



Constraints Faced by the Farmers in Practicing Coping Strategies towards Household Food Security during Flood

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

A study was carried out at each of three flood affected riverine villages of three upazilas (small administrative unit) under Jamalpur district in Bangladesh during September, 2011 to May, 2012 to find out the constraints faced by farmers in practicing coping strategies towards household food security during flood. The qualitative information as obtained from the focus group discussion

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(FGD) and scored causal diagrams (SCDs) were used to supplement the quantitative data to add new information if necessary in descriptive manner. Priority of constraints are differ from one farmer to another due to cultivated land topography, involvement of family labour in cultivation processes, precautionary measures taken against flood, previous experience, prediction of flood damage etc. 'Lack of appropriate agricultural rehabilitation program', 'improper and inadequate relief distributed by GO/NGO', 'high price of agricultural inputs' and 'lack of technical knowledge on flood' were identified as major constraints being faced by farmers in practicing flood coping strategy towards household food security. Lack of flood resistance crop varieties, inadequate organizational (GO/NGO) relief in time, lack of credit, agricultural labour and quality seeds in time (after flood) were found major constraints by almost all categories of farmers for overcoming food crisis created by the whim of nature. Go and NGO can take necessary steps against this adverse situations.

Keywords: Constraints; coping strategies; food security.

1. INTRODUCTION

The geographical location, land characteristics, multiplicity of rivers and the monsoon climate render Bangladesh highly vulnerable to natural hazards [1]. Of all the disasters the problem of flood has aggravated most from 1955 to 2004 and became one of the main concerns of people in Bangladesh [2] due to its recurrence. It is noted that climate change is likely to cause the intensity of flood events and increase the exposure of population to severe flooding [3]. One fifth to one third of the country is flooded each year during June through October when nearly two third of the grain (mainly rice) is produced [4]. Households with lower income and less access to productive natural assets face higher exposure to risk of flooding in Bangladesh [5]. Regular fighting with natural calamity, flood affected people always try to make their livelihoods more stable by creating more access to the livelihood asset pentagon. These lacking are being shouted by the all categories of farmers, whether their ranking may not maintained a justified chronology [6].

A disaster like flood causes serious disruption of the functioning of a community or a society causing widespread human, material, economic and environmental losses which exceed the ability of the affected community or society to cope using its own resources. Coping strategy refers to the specific efforts, both behavioral and psychological, that people employ to master, tolerate, reduce or minimize stressful events [7]. Although coping strategies vary with local conditions [8] but two general coping strategies have been distinguished: problem-solving strategies and emotion-focused coping strategies and people use both types of strategies to combat most stressful events [9]. It requires a significant assistance and coordinated response

by the Government and other entities to help the affected community to recover from the disruption. Flood affected people also tried heart and soul to protect, overcome and recover the crisis with his own efforts first and sometimes with a support derived from GOs or NGOs. But both the cases (institutional and self) the support is not sufficient. In spite of the situation, people applied some local and traditional strategies to overcome their losses and secure their foods which are not known to us and counted nationally. Therefore, this is an urgent need to know the coping strategies have been practiced by the flood affected people and to explore its relationship in their socio-economic, socio-demographic, socio-communicative and socio-psychological characteristics. There are more or less 27 food security and social safety net programs existing in the country, but they are insufficient to cover the increasing number of the hungry people [10]. The old and traditional methods of disaster management in Bangladesh is based on the concept of providing post disaster relief and rehabilitation facilities. These management systems have failed to make any contribution towards the development process [11]. It is very urgent to develop a comprehensive plan for minimizing the adverse affects of natural disasters especially in connection with food insecurity.

