IOSR Journal of Humanities And Social Science (IOSR-JHSS)
Volume 26, Issue 8, Series 8 (August. 2021) 14-21
e-ISSN: 2279-0837, p-ISSN: 2279-0845.
www.iosrjournals.org

Adaptation Strategy of Flood Affected People at Kaunia Upazila in Rangpur District

Mirza Amirun Nesa[1], Dr Shifat Rumana[2], Muhammad Anwar Hossain[1]

1. *Assistant Professor, Department of Sociology, Begum Rokeya University, Rangpur, Bangladesh.*
2. *Associate Professor, Department of Geography & Environmental science, Begum Rokeya University, Rangpur, Bangladesh.*

ABSTRACT
Bangladesh is a natural hazard-prone country in the world, and flood is considered the number one natural hazard. Different intensities and types of floods occur each year in this country because of its geographical location and physiographic and climatic conditions. The present study represents the adaptation strategy against flood in a flood-prone rural area of the Teesta River basin. The study was conducted in the Godai village of Kaunia Upazila in the Rangpur district. The major objective of the study is to investigate various flood management and mitigation activities undertaken by the Government and non-government organisations. The research method adopted in this study is exploratory, descriptive, and analytical in nature. Primary and secondary data have been used to reach the research goal. The study highlights the major flood management and mitigation strategies. Then it investigates and analysed the flood management activities in the study area and people's satisfaction level on such activities. The study suggested a comprehensive approach and fruitful adaptation measures to reduce the frequency and intensity of floods as well as to improve the living standard of flood-affected people in the rural setting.

KEYWORDS: Flood, Vulnerability, Adaptation, Kaunia Upazila.

Date of Submission: 18-08-2021 Date of Acceptance: 02-09-2021

I. INTRODUCTION

Bangladesh faces different types of natural disasters every year. The geographical location and physical setup of this country are very favourable for natural disasters, particularly for the flood. Besides, infrastructural condition, socio-economic backwardness creates an unsafe condition for people. The geographical conditions and economic underdevelopment jointly turn the flood into a flood hazard.

Bangladesh is a land of many rivers and is experiencing heavy monsoon rains. Flood is a frequently occurring phenomenon in Bangladesh, and it creates a severe problem and is considered the main threat to the life and livelihood of the people of Bangladesh. The country is subject to inundation by overflow during the rainy season due to drainage congestion, rainfall-runoff, and tidal storm surges. Each year around 20.5 percent (3.03 million hectares) of the country's land inundates in floodwater (Chowdhury, 2001; Mirza et al. 2001). As most of the people of Bangladesh live in the village, their livelihoods are directly or indirectly dependent on agriculture and land (BBS, 2003). The flood has severely affected their livelihood as most of the surface land is flooded everywhere during the rainy season (Milliman et al., 1989).

Women and children are the most vulnerable during disasters. During the 1998 floods in Bangladesh, the women faced difficulties gaining access to basic sanitation as most latrines submerged under floodwaters. Women with their family members have resorted to a number of different measures to cope with adverse situations during the flood (Rashid, 2002).

Floods could give some benefits as it makes land fertile and leads to an increase of agricultural production. However, in Bangladesh, flood is not a normal phenomenon; it takes the form of disaster. During floods, it creates scarcity of drinking water as the surface got contaminated. Cases of diarrhoea, cholera and other waterborne diseases increased remarkably during and after floods (Brower et al., 2007). In terms of damage by flood, the situation is getting worse day by day (Smith and Ward, 1998). It also has the potential to exact a huge impact on the health of the human population and different problems in the different phases of floods (Rogers et al., 1989).

The present study represents the adaptation strategy against flood in a flood-prone rural area of the Teesta River basin. The major objective of the study is to investigate various flood management and mitigation

activities undertaken by the Government and non-government organisations. Then it investigates and analysed the flood management activities in the study area and people's satisfaction level on such activities.

