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Poverty, Food Security Status and Coping Strategies of Small Farm Households in Mymensingh Region of Bangladesh

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Abstract: *The present study was conducted in Mymensingh region of Bangladesh during 2012-13 to know the present status of poverty, food insecurity and coping strategies adopted by small farm households during food crisis. Descriptive analytical tools such as Cost of Basic Need (CBN) method and Direct Calorie Intake (DCI) method were used to analyze the data. The study employed mainly farm level cross sectional data collected from 150 farm households taking 50 from each upazila of three districts namely Mymensingh (Phulpur), Netrokona (Kendua) and Kishoreganj (Kishoreganj Sadar) of Bangladesh. According to CBN method, about 23% of the small farm households lie below the lower poverty line and about 35% lie below the upper poverty line. Based on DCI method, about 16% lie below the hardcore poverty line and about 32% lie below the absolute poverty line. The study observed that on an average, the rural households are more or less secured in relation to availability of food round the year. However, Kartik (October-November) and Chaitra (March-April) are the two food-insecured months common for almost all the small farm households. As a whole, the Ashyin (Sept-Oct) is also a food insecured month along with Ashar and Sravan. About 62% of the respondents identified landlessness as the prime cause of their food insecurity followed by income generating activities and natural calamities, respectively. About 45% of farm households relied on less expensive food for everyday as consumption coping strategy during food shortage where about 5% took less food and 1% borrowed food for everyday. Irrespective of location, about 53% reliant upon borrowing money for coping with food insecurity followed by sale of households assets (45%), reduce food cost (40%) and wanting help from relatives (36%). It is also recommended that creation of employment opportunities throughout the year, especially in the lean season, and government supports are suggested to tackle the food insecurity problems for the study areas.*

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1. Introduction

Bangladesh is one of the low income economies of the world having per capita income of only around US$ 1314 (Deb, 2016). The economy of Bangladesh is developing over the years. Bangladesh had made significant achievement in food grain production and food availability. Availability of sufficient food at the country or local level does not mean that all people within that geographic unit are food secured. Despite a significant progress in domestic food grain production, Bangladesh is still facing food insecurity. Approximately 40% of the population lacking the resources to acquire enough food and consequently remaining below the poverty line (Hossain, 2009). Based on purchasing ability, incidence of poverty came down gradually during the last decade from 63 million poor people in 2000 to 47 million in 2010 (HIES, 2010).

The prevalent rates of global acute and chronic malnutrition among children under two years old in Bangladesh are alarming. Growth retardation, an outcome of chronic malnutrition, is widespread affecting an estimated 48.6% of the country's 20 million children (Mahzabin, 2011). Approximately one third of adolescent girls in Bangladesh suffer from anemia and micronutrient deficiency (HFSNA, 2009). Bangladesh is ranked 129th out of 169 countries in the 2010 Human Development Index (UNDP, 2010). In rural areas, poverty incidence remains especially high among households headed by a member working in agricultural sectors (48.2%) as well as among landless rural households (66.6%) (NFPPoA, 2008). The undernourishment according to DCI method indicate that the recent decline in "hardcore poverty" (from 20% to 19.5%) and in "ultra-poverty" (from 8.2% to 7.8%) has been less impressive than the decline in absolute poverty (from 47.5% to 40.4%), suggesting that many people tend to be "trapped" in the vicious cycles of hunger and poverty. The percentage of population living under the poverty line came down to 31.5 in 2010 from 40 in 2005 due to consistent economic and remittance growth. However, 17.6% of the population is still extremely poor (HIES, 2010).

It is often argued that land available for crop cultivation has been shrinking at around 1% per annum, which means a reduction of average farm size with concomitant increase in fragmentation and sub division of holdings (Mandal, 2007). Above all, these scarce cultivable lands are being used for making new houses. The number of landless, marginal and small farmers has, therefore, been increasing at alarming rate day by day in rural Bangladesh. These groups is forced to rely on labour selling/crop farming, fishing, petty business, service and other non-farm activities and often on a piecemeal, daily or seasonal basis. Due to the seasonal variation in agriculture employment and limited employment opportunities in non-farm sector, millions of people suffer from chronic and transitory food insecurity. The average Bangladesh diet is deficit in energy by about 15 percent (Amin and Farid, 2005). Normal diet of Bangladeshi people is also seriously imbalanced; carbohydrates contribute nearly 74 percent to the total dietary energy