2. METHODOLOGY

The study was carried out at three flood affected reverine upazilas (small administrative unit) under Jamalpur district in Bangladesh during September, 2011 to May, 2012 to find out the constraints faced by the farmers in practicing coping strategies towards household food security during flood. The relationship, contribution and direct-indirect effect between personal attributes and their coping strategies

towards household food security and the constraints faced by the farmers was also explored. Data were collected from randomly selected 336 respondents of 6720 farm families through both the qualitative and quantitative techniques and analyzed with the help of SPSS. In order to assess the problem confronted by the farmers of the study area, a close form questionnaire was prepared based on experience of field visit before data collection. The quantitative analyses were done with the data to measure these indicators (frequency, percentage, constraint index etc.). The qualitative information (high, medium, low, not at all etc.) as obtained from the focus group discussions (FGD) and scored causal diagrams (SCDs) were used to supplement the quantitative data to where to add new information if necessary in descriptive manner.

3. RESULTS AND DISCUSSIONS

1. Constraints being encountered by farmers during and after flood

Some of the livelihood capitals such as land, seeds and support are the main issues to overcome the adverse situation especially recover the food crisis during and after flood. Regular fighting with natural calamity, flood affected people always try to make their livelihoods more stable with creating more access to the livelihood asset pentagon. These lacking are being shouted by the all categories of farmers, whether their ranking may not maintained a justified chronology. Actually land suitability is the prerequisites of cultivation. Emergence of a fresh seedling depends on sweet adjustment of soil water and seeds sowing on soil. There is a chance of seed damaging both for access or shortage of soil water. Farmers can never want to face such type of risk just after a tremendous shock. So, in this regards it can be said that farmers are the appropriate specialist who adjusted with the nature more judicially. So keeping the situation in mind that is take long time by land fit for cultivation (joo condition) due to slow release of flood water, farmers taken careful decision what he will do. After flood, lack of quality seeds in time, lack of adequate number of agricultural labour and inadequate organizational support derived from GO/NGO as relief in time were identified by them as vital factors of food security preconditions.

Obviously flood is a natural problem but after flood, farmers' utmost try to turn back in cultivation again and the first step is to prepare the damaged crop field for next crop cultivation. But in quest of more and rapid earning, local agricultural labours were shifted them into city town. Rests are demanded a high labour price than normal situation which creates a burning issue to be meet up being an immediately distressed farmer. Sometimes availability of agricultural labour both in time and number creates a headache on the way of food security achievement where accessibility got first priority than that of money.

After flood, farmers are instantly demanded a third person assistance to overcome and recover flood damages. It may be from GO, NGO or any other devoted personnel. But they indicated lack, in appropriate and in time supports. Because proper and effective planning was not taken for significant development especially for the affected people both by GOs and NGOs. Sometimes commercial bank and NGOs are not interested to provide specific loan or credit within these people due to their vulnerability situation, poverty and migration attitude. In Bangladesh there is no established organization to prepare the special programme for flood affected people. Concern GOs have minimum opportunity to work with them and such opportunities are also dipped in corruption. Simultaneously the service of advisory supports delivered by the extension workers were also weak and not prompt due to poor communication, weak transportation, less responsibility. All these circumstances may be created transitory food insecurity and delaying to recover the crisis period. The constraints that expressed by all categories of farmers to escape flood related household food insecurity condition are summarized and presented in the Table 1.

2. Focus Group Discussion

Focus Group Discussion with the flood affected people was done to collect information additional to data collection through interview schedule. The outcomes of group discussions on 'problems of achieving food security during flood' were summarized and finally noted down by the investigator. A list of 17 constraints was identified and summarized along with their corresponding frequency against each of the items which were cited more than once by all groups (Table 2).

