory, but practically only a few actually get it. The following points are endorsed by the 40% women when they were asked about their source of relief (Table 3).

**Table 3: State of Relief after Cyclone**

<table>
<thead>
<tr>
<th>Source of Relief</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Agencies</td>
<td>45</td>
</tr>
<tr>
<td>NGOs</td>
<td>15</td>
</tr>
<tr>
<td>NGOs and Government (both)</td>
<td>15</td>
</tr>
<tr>
<td>Local Institutions</td>
<td>15</td>
</tr>
<tr>
<td>Others (e.g.)</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

*Source: Field Study, 2015*

Table 3 shows that about 45% of them got relief from the government, about 15% from NGOs. They also mentioned that available relief goods were insufficient. The survey data explored that among those who could collect relief about 34% them had to face deprivation and misbehavior during relief collection. These results narrate the reasons why most of the women chosen not to go for relief collection.

The survey data reveals that, about only 15% women got help from NGOs right after cyclone. The help cover clothing, medicine, drys food and fresh drinking water. Different NGOs for example, Bangladesh Red Crescent Society, Oxfam, Care Bangladesh, Action Aid, UNDP, Islamic Relief and BRAC are continuously providing support to address cyclone risk reduction in the survey study area.

**Women’s Participation in Training**

Cyclone preparedness training program is essential in order to save lives, to reduce the chances of losing personal properties and so on. Cyclone preparation training is absolutely necessary for all women. However, the survey data explored that in the study area only about 7% women got the opportunity to participate in a training exercise related to cyclone preparations, provided by NGOs, government, local organization and others. It is also evident that, among those lucky receivers only about 28.6% women got their training from government, about 14.3% from NGOs, about 42.9% from local organizations, about 14.3% from others. Based on these findings, it can be concluded that a lot more of training facilities on disaster management is needed to make most of the women of the study area less vulnerable than they are now. So, the relevant organizations must give special attention on the participation of women in their programs to reduce vulnerability of women, indirectly targeting the majority of the population covering women as a whole and the children who are very much vulnerable within the community.

**Economic Conditions**

Economic conditions are considered to be sound or positive when an economy is expanding, and are considered to be adverse or negative when an economy is contracting. The survey data identified that, about 50% women said NGOs were very helpful in
changing the economic condition of their family. The NGOs are increasingly participating in cyclone risk reduction by enhancing the socioeconomic conditions of these families. NGOs specially extend their help in rebuilding houses, providing free medical treatment, free food, clothing etc. in order to change their familial economic condition.

**Living Conditions after Cyclone**

Women plays multifarious roles in rejuvenating their family after the devastation done by a cyclone by collecting or arranging the basic needs of the family members and also managing the saved resources. These include safe drinking water, food, house material for shelter and management of resources to fulfill other daily needs and reestablishing the regular livelihood.

Dry food seems to be very commonly to be consumed right after the cyclone. It is observed that about half of the women along with their family took dry and cooked food right after the cyclone. On the other hand about 29% women took dry food, about 24% women took cook food and about 6% women took other forms of food.

As part of Bangladeshi rural area cultures, women have the sole responsibility to collect safe drinking water for the family. The survey data also reveals the same result. About 84% of the sample women collected the drinking water for their family after the cyclone. Women used alum, water purifying tablets for purifying water. The survey data explored that an overwhelming majority of the respondents (about 94%) women mentioned that tube-well is the source of drinking water of their family after cyclone. In addition, the respondents also mentioned river, canal, ditch etc. as the source of their drinking water.

The survey data explored that, about 67% women cultivated vegetables in their yard and they choose such vegetables to cultivate which has comparatively more susceptibility than others. The saved vegetable seems to be the immediate source of food right after the cyclone. Based on the survey data it can be concluded that they use vegetable cultivation as strategy to cope with cyclone.

The survey data explored that, about 61% women collected vegetables or fruits besides farmland after the cyclone. These results are showing that most of the women collect vegetables or fruits.

It is always a women’s responsibility to collect food and to decide what will be served each day. Figure 2 presents the source of collecting food after cyclone.
Figure 2: Source of Collecting Food after Cyclone

Source: Field Survey, 2015

Figure 2 is showing that about 66% women said that they managed the food for the family after cyclone by self-cooking, about 18% collected from the market. These indicate that most of the women cooked after cyclone from the materials either she had saved or preserved before the cyclone or collected just after the cyclone. These contributions of women after cyclone are very important for the family.