and 57 percent by protein (BBS, 2003). The extent of poverty in terms of calorie intake is relatively high in Bangladesh where about 49% households are poor and 23% are extreme poor (PDO-ICZMP, 2003). Poverty stricken people usually use their natural environment in unsustainable ways, leading to further deterioration of their livelihood conditions (FAO, 2005). As a consequence, food security for these people has become very challenging task. The ultra poor usually consume less than minimum calorie intake (1805 kcal/day) and any further reduction in food consumption will certainly deteriorate their physical ability and future potentiality (BBS, 2007; FPMU, 2007). Under this tenuous food situation, how these rural households cope with the food insecurity situation is really unknown.

There have been substantial amounts of literature found on different aspects of food security at home and abroad (Dash, 2005; Rahman, Haque and Talukder, 2005; Amin and Farid, 2005), but very few of them dealt with the strategies adopted by the people suffering from poverty and food insecurity. There is hardly any study found conducted in the above mentioned population in this specific region of the country though they are recognized as one of the most vulnerable groups where food security needs to be ensured.

This study is an attempt to assess the status of poverty and food insecurity of small farm households and investigate the mechanisms; both consumption and non-consumption, that the small farm households adopt to cope with the situation.

The specific objectives of the study are as follows:

i.to assess the poverty status of the small farm households;

ii. to determine food security status of selected farm households; and

iii. to investigate the coping strategies adopted during food crisis by farm households

2. Methodology

For this study, multi-stage simple random sampling was used for selecting the sample. The first stage involved purposively selection of three districts (i.e., Mymensingh, Netrokona and Kishoreganj) out of six in the greater Mymensingh region. After selecting three districts, one upazila from each district was selected again purposively considering the level of food security on the basis of the report of RDRS, 2004. Because of RDRS survey report on food security and hunger in Bangladesh divided all upazilas of Bangladesh into four categories; a) Very high food insecure; b) High food insecure; c) Moderate food insecure; and d) Low food insecure upazila based on availability, accessibility and utilization of food and vulnerability. From the above classification this study investigates prospective food security strategies in very high food insecured upazila of Phulpur (Mymensingh) and Kendua (Netrokona), moderate food insecure upazila of Kishoreganj sadar (Kishoreganj). Stage two involved a random selection of two

third villages from the list of villages in a union of a upazila of the selected districts. From these three districts, a total of 12 villages/*Paras* were randomly selected taking 5 villages/*Paras* from the selected upazila of Mymensingh, 4 villages/*Paras* from the selected upazila of Netrokona, and the remaining 3 villages/*Paras* from the selected upazila of Kishoreganj district. The third stage involved a random selection of fifty farming households from the selected villages. Thus, total numbers of sample farm households owning 0.2 to 1.0 ha of land were 150.

Analytical techniques

Generally, two methods are used in estimating poverty. The first one is based on Direct calorie Intake (DCI) and the other one is the Cost of Basic Needs (CBN) method. Direct calorie intake method is used to determine whether an individual/family lives below or above a certain poverty threshold. These thresholds are predetermined for Bangladesh, e.g., 2122 kcal for absolute poverty line and 1805 kcal for hardcore poverty line. The first threshold (absolute poverty line) is used to determine 'poor' and 'non-poor'. If daily food intake of an individual/family falls below the hardcore poverty line, then the individual/family is termed as hardcore poor. The DCI method allows estimation of the magnitude of food poverty base upon one's food intake. In this study, threshold levels have been estimated based upon the calorie-value and nutrition information from multifarious types of food intake, as provided by a specialized entity in Bangladesh (Cogill, 2003).

In the CBN method, 'upper' and 'lower' poverty lines were determined. Poverty lines are used to find a poor household which represents the level of per capita expenditure at which the members of households can buy an exogenously determined low-cost but adequate diet plus other objects of basic needs. In this study, both DCI and CBN methods have been used to estimate the poverty line at the household level.

Cost of Basic Needs (CBN) method

The CBN method estimates the poverty level in a year in three steps. First, the cost of a bundle of fixed food items is estimated. The food items are rice, wheat, pulses, milk, oil, meat, fish, potato, vegetables, sugar and fruits which provide minimal nutritional requirements corresponding to 2,122 kcal per day per person.