II. MATERIALS AND METHODS

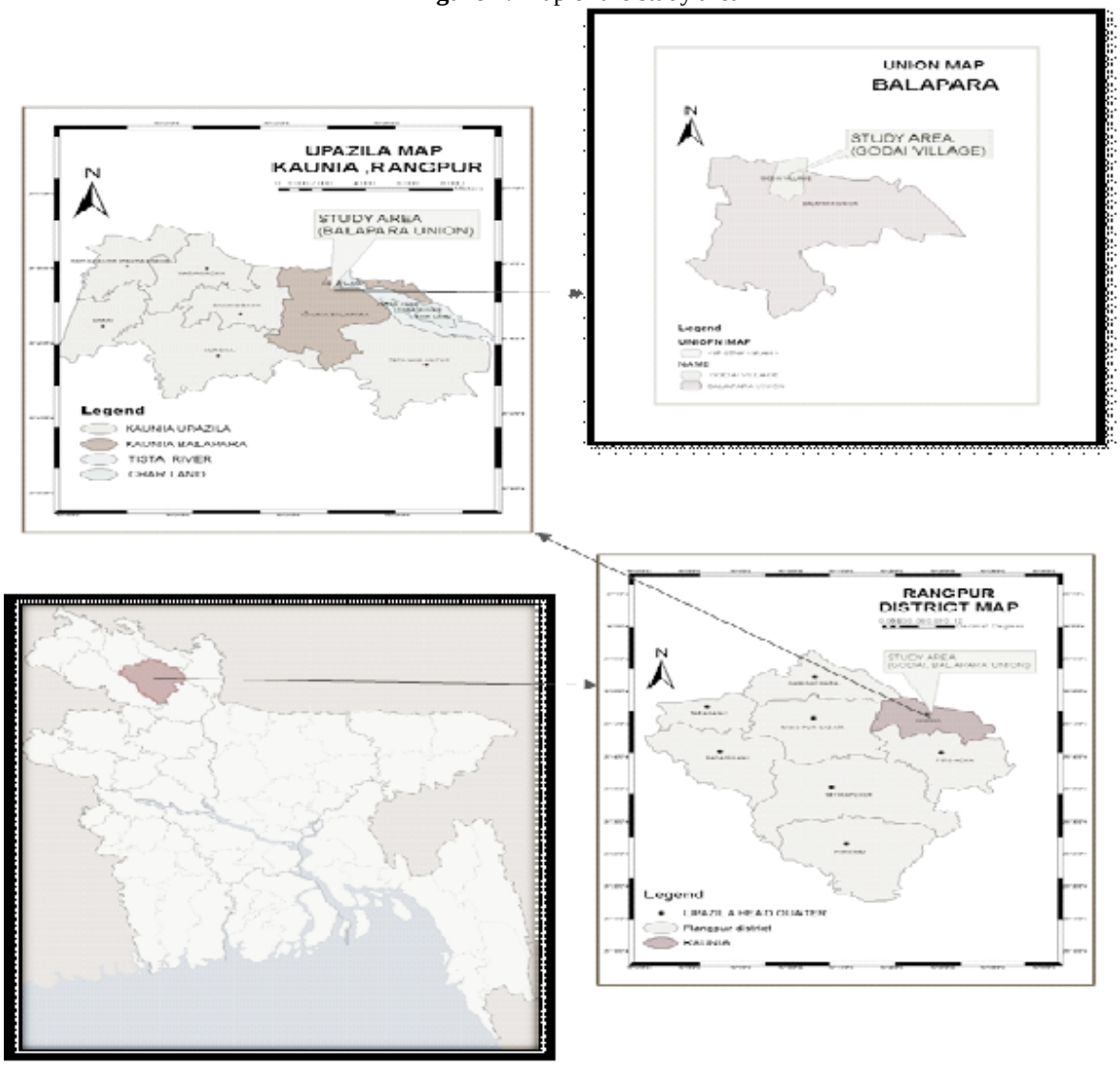
2.1 Description of the study area

Godai village was selected for the study, which is located at Kaunia Upazila in the Rangpur district. The area was selected mainly to outline the factors responsible for flood disasters and find out people's coping strategies to mitigate flood hazards. The study area covered the flood-prone in the northwest part of Bangladesh. Kaunia Upazila is located between 25 °42' to 25°50' north Latitudes and between 89°18' and 89°30' east Longitudes. The total population of this Upazila is 214317. The Upazila is surrounded by Gangachara and Lalmonirhat Upazila in the North, Pirgonj Upazila in the south, Lalmonirhat Sadar and Rajarhat Upazila in the East and Rangpur Sadar Upazila in the west.

