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Farmers' Preparedness for Combating Flood in Fulchari Upazila of Gaibandha District

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Abstract

The purpose of the study was to determine the extent of farmers' flood preparedness and to explore the relationships between the selected characteristics of the farmers and their extent of flood preparedness. Field work for the study was conducted in Fulchari upazila under Gaibandha district. Data were collected from 112 selected farmers out of a population of 403, who were most flood affected farmers in the study area. Farmers' flood preparedness was measured by considering six dimensions namely crop, livestock, fish, food and housing, health and sanitation, and security. Majority (77.28 percent) of the respondents had preparedness on food and housing, while 61.71 percent on crop, 50.30 percent on security, 42.78 percent on fish, 42.34 percent on livestock and only 16.07 percent had preparedness on health and sanitation. It was found that majority (73.2 percent) of the respondents had medium preparedness, while 14.3 percent and 12.5 percent had high and low preparedness, respectively. The correlation analysis showed that level of education, farm size, annual family income, extension media contact and social mobility had positive and significant relationships with the extent of farmers' flood preparedness. On the other hand, age, family size, credit received, organization participation, and fatalism had no relationships with the extent of farmers' flood preparedness.

Keywords: *Flood, preparedness, combating flood, farmers.*

Introduction

The concept of flood preparedness encompasses measures aimed at enhancing life safety when a disaster occurs, such as protective actions during an earthquake, hazardous materials spill, or terrorist attack. It also includes actions designed to enhance the ability to undertake emergency actions in order to protect property and contain disaster damage and disruption, as well as the ability to engage in post-disaster restoration and early recovery activities. Preparedness is commonly viewed as consisting of activities aimed at improving response activities and coping capabilities. However, emphasis is increasingly being placed on recovery preparedness—that is, on planning not only in order to respond effectively during and immediately after disasters but also in order to successfully navigate challenges associated with short- and longer-term recovery.

The flood of 1998 wits the long lasting in the history of the country causing enormous damages to over two thirds of the country and continued for more than 75 days. Major losses were incurred in crops, livestock, poultry, fisheries and forestry (I'I'DG, 2001).

People of Bangladesh have traditionally developed different kinds of coping mechanisms to avoid or at least to decrease the loss due to flood. However, many people become perplexed what they will do during flood. If they are trained on preparedness of flood, it will be reduced sufferings during flood in many times. The number of deaths, extent of health related problems and scope of relief required was higher than in previous floods and this can be directly linked to the significant failure of the flood protection systems and particularly embankments. This applies directly to the construction of

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embankments, main highways, bridges and culverts. In view of the considerations the following specific objectives were formulated: i) to determine and describe farmers' preparedness for combating flood; ii) to ascertain the problems of preparedness faced by the farmers during flood and ways of minimizing the problems; and iii) to explore relationships between selected characteristics of farmers and their flood preparedness.

Methodology

The study was conducted in four selected villages in Fazlupur union of Fulchari upazila under Gaibandha district. Fulchari upazila is one of the most flood affected upazilas not only in Gaibandha district but also in Bangladesh. Fulchari Upazila is situated very near to Jamuna river. The selected villages were: Krisnomoni, Rasulpur, Khatiamarir char and Kalasona.The reason behind the selection was the fact that these were highly affected areas in the Fulchari upazila and thereby considered suitable for the study. The researcher himself prepared a list of most flood affected farmers of the selected villages. The total numbers of most flood affected farmers in these villages were 403, which constituted the population of the study. Solvin equation (Solvin, 1984) was used for sample size determination considering 8% error. A number of 112 farmers were selected at random by using a Table of Random Numbers. A reserve list of 11 farmers was also prepared. Farmers selected characteristics such as age, level of education, family size, farm size, annual family income, credit received, extension media contact, social mobility, organizational participation and fatalism were considered as independent variables. Extent of farmers' flood preparedness was dependent variable of the study. Extent of flood preparedness was measured by considering six dimensions, namely crop, livestock, fish, food and housing, health and sanitation, and security. Total twenty-seven items of preparedness within six dimensions were selected to measure farmers' preparedness. Farmers' preparedness was measured on the basis of extent of flood preparedness, which they fallowed before flood condition. Extent of flood preparedness was determined on a 4-point rating scale namely full preparedness, moderate preparedness, less preparedness and no preparedness and weights were assigned 3, 2, 1 and 0 respectively. To calculate the total score of farmers' extent of flood preparedness score for all the dimensions were added together. Thus, the extent of flood preparedness score of a respondent could range from 0 to 81, where 0 indicated no flood preparedness and 81 indicated highest level of flood preparedness taken by the farmers.