The required quantities in the food bundle is denoted by $(F_1, F_2,...,F_N)$ to meet the calorie requirement; that is, F_j is the required per capita quantity of the food item j. The food poverty line is computed as $Z_f = \Sigma P_j F_j$, where P_j is the unit price of j-th food item. In the second step, two non-food allowances for non-food consumption are computed. First one was obtained by taking the amount spent on non-food items by those households whose total consumption is equal to their food poverty line Z_f. These households spend less amount on food than the food poverty line and

spend only on the essential items in non-food consumption. Algebraically, if the total per capita consumption is denoted by y and food per capita consumption by x, the "lower" allowances for non-food consumption are estimated as $ZL_n=E[y_i-x_i \mid y_i=Z_f]$, where E denotes the mathematical expectation. The second one is "upper" allowances, which is obtained by taking the amount spent on nonfood items by those households whose food expenditure is equal to the food poverty line. These households do meet their food requirement comfortably. Mathematically, the "upper" allowances for non-food items can be expressed as $ZU_n=E[y_i-x_i \mid x_i=Z_f]$. Obviously, ZU_n is larger than ZL_n, because the share of food expenditure in total consumption decreases as consumption increases.

In the third step, estimation of the poverty lines consisted simply of adding to the food poverty line with the "lower" and "upper" non-food allowances to yield the total lower and upper poverty lines.

Lower poverty line: $Z_L=Z_f+ZL_n$ where $ZL_n=E[y_i-x_i \mid y_i=Z_f]$

Upper poverty line: $Z_U=Z_f+ZU_n$ where $ZU_n=E[y_i-x_i \mid x_i=Z_f]$

The difference between the two lines is due to the difference in estimation of the allowances for non-food consumption. The lower poverty line incorporates a minimal allowance for non-food goods, while the upper poverty line includes more allowance.

In practice, some adjustments are necessary to estimate ZL_n and ZU_n, because it is not feasible to get desired data whose total consumption is equal to the food poverty line (Z_f) or whose food expenditure is equal to the food poverty line. To avoid this problem, expectation should be taken for those households whose total consumption is less or equal to the food poverty line, in the computation of "lower" allowance for non-food consumption. Similarly, "upper" allowance can be computed by taking the expectation for those households whose food expenditure is less or equal to the food poverty line.

Direct Calorie Intake (DCI) method

The direct calorie intake method estimates the per capita calorie intake at household level. In this method, food consumed during the last three days in a household is first averaged and then the average content of food per day per household is converted into kilocalorie. The amount of calorie intake is then converted into per capita per day. According to this method, a household is considered as 'hardcore poor' with per capita calorie intake is less than 1,805 kcal per day, and 'absolute poor' with less than 2,122 kcal per day. Irrespective of male and female, two children under six years old was considered one adult member in this study (Omotesho et al., 2006). The tables of nutrient composition of Bangladeshi foods (Darnton-Hill et al., 1988) was used to calculate the calorie and nutrient values of the foods.

3. Results and discussions

Estimation of poverty using CBN methods

It is recognized that an adult person in Bangladesh requires on an average minimum amount of 832 gm of food a day, which is converted to 2112 kcal energy (BIDS, 1997). The food combination suggested by BIDS (1997) was 397 gm of rice, 40 gm of wheat, 40 gm of pulse, 58 gm of milk, 20 gm of oil, 12 gm of meat, 48 gm of fish, 27 gm potato, 150 gm of vegetables, 20 gm of sugar, and another 20 gm of fruits. In practice, the rural people are dependent more on rice than on other items. BBS (2000) used a larger combination of food and per capita per day intake of rice was suggested as 455 gm. However, the per capita per day food combination for this study has been prepared by considering the food combination suggested by BBS (2000) and BIDS (1997).

The per capita per day intake of food, calorie contents and price of food for this study population are presented in Appendix Table 1. In the estimation, the per capita per day requirements of food intake were fixed at 874.39 gm containing 460.96 gm of rice, which incurred cost amounted Tk. 36.57 at the survey point in time (Appendix Table 1).