In response to the source of fire wood about 9% women said that they collected the firewood for cooking from the market, about 60% said from the surrounding area, about 26% of tree cutting, about 4% from old furniture and about 1% from another source. These results indicate that most of the women collected firewood from the surrounding area. After cyclone firewood is very important for family cooking.

Drying food is a method of food preservation that removes enough moisture from the food so that bacteria, yeast and molds cannot grow on it. About 68% women could preserve different kinds of dry food before the cyclone to meet immediate need after the cyclone and 32% women could not store dry food for combating the cyclone due to their poverty. Most of these women could store dry food like dry fish, flattened rice, puffed rice, brown sugar and so on. Most of the women used some techniques such as air drying, sun drying, solar drying, vine drying, salt and pasteurization. They usually preserved rice, egg, pulse, oil under soil and the top of the roof of their houses.

The survey data also explored that among those who preserved different kinds of food. Only about 14% of those women could preserve different kinds of food grains before the cyclone and rest could not store food grains for combating the cyclone due to their poverty. These results indicate that most of the women could not store food grains. As a result, after cyclone the vulnerability of women increases.
As part of basic survival amenities women also arrange the housing materials right after the cyclone. About 53% women arranged the materials for house reconstruction after the cyclone and about 47% women did not. These results are showing that most of the women arranged the materials for house reconstruction. The survey data also explored that, about 47% women arranged some materials for house reconstruction. Most of the women repaired or reconstructed houses with their own resources such as plastic, jute sack, wood, bamboo, tin, iron, roof and cloths to cover the rooms and roofs of their houses.

**Coping Strategies**

Among the respondents about 66% women maintained a good relationship with neighbors, about 29% maintained medium, about 3% had bad and about 2% had no relation with their neighbors. These results indicate that most of the women had a good relationship with neighbors. As a result, women got support from neighbors during and after the cyclone or they joined together and form a team to help each other. Women had knowledge about certain medicinal trees and they used herbs, roots, and barks to cure family members from different types of diseases in a cyclone time. The survey data explored that, about 97% women took care of the family member’s health after cyclone. These kinds of contributions of women are very important to reduce cyclone damage risk.

Some assets such as ornaments, livestock and household items are more likely to be sold than others during a cyclone crisis. The survey data explored that, about 88% sample women of Barguna District sold their livestock and ornaments to help their family after the cyclone. Insurance is the equitable transfer of the risk of a loss, from one entity to another in exchange for payment. It is evident from the survey that about only 16% women had savings to overcome cyclone and 84% women had no savings to overcome the destruction of cyclone. The result shows that, the women in Barguna District are not economically prepared to overcome the after cyclone stage.

The contributions of women during cyclone are crucial. Without or little support, women face the challenges from the cyclone with whatever resources they have in-hand. It is observed that most of the women helped their family to overcome the cyclone damage. Such as they repaired or reconstructed houses with their own resources. Women had the sole responsibility to collect drinking water and made it safe. Women and girls provided health support to sick family members. Some women took loan, food from relatives or neighbors. A group of women provided security to young women and girls in the community. After cyclone most of the women cooked food for their family members. Some women sold their domestic animals and ornaments to help family members after cyclone.

**CONCLUSION AND RECOMMENDATIONS**

Women are the worst victims during a cyclone. They get the warning signal at the eleventh hour of the cyclone disaster and cannot leave the house immediately. Most of the women do not have any training on Disaster management or coping with cyclone and have not enough resource or savings to overcome the destruction of cyclones. Lack of awareness and preparedness increases the risk of vulnerability during cyclones. It
is impossible to stop the natural disasters, like cyclone but enhancing the coping strategies with cyclone can remarkably lessen the effects. Since women take care of the families they deserve special attention during and after any disaster specifically from natural disasters like cyclone. It is evident from the field that combating women’s vulnerabilities certainly lessen the impacts of cyclones at household levels. Therefore, in order to achieve overall sustainability in the study area, an urgent risk reduction program to address women’s vulnerability to cyclone in the study is essential in no time.

REFERENCES
BMD, (2017). Bangladesh Meteorological Department, Ministry of Defense, Govt. of People’s Republic of Bangladesh.