Findings and Discussion

The salient features of the selected ten characteristics of the farmers have been presented in Table 1.

Farmers' Flood Preparedness

The extent of flood preparedness of farmers ranged from 23-51, with an average of 35.99 and standard deviation 6.55. Based on their preparedness, the farmers were classified into three categories, such as low preparedness (up to 29), medium preparedness (30-43) and high preparedness (>43) that is shown in Table 2. Majority (73.2 percent) of the respondents had medium preparedness, while 14.3 percent and 12.5 percent had high and low preparedness, respectively.

Table 1 Salient features of selected farmers (N=112)

Characteristics	Scoring system	Range Observed (Possible)	Category	Number (N=112)	Percent	Mean	SD
Age	Years	26-72	Young (26 to 35)	43	38.4	40.23	9.85
			Middle aged (36 to 50)	54	48.2		
			Old (>50)	15	13.4		
Level of education	Level of schooling	0-6	Illiterate (0)	79	70.5	0.49	1.19
			Can sign only (0.5)	26	23.2		
			Primary and secondary (1-10)	7	6.3		
Family size	Numbers	2-9	Small (up to 4)	75	67.0	4.17	1.29
			Medium (5-6)	33	29.4		
			Large (>6)	4	3.6		
Farm size	Hectare	0.04-2.25	Marginal(0.02 to 0.20 ha)	7	6.3	0.52	0.36
			Small (0.21 to 1.00 ha)	98	87.4		
			Medium (1.01 to 3.03 ha)	7	6.3		
			Large (above 3.03 ha)	0	0		
Amount of money damaged by flood in previous year	Taka (000)	2-30	Minimum (up to 6)	20	17.9	12.43	5.34
			Moderate (7-17)	82	73.2		
			Maximum (>17)	10	8.9		
Annual family income	Taka (000)	36-110	Low (up to 60)	72	64.3	60.61	13.17
			Medium (61-100)	36	32.1		
			High (>100)	4	3.6		
Credit received	Taka (000)	0-12	Not received (0)	65	57.7	3.52	4.34
			Low (1 to 6.44)	10	9.0		
			Medium (6.45-10.32)	35	31.5		
			High (>10.32)	2	1.8		
Extension media contact	Score	5-18 (0-27)	Low (up to 7)	33	29.5	9.35	2.66
			Medium (8-12)	66	58.9		
			High (>12)	13	11.6		
Social mobility	Score	8-16 (0-18)	Low (up to 8)	27	24.1	10.53	2.05
			Medium (9 to 12)	62	55.4		
			High (>12)	23	20.5		
Organizational participation	Score	0-6 (0-15)	Low (up to 1)	52	46.4	1.57	1.22
			Medium (1.01-2)	43	38.4		
			High (>2)	17	15.2		
Fatalism	Score	15-26 (0-32)	Low (up to 19)	25	22.3	21.60	2.51
			Medium (20-24)	82	73.2		
			High (>24)	5	4.5		

Table 2 Distribution of farmers based on their flood preparedness

Dependent variable	Possible range	Observed range	Categorization of farmers on preparedness	Number (N=112)	Percent	Mean	SD
Farmers' flood preparedness	0-81	23-51	Low (up to 29)	14	12.5	35.99	6.55
			Medium (30-43)	82	73.2		
			High (>43)	16	14.3		

There were six dimensions for measuring the extent of farmers' flood preparedness. These dimensions were: crop, livestock, fish, food and housing, health and sanitation, and security. Frequencies distribution of the farmers based on their flood preparedness on these dimensions were computed in order to understand the extent of their preparedness as shown in Figure 1. The figure shows that majority (77.28 percent) of the respondents had preparedness on food and housing, while 61.71 percent on crop, 50.30 percent on security, 42.78 percent on fish, 42.34 percent on livestock and only 16.07 percent had preparedness on health and sanitation.