2.2 Justification of the study area

Kaunia Upazila is located near to Teesta River. Thus, heavy rainfall causes the overflow of river water and causes riverbank erosion with floods. These conditions lead that it's a disaster-prone area. The site for the study was selected in the Godai village, which is located at Kaunia Upazila in the Rangpur district. The area was selected mainly to outline the factors responsible for flood disasters and find out people's coping strategies to mitigate floods.

Figure 1: Map of the study area



2.3 Methodology

In this study, it has been tried to find out the flood management and preparedness activities in different phases of flood in the selected area, besides an attempt has been conducted to explore and evaluate the victim people's opinion needs and satisfactions in the study area. One village was selected as the study area from Balapara union at Kaunia Upazila of Rangpur district. The village was taken to consideration based on its characteristics and purposively. The sample size of this village was selected from 'Guide to minimum sample size' by R.V. Krejcie and D.W. Morgan. The total sample size was 152 households. Both primary and secondary data were used to fulfil the research objectives. Primary data was collected from reconnaissance surveys, questionnaire surveys, field observation and informal discussion. On the other hand, secondary data was collected from various journals, articles, different types of thesis reports, and the internet. Different types of descriptive statistical methods have been applied to analyse the data and represent it. Besides, Arc GIS (Arc map 10) software has been applied to show the location of the study area.

III. RESULTS AND DISCUSSIONS

Coping strategy means people or organisations use available resources and abilities to face adverse consequences that could lead to disaster. In general, this involves resources, both in normal times as well as during crises or adverse conditions. This strengthening of coping capacities usually builds resilience to withstand the effects of natural and human-induced hazards vulnerability is seen as a function of susceptibility to loss and the capacity to recover. The coping capacity may vary global, regional, national, local and community and ultimately the household level. Gender, religion, education, and income may also affect coping capacity. The study collected data to discuss the household level coping capacity and vulnerability to flood disaster in the study area.

3.1 Socio-demographic information about respondents

The table shows the age, educational qualifications, and occupational status of the respondents. Most of the respondent's (29.6%) age is between 41-50 years old. In the study area, 26 percent are illiterate, 26.2 percent have completed primary school, and 21 percent have completed class eight. The majority, around 46% of the total respondents, are farmers. The farmers are more in the research area. On the other hand, dependent/ unemployed/ student respondent is 19.7%.

Table 1: Demographic information of respondents

Sl no.	Socio-economic information	Percentage (%)
	Age group	
01	20-30	19.6
02	31-40	26.5
03	41-50	29.6
04	51-60	17.7
05	60+	6.6
	Educational qualification	
01	Illiterate	26
02	Primary	26.2
03	Class eight pass	21
04	SSC pass	11.8
05	HSC pass	9.7
06	Higher education	3.9
07	Others	1.4
	Occupational status	
01	Farmer	46
02	Housewife	16.4
03	Businessman	1.3
04	Service holder	3.9
05	Daily labor	11.4
06	Dependent/Unemployed/Student	19.7
07	Others	1.3