Table 1 Estimation of the incidence of poverty at household level by CBN method

Per capita Food Poverty Line (Z_f)*		13348	
Per capita lower allowance (ZL_n)**	1639	Per capita lower poverty line ($ZL= Z_f + ZL_n$)	14987
Per capita upper allowance (ZU_n)**	3066	Per capita upper poverty line ($ZU= Z_f + ZU_n$)	16414
Per household lower poverty line expenditure	73436	% HH below the lower poverty line expenditure	22.70
Per household upper poverty line expenditure	80429	% HH below the upper poverty line expenditure	34.87

source: Field survey, 2012.

Note: *The food poverty line is estimated by considering the price for the annual food quantity of minimal nutritional requirements corresponding to 2,122 kcal per day per person.

** $ZL_n=E[yi-xi \mid y_i=Z_f]$ and $ZU_n=E[y_i-x_i \mid x_i=Z_f]$, where y denotes the total per capita consumption; x denotes the food per capita consumption and Zf denotes the food poverty line.

By converting the per capita poverty lines into household level, the "lower" and "upper" poverty lines for the study population had been estimated at Tk. 73436, and Tk. 80429, respectively (Table 1). The result suggests that about 22.7% households lie below the lower poverty line and about 34.87% households lie below the upper poverty line. The incidence of poverty in the study population was found consistent with the national figures (23.5 % by lower poverty line and 38.8 % by upper poverty line for rural area of Dhaka division of Bangladesh) which was reported by HIES (2010).

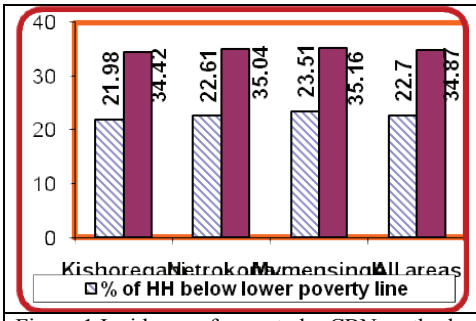


Figure 1 Incidence of poverty by CBN method

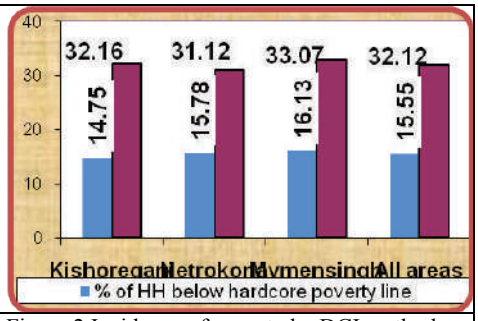


Figure 2 Incidence of poverty by DCI method

Poverty estimation using DCI method

Figure 2 presents the incidence of poverty by using direct calorie intake (DCI) method described earlier. Considering the average household consumption of food during the last three days prior to the survey, the average per capita calorie intake was estimated at 2349.08 kcal (Table 2). However, the average per capita intake of calorie was obtained as 1693.64 kcal and 1995 kcal for the households fell below the hardcore and absolute poverty line, respectively. The head count ratio indicates that 15.55% households fell below the hardcore poverty line and 32.12% households fell below the absolute poverty line (Table 2). The poverty rate estimated by DCI method was relatively lower than that of by CBN method and that might be because of ingestion of more rice generally containing higher calorie value than other items of food.

Table 2 Estimation of the extent of poverty at household level by DCI method

Heads	Small farm households
Per capita average intake of calorie	2349.08
Per capita average intake of calorie below hardcore poverty line	1693.64
Per capita average intake of calorie below absolute poverty line	1995.00
% of households below hardcore poverty line	15.55
% of households below absolute poverty line	32.12

source: Field survey, 2012.

Differentials of poverty by selected background characteristics

The aim of the study of differentials of poverty by selected background characteristics is to identify the sectors of the population where the incidence of poverty is high and need to be addressed through policy formulation. The background characteristics are: district, occupation and education of the household head, sanitation facilities and NGO membership and so on.