Table 1. Coping constraints being encountered by all categories of farmers during and after flood

| Sl. No. | Items/Constraints | Number of respondents with their extent of constraint | | | | Constraint index | Rank |
|---------|--|---|--------|-----|------------|------------------|------|
| | | High | Medium | Low | Not at all | | |
| 1. | Lack of flood resistance crop varieties | 230 | 82 | 15 | 9 | 1205 | 1 |
| 2. | Inadequate organizational (GO/NGO) relief in time | 224 | 80 | 28 | 4 | 1196 | 2 |
| 3. | Lack of credit to overcome and continuing agricultural and other activities | 199 | 119 | 14 | 4 | 1185 | 3 |
| 4. | Lack of adequate number of agricultural labour | 222 | 72 | 32 | 10 | 1178 | 4 |
| 5. | Lack of quality seeds in time (after flood) | 219 | 72 | 37 | 8 | 1174 | 5 |
| 6. | Lack of adequate appropriate extension activities on flood rehabilitation | 193 | 91 | 15 | 37 | 1112 | 6 |
| 7. | Take long time by land fit for cultivation (joo condition) due to slow release of flood water | 153 | 132 | 36 | 15 | 1095 | 7 |
| 8. | Lack of technical knowledge about flood protection | 109 | 175 | 46 | 6 | 1059 | 8 |
| 9. | Lack of organized group for social security that can protect assets from robbery or theft | 167 | 70 | 79 | 20 | 1056 | 9 |
| 10. | Lack of consciousness about water contaminated diseases | 141 | 113 | 44 | 38 | 1029 | 10 |
| 11. | Due to lack of appropriate information on flood situation one fail to protect house during flood | 119 | 102 | 73 | 42 | 970 | 11 |
| 12. | Insufficient drinking and cooking water during and after flood | 109 | 102 | 43 | 82 | 910 | 12 |
| 13. | Lack of sufficient sanitary latrine that avoids direct contact of night soil in the flood water | 96 | 95 | 81 | 64 | 895 | 13 |
| 14. | Due to lack of high safe place/land one fail to transfer his/her cattle and poultry during flood | 107 | 49 | 135 | 45 | 890 | 14 |
| 15. | Lack of flood shelter camp where family members and household assets can be shifted | 108 | 58 | 100 | 70 | 880 | 15 |

Table 2. List of constraints and their frequency towards food security during flood period

| Sl. No. | Causes | Frequency | Percentage | Rank |
|---------|---|-----------|------------|------|
| 1. | Lack of technical knowledge about flood protection | 16 | 88.89 | 2 |
| 2. | Take long time by land fit for cultivation (joo condition) due to slow release of flood water | 15 | 83.33 | 3 |
| 3. | Lack of adequate number of agril. labour | 15 | 83.33 | 3 |
| 4. | Inadequate organizational (GO/NGO) relief supply in time | 18 | 100 | 1 |
| 5. | Insufficient drinking and cooking water during and after flood | 12 | 66.67 | 4 |
| 6. | Lack of adequate agricultural rehabilitation program | 18 | 100 | 1 |
| 7. | Lack of consensus ness about water contaminated diseases | 10 | 55.56 | 6 |
| 8. | Lack of flood resistance crop varieties | 12 | 66.67 | 4 |
| 9. | Lack of quality seeds in time (after flood) | 11 | 61.11 | 5 |
| 10. | Shortage of animal feed | 8 | 44.44 | 7 |
| 11. | Lack of preventive measures against poultry/dairy | 8 | 44.44 | 7 |
| 12. | Locally scarcity of seeds of quick growing crop variety | 11 | 61.11 | 5 |
| 13. | Lack of credit to overcome and continuing agricultural and other activities | 15 | 83.33 | 3 |
| 14. | Complexity in loan distribution | 8 | 44.44 | 7 |
| 15. | High price of agricultural inputs | 18 | 100 | 1 |
| 16. | High credit interest | 7 | 38.89 | 8 |
| 17. | Less consensus ness about fish protection | 7 | 38.89 | 8 |

Among the 17 items stated in the Table 2, four items viz. 'lack of appropriate agricultural rehabilitation program', 'improper and inadequate relief distributed by GO/NGO', 'high price of agricultural inputs' and 'lack on technical knowledge on flood' were identified as major constraint and the remaining 13 causes seem to be product of those constraints.