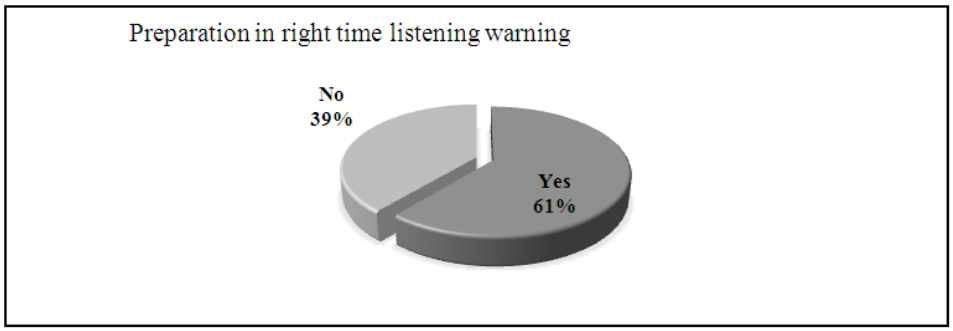
Source: Field Survey, 2019

3.2 Adaptation strategy of people for reducing flood hazard

3.2.1 Preparation in right time listening warning about flood

In the aspects of respondents, 61% said they were prepared at the right time listening to warnings about floods, and 39% said they were not prepared. It is seen that all people are not conscious of the forthcoming flood. Some respondents are conscious, and they prepare at the right time listening to warnings about the flood.

Figure 2: Preparation in right time listening warning about flood

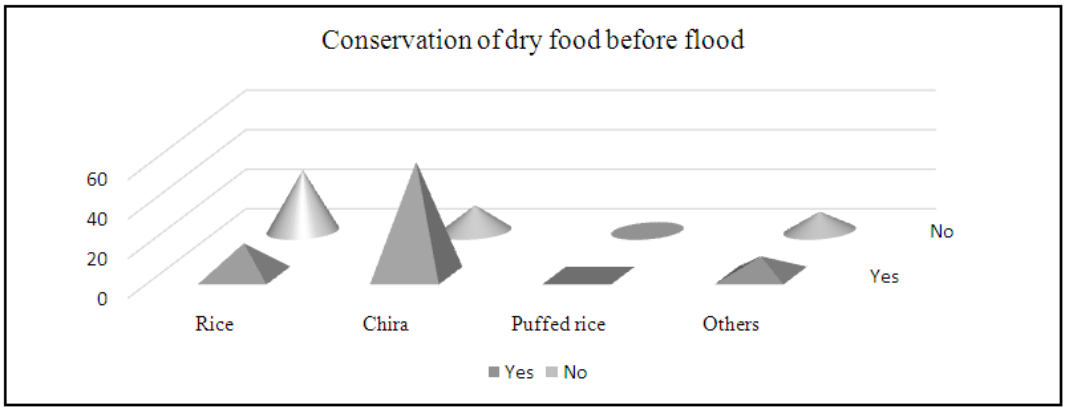


Source: Field Survey, 2019

3.2.2 Conservation of dry food before the flood

In the study village, most of the respondents conserve various types of dry foods for flood time. The dry food includes rice and flattened rice. About 57.7% of respondents preserve flattened rice before the flood, 16.4% of respondents conserve rice, and 9.8% of respondents conserve other dry food. Some respondents said that they did not keep any dry food before the flood.