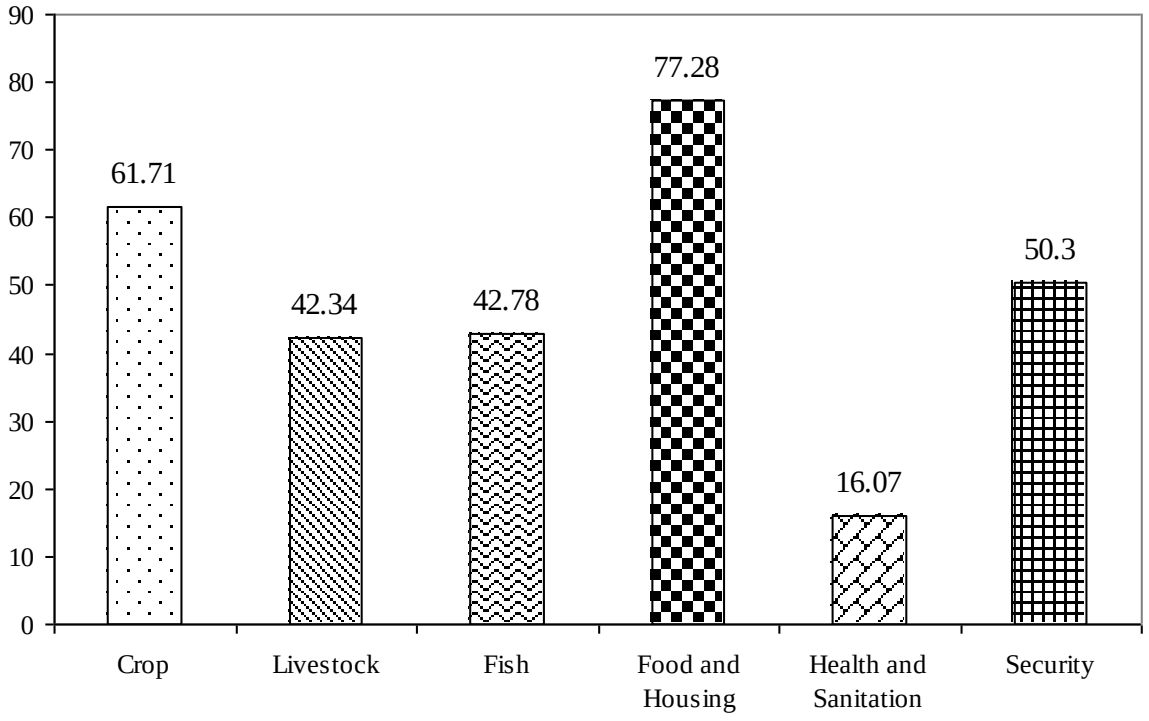

Figure 1 Distribution of farmers according to their preparedness on flood

Rank order of Overall Items of Flood Preparedness

A rank order was also prepared from the overall items of all dimensions on the basis of flood preparedness index. The rank order has been shown in Table 3.

Relationship between the Selected Characteristics of the Farmers and their Flood Preparedness

Co-efficient of correlation (r) was used to explore if there was statistically significant relationship between the selected of the farmers characteristics and their flood preparedness. The correlation analysis showed that level of education, farm size, annual family income, extension media contact and social mobility had positive and significant relationships with the extent of farmers' flood preparedness. On the other hand, age, family size, credit received, organization participation, and fatalism had no relationships with the extent of farmers' flood preparedness. The summary of the result of correlation test is presented in Table 4.

Table 3 Rank order of the items of flood preparedness

Items of flood preparedness	Flood preparedness index (FPI)	Rank order
Making boat before flooding	281	1
Planting the larger trees surrounding the homestead area for reducing the impact of flood	275	2
Raising height of the homestead area	255	3
Reserving dry food	249	4
Making poultry shade in high land before flooding	247	5
Planting the short duration crops and collecting products before flooding	232	6
Reserving short duration crops seeds	232	7
Reserving cash money to use during flood condition	203	8
Planting larger trees surrounding the pond for reducing the impact of flood	203	9
Training the children how to swim	196	10
Selling poultry before flooding	194	11
Making cow shade in high land before flooding	193	12
Selling all cattle before flooding	167	13
Transferring reserved products in safe place before flooding	158	14
Contacting with relatives before flooding for safe habitat during flood	156	15
Raising height of the surrounding area of pond	154	16
Selling all pond fishes before flooding	148	17
Transferring cattle in home of near relatives for safe habitat	127	18
Managing safe water and good sanitation before flooding	84	19
Keeping reserve sufficient grasses for feeding cattle	74	20
Making net before flooding for protecting pond fishes during flood condition	70	21
Keeping knowledge about foot and mouth disease of cattle	70	22
Keeping knowledge about cattle diseases	63	23
Keeping reserve orsaline and keeping knowledge about procedure	59	24
Keeping knowledge about water borne diseases	43	25
Keeping knowledge about diarrhoea	30	26
Forming a social committee for combating flood	9	27

Table 4 Relationships between the selected characteristics of the farmers and their flood preparedness (N = 112).