According to farmers opinion, after flood the first step is to support them from anywhere to rise up their adverse condition. But reality is that, in respect of losses regularly there is a gap between the damages and the recover ways. It may be either in amount or in appropriate time. Land, water, labor and fertilizer are most important components for agriculture and except fertilizer and high yielding seed; all other elements are available in Bangladesh. Just after flood locally there has been scarcity of quality seeds, quick growing varieties, finally high prices of fertilizers and other agricultural inputs was found to be a regular phenomenon. Most of the cases it is an artificial problem created by business community, wishfully increasing the rate of agricultural raw materials. According to farmers' opinion, Upazila Administration, Police Administration, Department of Agricultural Extension and Business Community could jointly put the inputs prices and adulteration at minimum level by playing their functional cooperation and active help. Delaying of land *joo* condition because of take long time in releasing flood water from agricultural land is a major problem confronted by the farmers to achieve food security after flood. It's a natural problem related to land topography, but if we could produce flood resistant crop varieties, it would be solved. Lack of technical knowledge of food security is mentioned by the farmers is a major constraint in rise up food security status. According to their desire it could be improved by arranging several trainings on agricultural products (crop, animal and fish) protection, disaster management, food processing and preservation, health and sanitation, health and nutrition and homestead management.

DAE, DLS, DoF and NGO's were their preferred organizations through which they like to get these training. Although they mentioned these names of organizations, they were actually not well aware about the agencies which might fit with their demand. They also expressed their willingness to get these training in their own locality and preferred some of the events especially for women. Due to the growing

responsibilities of women for household well being they could be considered as an effective part for ensuring household food security. Because women also play a central role in determining intra-household food security and nutrition for individual family members. It is necessary to initiate women-focused development programs including involvement at a larger scale of women in ever increasing economic activities through better access to provide resources, inputs and services.

They also priorities system of loan disperse by Commercial Banks or loan giving NGOs were a problem on the way of food security achievement. They argued that complexity of loan processing, high credit interest, inadequate loan, brokering and delay loan distribution hampered the success of this process. They also felt the absence of commercial bank in their locality. It would be a dream for them if they could borrow money from local banks or NGO with minimum interest to set the facilities needed on the way of achieving food security.

3 Problems Confronted by the Respondents in Achieving Household Food Security during Flood Period

Problems faced by the respondents in food security during flood period were measured through SCD of Participatory Farm Management Methods. Problems in food security during flood period were discussed with a group of respondents, assuming the 'end problem' being 'food insecurity during flood period'. Firstly the problems mentioned by the respondents were listed; secondly diagrams were drawn by them on the plain paper to show causal relationships between problems and finally scoring of selected problems was performed again by them. In this study, five intermediary and six root causes were identified and they were ranked with their relative importance indicated by the original score numbers as shown inside the parentheses. The identified core problem was "Food insecurity during flood period (100)" and intermediary problems were lack of agricultural products protection training (30), lack of disaster management training (5), delaying rehabilitation activities (30), less interest in food storage (20) and low flood prediction ability (5). In the study the identified root causes were lack of training (35), improper relief support (30), scarcity of capital (20), weak weather forecasting system (5), lack of food storage devices (5) and laziness (5).

Among the 'root' causes 'lack of training' got the highest score contributing two intermediate causes 'Lack of agricultural products protection training' and 'Lack of disaster management training'. It was logical because lack of training caused lack of knowledge, attitude and skill resulting in low decision-making ability against flood severity. It makes a man easier to receive any modern ideas leading to overcome of adverse situation as well as improvement of livelihood status. According to the score 'improper relief support' secured the second position. It is so difficult to recover by most of the respondents without any relief support from anywhere who gained such a drastic affect of flood regularly and also family poverty as an irony of fate. Due to miss targeting non eligible people were enjoying the relief benefits. Firstly elected representatives committed irregularities in selecting the actual flood affected people and secondly there had been a minimum scope to justify the lists of actual flood affected persons for the concerning governmental authorities due to shortage of time and emergency distribution of relief. Scarcity of money (both cash and savings) results in lack of interest as a result the respondents lose heart to involve in food storage. One can think about food preservation but nothing to do because all of concerned thinking are governed by money.