Figure 3: Conservation of dry food before the flood

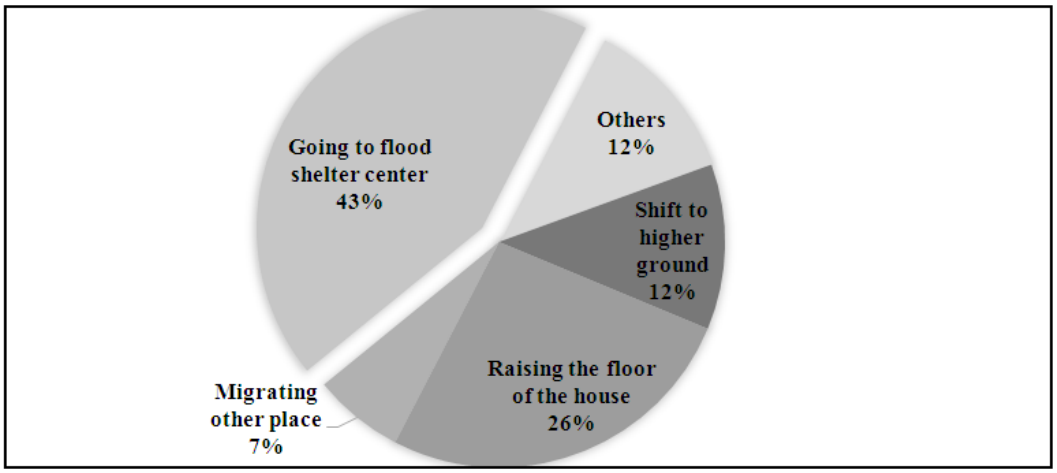


Source: Field Survey, 2019

3.2.3 Shelter during flood

In the flood-affected locality, first coping attempts start operations that are needed for survival. People take different measures to protect their life and property. It is found from figure 4 that out of a total of 152 respondents, maximum respondents (43%) said that they go to flood shelter centre in flood time, 26% raising the floor of the house, 12% shift to higher ground, 6% migrating to other places, and 12% said about others strategy for sheltering in during flood.

Figure 4: Shelter during flood

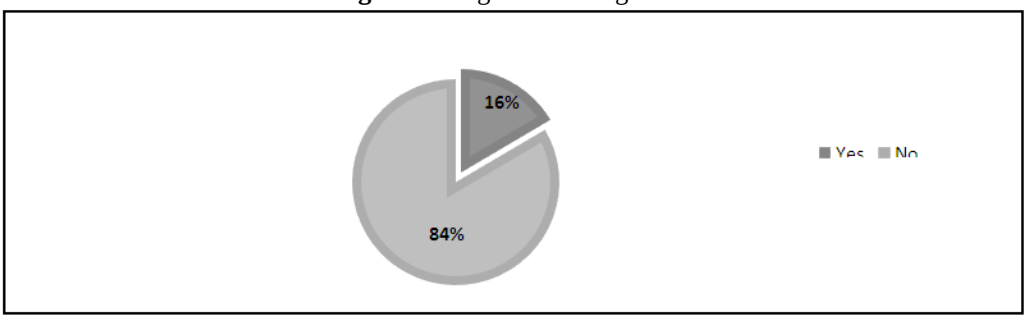


Source: Field Survey, 2019

3.2.4 Migration during flood

In the study place, some people were migrated because of the flood. 16% of the respondents said that their family members were migrated to another place for better work and better life standers. On the other hand, 84% of respondents said that their family members had not migrated due to the flood.

Figure 5: Migration during flood



Source: Field Survey, 2019

3.2.5 Water purifying system

Water is life. But polluted water is more harmful to the human body. In flooding time, water is polluted in different ways. So water purifying is essential for that time. There are some water purifying systems such as using the tablet, using fitkiri, and boiling. Among the respondents, 92.1% said that they boiling water for purifying during and after the flood, 3.2% said about using fitkiri, and 4.6% said about other systems.

Table: 2 Water purifying system during and after the flood

Water purifying system	Frequency	%
Using tablet	-	-
Using fitkiri	5	3.2
Boiling	140	92.1
Others	7	4.6
Total	152	100

Source: Field Survey, 2019

3.2.6 Sources of relief/help in the study area

The following table represents the opinion of the flood-affected people who got relief from different NGOs, Govt. organisations. Most of the respondents (during flood 30.9% and after flood 35.5%) said they didn't find and didn't get help or relief from any organisation in the locality. Floodwater washed away their belongings and assets. The following survey data shows that 26.3% of respondents got support from NGO's during the flood, and after the flood, this was 23%. 23% of respondents took relief from the Govt. organisation during and

after the flood; this was 29.6%. Besides this, some people were taken help or relief from students and teachers of university/college.

Table: 3 Sources of relief/help during and after the flood

Source of relief/ help	During flood		After flood	
	Frequency	%	Frequency	%
NGO	40	26.3	35	23
Government	35	23	45	29.6
University/College	20	13.1	10	6.5
Others	10	6.5	8	5.2
Not get any relief	47	30.9	54	35.5
Total	152	100	152	100

Source: Field Survey, 2019

3.2.7 Types of relief/help in the study area

During the disaster period, different types of relief materials are given to fulfil the basic demand of the victim people. Around 23% of respondents reported that they receive relief during the flood, and 19.8 percent receive food like biscuits, flattened rice, and fried rice after the flood. 13.1% received clothes, and 9.8% get pure drinking water during the flood. However, 39.4% of respondents did not get any relief or support during the flood, and 36.9% of respondents said they did not get relief after the flood.