Independent variables (selected characteristics)	Co-efficient of correlation (r)values
Age	0.024
Level of education	0.199*
Family size	0.038
Farm size	0.264**
Annual family income	0.263**
Credit received	0.156
Extension media contact	0.282**
Social mobility	0.198*
Organizational participation	0.150
Fatalism	0.135

* Significant at 0.05 level of probability
** Significant at 0.01 level of probability
Dependent variable: Farmers' flood preparedness

Farmers' Problems in flood preparedness

For having a clear understanding of the problems faced by the farmers 12 problems were selected through pre-testing with the farmers for taking flood preparedness. For having the better understanding regarding farmers' problems in flood preparedness, it was necessary to have an idea about the comparative problems facing in 12 selected problems. For this purpose, a Problem Facing Index (PFI) was computed. The computed PFI of the 12 selected problems ranged from 91 to 291 (against a possible range from 0 to 336) which are arranged in rank order according to their PFI as shown in Table 5.

Table 5 Rank order of twelve selected problems faced by the farmers in flood preparedness

Name of the problems	Extent of problems (N=112)				PFI	Rank order
	High (3)	Medium (2)	Low (1)	Not at all (0)		
Lack of governmental help	72	35	5	0	291	1
Lack of proper distribution of aid materials	60	36	13	3	265	2
Lack of proper distribution of non-governmental organizational help	48	40	14	12	238	3
Lack of flood resistant crop varieties	41	45	12	14	225	4
Unavailability of proper flood resistant technologies	42	36	17	17	215	5
Lack of sufficient and appropriate extension program for reducing the impact of flood	40	32	29	11	213	6
Lack of quality seed in the market	38	40	12	22	206	7
Inability of farmers in receiving credit in proper time	36	42	7	27	199	8
Complexity in receiving credit	29	38	17	28	180	9
Lack of communication with SAAO in proper time	26	35	19	32	167	10
Lack of sufficient knowledge of farmers on flood preparedness	27	35	13	37	164	11
Lack of organized efforts by the villagers	5	19	38	70	91	12

Conclusions

1. The study reveals that majority (73.2 percent) of the farmers in the study area had medium flood preparedness while only 14.3 percent of them had high flood preparedness. Bangladesh is known as country floods. Each year at least some people become the victim of floods. Hence, it is obvious that people should adequate preparedness for floods. Therefore, it is concluded that if majority of the farmers in the study area do not have appropriate flood preparedness, their livelihoods will not be free from vulnerability.
2. The overwhelming majority (70.5 percent) of the farmers was illiterate and 23.2 percent could sign only. There exists also a positive significant relationship between their education and their flood preparedness. This means that education is a vital element for flood preparedness. Literate person may play important role through disseminating flood preparedness information to the others. Thus, educated farmers know more about flood preparedness. It is therefore concluded that farmers' flood preparedness can be increased at a satisfactory level by increasing their level of education.
3. The vast majority (64.3 percent) of the respondents had low annual family income. Annual family income of the respondents and farmers' flood preparedness had a significant positive relationship. It may, therefore, be concluded that farmers' flood preparedness increases with the increase of their annual family income. Annual family income may be increased through involving farmers of the flood prepared in different income generating activities.
4. Social mobility of the respondents had a significant positive relationship with their flood preparedness. Slightly more than half (55.4 percent) of the respondents had medium social mobility. Social mobility of the respondents and farmers' flood preparedness had a significant positive relationship. Through social mobility farmers can come in contact with many individuals and exchange ideas, facts and feelings with them. Hence, arrangements may be made for recreational facilities outside own locality so that farmers get opportunities for increasing social mobility.

References

ITDG, 2001. *Annual Report 2001*. Intermediate Technology Development Group Bangladesh, Dhaka.

Solvin, R.K. 1984. *Research Methods in Education: A Practical Guide*. New Jersey; Prentice Hall, Inc.