Using CBN method: The result suggests that proportion of households below the lower poverty line was almost identical in all districts under study, while significant ($p<0.01$) variation was observed in the proportion of households below the upper poverty line (Table 3). The proportion of households below the upper

poverty line was found highest (39.99%) in Mymensingh district and lowest (38.70%) in Kishoreganj. The incidence of poverty was found to vary significantly ($p<0.01$) across the occupation of household head. The incidence of poverty was striking among labourer-headed households; nearly half of them in each category (agriculture and non-agriculture) fell below the upper poverty line. The incidence of poverty was found lower for the households whose heads were engaged in agriculture and job/service. There was a little variation in the incidence of poverty according to the education of the household heads may be because of the poor variation in their educational level. Family size was also appeared to have positively correlated with the incidence of poverty: about 45% of the larger households fell below the upper poverty line, but it was about 25% for small sized households (1-3 members) (Table 3).

Table 3 Differentials of Poverty using CBN method according to selected characteristics

Characteristics	% of HHs below lower poverty line	P-value	% of HHs below upper poverty line	P- value
District				
Kishoreganj	24.14	P>0.1	38.70	P<0.05
Netrokona	24.82	(χ^2=0.10)	39.54	(χ^2=22.0)
Mymensingh	25.43		39.99	
Occupation of household head				
Agriculture	22.14	P<0.01	37.16	P<0.01
Business	24.39	(χ^2=32.5)	39.89	(χ^2=84.4)
Agril. Labourer	32.71		44.61	
Non-agril. labour	31.59		43.07	
Job/service	22.07		36.17	
Others	25.34		42.18	
Education of the household head				
No education	33.09	P>0.10	45.28	P<0.01
1-5 yrs schooling	26.41	(χ^2=8.5)	39.16	(χ^2=21.1)
6-10 yrs schooling	24.98		39.21	
10+ yrs schooling	21.03		34.17	
Family size				
1-3	14.06	P<0.05	25.17	P<0.01
4-6	21.37	(χ^2=72.4)	39.39	(χ^2=89.6)
7 & above	29.97		45.11	
Sanitation facilities				
Sanitary toilet	27.64	P<0.05	41.27	P<0.05
pucca toilet	25.93	(χ^2=9.5)	38.59	(χ^2=9.2)
Katcha toilet	29.67		43.62	
Often field/others	33.58		43.31	
NGO membership				
Yes	29.95	P<0.10	48.61	P<0.01
No	26.78	(z=1.63)	37.45	(z=3.32)

source: Field survey, 2012.

The incidences of poverty was found to vary significantly across the sanitation facilities ($p<0.05$). The proportion of households fell in the poverty lines decreases as the sanitation facilities increases. The incidence of poverty was significantly

higher (49%) for the households who were the member of any NGO than among non-member households (37%) which was consistent with the findings of Kazal et al., (2012).

Using DCI method: The findings indicate that proportion of households below the hardcore poverty did not vary significantly across the districts, while significant ($p<0.01$) variation was observed in case of absolute poverty (Table 4). Like CBN method, the incidence of absolute poverty was found to vary significantly ($p<0.01$) by DCI method. The incidence of poverty by DCI method was found lower for the households with heads in agriculture, business and engaged in job/service; however, it was found higher for the households whose heads were engaged in agricultural and non-agricultural labour.

Table 4 Differentials of poverty using DCI method according to selected characteristics

Characteristics	% of HHs below hardcore poverty line	P-value	% of HHs below absolute poverty line	P-value
Over all	18.43		35.40	
District				
Kishoreganj	17.54	P>0.1	35.09	P<0.01
Netrokona	18.52	(χ^2=2.35)	34.87	(χ^2=72.4
Mymensingh	19.23		36.24	)
Occupation of household head				
Agriculture	17.01	P<0.01	34.15	P<0.01
Business	17.65	(χ^2=33.52)	33.89	(χ^2=77.4
Agril. Labourer	19.38		36.61	)
Non- agril. labour	19.59		37.74	
Job/service	16.32		34.28	
Others	21.23		36.18	
Education of the household head				
No education	19.36	P>0.10	36.43	P<0.01
1-5 yrs schooling	18.05	(χ^2=5.41)	35.19	(χ^2=19.1
6-10 yrs schooling	18.17		35.91	4)
10+ yrs schooling	17.26		34.56	
Family size				
1-3	10.37	P<0.05	28.79	P<0.01
4-6	19.62	(χ^2=33.42	36.51	(χ^2=49.6
7 & above	23.75	)	39.08	5)
Sanitation Facilities				
Sanitary toilet	17.60	P>0.05	36.20	P<0.05
pucca toilet	15.49	(χ^2=2.5)	34.09	(χ^2=11.2
Katcha toilet	19.63		37.13	)
Often field/others	23.05		38.01	
NGO membership				
Yes	19.36	P>0.10	37.11	P>0.10
No	18.65	(z=0.53)	36.62	(z=.22)

source: Field survey, 2012.