Table: 4 Types of relief/help during and after the flood

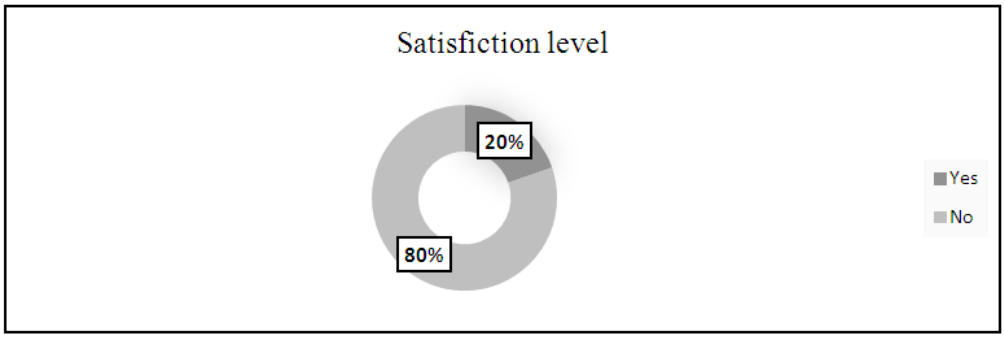
Type of relief	During flood		After flood	
	Frequency	%	Frequency	%
Food	35	23	30	19.8
Cloth	20	13.1	10	6.5
Pure drinking water	15	9.8	8	5.2
Emergency kit	8	5.2	5	3.2
Tents	-	-	-	-
House repairing material	10	6.5	15	9.8
Agricultural element (seed, pesticide, fertilizer, instrument, agricultural loan)	-	-	20	13.1
Others	17	11.1	10	6.5
Not get any relief	47	30.9	54	35.5
Total	152	100	152	100

Source: Field Survey, 2019

3.2.8 Satisfaction level of taking these reliefs

In the aspects of respondents, 20% reported that they were satisfied with taking reliefs and the other 80% expressed their dissatisfaction level for receiving reliefs from different organisations. It is clear from the following figure, more than one-half of respondents was not satisfied taking relief.

Figure: 6 Satisfaction level of taking relief of the study area



Source: Field Survey, 2019

3.2.9 Medical treatment in the study area

During and after flood time, people suffer from waterborne diseases such as Diarrhea, Malaria, fever, stomach problem (dysentery), respiratory problems, eye, and skin diseases. In the period of flood, many people, especially children, died from waterborne diseases. To secure safe and sound health, Medicare facilities are very important for flood-affected areas during and after the flood. In the field survey the respondent was asked about the medical treatment during and after the flooding. Most of the people in the study area didn't get medical support. Only 19.4% of respondents said that they got help from NGO's, Govt., the social community, and other sources during the flood, and 30.7% got help after the flood from the same sources.

Table: 5 Medical treatment in the study area

Sources of treatment	During flood		After flood	
	Frequency	%	Frequency	%
NGO	10	6.5	15	9.8
Government	5	3.2	10	6.5
Social community	10	6.5	15	9.8
Others	5	3.2	7	4.6
Not get any medical treatment	122	80.2	105	69
Total	152	100	152	100

Source: Field Survey, 2019

3.2.10 Opinion of the people to decrease the flood hazard

The respondents in the study area gave some suggestions for the protection and prediction of flood hazards. 80.3% of the respondents think that making embankment is the best way to protect, 6.6% suggested that dressing of the riverbed and 13.1% think making a dam to the riverside. They said that those systems could decrease the flood hazard.