4. Suggested solutions to the 'root' causes

Participants of the selected group for the preparation of Scored causal Diagram (SCD) were requested to mention possible solutions to the 'root' causes of food insecurity during flood period. The respondents uttered diverse opinions on how these problems could be overcome. The suggestions for the solution of the problems made by respondents through discussing with each other have been presented in the Table 3.

Involvement of flood affected people in food security during flood period is a fundamental issue for survival and development of socio-economic condition of the rural people. The study reveals that coping strategies practiced by the flood affected people in respect of food security is not so optimistic. Thus, suitable approaches should be ensured in order to secure inclusive involvement of flood affected people in their coping issues. Linkage among GOs, NGOs and donor organizations needs to be strengthened to ensure cooperative involvement of the rural people. The issue that might be dealt with credit and technical information supply, training and demonstration method, motivation campaign and others.

Table 3. Suggested solutions with way to achieve the problems

| Sl. No. | Suggested solution | Way to achieve |
|---------|---|--|
| 1. | Increase need base training facilities for increasing their knowledge and skill towards food security as well as to have efficient manpower | Need GOs and NGOs should take initiatives |
| 2. | Distribution of adequate relief in time for overcoming the crops and other losses | GO, NGO and other Donor organizations |
| 3. | Distribution of available rehabilitation loans with minimizing complexity | NGO and Commercial Banks could disperse loan |
| 4. | Just after flood ensuring availability of agricultural inputs with purity and judicial cost in local markets | GO (Marketing Department, DAE, BADC, District Administration) could take over the matter |
| 5. | Establishment of local weather forecasting center with appointing adequate volunteers | GO |
| 6. | Distribution of food storage materials/devices with necessary instructions before flood | GO, NGO and other Donor organizations |
| 7. | Grow more consciousness among farmers about food preservation through organizational participation, cosmopolitaness etc. | Local Social Clubs could be motivated by using different communication media |
| 8. | Locally increase income generating activities that can ensure cash money | GO, NGO and Local Social Clubs can take initiatives |

4. CONCLUSIONS

Based on the above findings, it can be concluded that after flood, lack of quality seeds in time, lack of adequate number of agricultural labour and inadequate organizational support derived from GO/NGO as relief in time were identified by flood affected farmers as vital factors of food security preconditions. Simultaneously the service of advisory supports delivered by the extension workers were also weak and not prompt due to poor communication, weak transportation, less responsibility. All these circumstances may be created transitory food insecurity and delaying to recover the crisis period.

5. RECOMMENDATIONS

Based on the above findings, to overcome the situation it can be said that still now there is an ample scope for the development workers to work with the flood affected people. As the objectives of social safety net programs are to protect the poor people from vulnerable situation and the coverage of those programs in the study area were minimum. To overcome the situation it can be said that government should increase budget for social safety net programs in the flood affected area. During flood period, most of the flood affected people spent their maroon life without any work. Proper planning can engage their idle time into busy life. The GO and NGOs could undertake and facilitate IGAs in the flood affected areas which will increase employment opportunity as well as more family income especially in the lean period. There is a scope of uplifting women of flood affected areas by more involving them in IGAs, food preservation, cooking, poultry rearing etc. through training. As a social being, maintaining of social bondage within the family and the community female can work silently. Farmers of the flood affected areas availed low credit facilities. In this sector GO and NGOs should allocate easier soft loan for the flood affected people to overcome the situation, can organize capacity building activities and motivational campaign for the distress people for changing their existing outlook towards the involvement in diversified activities for increasing improvement of livelihoods.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the authors.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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