Table: 6 People opinion about the protection and prediction about flood hazard

People opinion	Frequency	%
Embankment	122	80.3
Dressing of the river bed	10	6.6
Making dam	20	13.1
Total	152	100

Source: Field Survey, 2019

In the northwest region of Bangladesh, flood is a seasonal event that occurs every year. People from the rural part cope with the situation with their knowledge and assets and sometimes get external support in the form of financial aids or food from Government or non-government organisations and sometimes did not. Their coping capacity is a very complex and dynamic process linked with several physicals, economic and socio-cultural variables

IV. CONCLUSION AND RECOMMENDATIONS

From the overall discussion, it is seen that Godai village at Kaunia Upazila of Rangpur district is in a flood-prone area. Almost every year flood occurs in that area by the Teesta River. People affected by the flood on livelihood both directly and indirectly in the area. As a result, dwelling houses, crops, and roads become seriously damaged. The local people take various indigenous strategies to cope with a flood before, during, and after the flooding. The study reveals that respondents are prepared about upcoming flood hazards, although some respondents are not conscious of this situation. Conservation of dry food like rice flattened and fried rice, shift to higher ground, raising the floor of the house, migrating to other places, going to flood shelter centres are the main adaptation strategies in flood time. Govt organisation and several NGOs give relief in the study area, especially before and after the flood. We know that flood is not managed properly, but some steps can decrease flood disaster. The study shows structural solutions, such as building embankments along the rivers, dressing the

riverbed, making a dam. From the study, it can be recommended that for suitable and fruitful flood management strategies, policymakers and planners have to introduce the latest and contemporary flood management strategies besides the existing traditional strategies. We hope that these steps decrease flood disasters in the research area.

Funding sources/sponsors: Nil.
Conflict of interest: None declared.

REFERENCES

[1]. BBS, (2003). National Population Census 2001, Preliminary Report, Bangladesh Bureau of Statistics. Government of Bangladesh (GOB), University Press Limited, Dhaka.
[2]. Brouwer, R. Akter, S. Brander, L. and Haque, E., (2007) Socio-economic Vulnerability and Adaptation to Environmental Risk: A case study of Climate Change and Flooding in Bangladesh. Journal, 27 (2):313.
[3]. Choudhury, A.M, (2001), Major disaster in Bangladesh and their impacts, Presented at the disaster management course held at PATC, Dhaka.
[4]. GoB. (2008). Damage, Loss and Needs Assessment for Disaster Recovery and Reconstruction. Dhaka: Ministry of Food and Disaster Management, Government of Bangladesh.
[5]. Milliman, J. D., Broadus, J. M. and Gable, F. (1989) Environmental and economic implications of rising sea level and subsiding deltas: The Nile and Bengal examples.
[6]. Ambio, 18, 340-345.
[7]. Mirza, M. M. Q., Warrick, R. A., Ericksen.N. J. and Keny, GJ (2001). Are floods getting worse in the Ganges, Brahmaputra and Meghna basin? Environmental Hazards. 3. pp.37-48.
[8]. Rashid, S. F., (2002) gender flood in Bangladesh, research anthropologist and evaluation division, BRAC.
[9]. Rogers, P., P. Lydon, and D. Seckler. (1989). Eastern Waters Study: Strategies to Manage Flood and Drought in the Ganges-Brahmaputra Basin, Irrigation Support Project for Asia and the Near East (ISPAN), Washington, DC
[10]. R. V. Krejcie, and D.W. Morgan, "Determining Sample Size for Research Activities", Educational and Psychological Measurement, Vol. 30:607-610, 1970
[11]. Smith, K .and Ward, R. (1998). Floods: Physical processes and Human Impacts. John Wiley and son. England.
[12]. USAID, (1988). OFDA Annual Report, Office of the U.S. Washington DC: Disaster Assistance Agency for International Development, pp. 110-122.

Mirza Amirun Nesa. "Adaptation Strategy of Flood Affected People at Kaunia Upazila in Rangpur District."*IOSR Journal of Humanities and Social Science (IOSR-JHSS)*, 26(08), 2021, pp. 14-21.