The incidence of poverty in both the form (hardcore and absolute) was found lowest for the households with heads of 10 and above years of schooling, while it was found highest in absolute poverty for the households with illiterate heads. Like

the CBN method, the positive impact of family size on the incidence of poverty was obviously found in the DCI method since an increasing trend was observed in the percentages of households falling below the poverty lines, both hardcore and absolute, with the increase in family size. The findings on the basis of sanitation reveal that the poverty in terms of hardcore and absolute level was observed lowest (15.49% in hardcore poverty and 34.09% in absolute poverty) for the households having pit/pucca toilet. Unlike the impact of NGO-membership on the incidence of poverty by CBN method, this vary characteristic puts no significant impact in terms of variation on the incidence of poverty by DCI method. The overall findings of DCI method mostly differed from those of CBN method because of substantial inclusion of rice in the diet by rural people, which influenced and generally inflated the value of their calorie intake.

The above discussion indicates that the incidence of poverty in terms of percentage of households by both CBN and DCI methods varies according to location, occupation of the household head, family size and to some extent, the education of the household head. Therefore, policy implications should be formulated by properly addressing these salient factors to reduce the poverty and improve food security situation of the rural people in Bangladesh.

Month-wise household food security status: The study also investigated the food security status of farm households by months during 2012. The respondents had been requested to answer the month-wise food security status of the households during of the twelve months during the calendar year 2012. The respondents had three qualitative options for assessing their monthly food security status: (i) secured, (ii) more or less secured, and (iii) insecured. During the data processing, each of the qualitative values had been assigned with a numeric value in the following manner: 3 for secured, 2 for more or less secured and 1 for insecured. Thus, for each of the sample households have twelve numeric values on their food security status. All the numeric values of sample households for each of the twelve months have been added by all farms. Average value for food security status for a particular month is being estimated by dividing the estimated total value by the respective sample size. It is to note that the minimum and maximum limits of the average values must lie between 1 and 3, where the minimum value will be equal to or greater than 1 and the maximum value must be less or equal to 3. The aggregated food security status is estimated in the identical fashion by adding household status for the same for all twelve months together; and then average value was estimated using the procedure stated above.

Table 5 Average aggregate values of food security status by months

Food security status by months	Small farm households
Mag (Jan-Feb)	2.6
Falgun (Feb-March)	2.4
Chaitra (March-April)	1.6

Baishak (April-May)	2.3
Jaistha (May-June)	1.9
Ashar (June-July)	1.6
Sravan (July-Aug)	1.5
Bhadra (Aug-Sept)	2.3
Ashyin (Sept-Oct)	1.6
Kartik (Oct-Nov)	1.3
Augrahayan (Nov-Dec)	2.6
Poush (Dec-Jan)	2.7
All months 2012	2.0

source: Field survey, 2012.

It is to note that the average values contain some fractional parts along with whole numbers. However, during the interpretation, the whole numbers are considered and the fractions are ignored. Two methods were applied for interpretation of the average numeric values: (i) conservative and (ii) moderate approach. According to conservative approach, only the whole numbers were given their respective qualitative interpretations. For example, the values like 1.2 and 2.4 are respectively interpreted as unsecured and more or less secured months (Table 5). The above analysis reveals that on an average the rural households are more or less secured in relation to availability of food round the year (Table 5). However, Kartik (October-November) and Chaitra (March-April) are the two food-insecured months common for almost all the farm households. As a whole, the Ashyin (September-October) is also a food insecured month along with Ashar and Sravan.

Causes of food insecurity

There are various causes responsible for food insecurity at small farm household. About 62% of the respondents identified landlessness as the prime cause for food insecurity. The other major causes were: lack of income generating activities i.e., seasonal unemployment, natural calamities, lack of credit and damage of crop generally caused by unexpectedly earlier heavy downpour and stone-slab as a considerable cause for food insecurity (Figure 3).

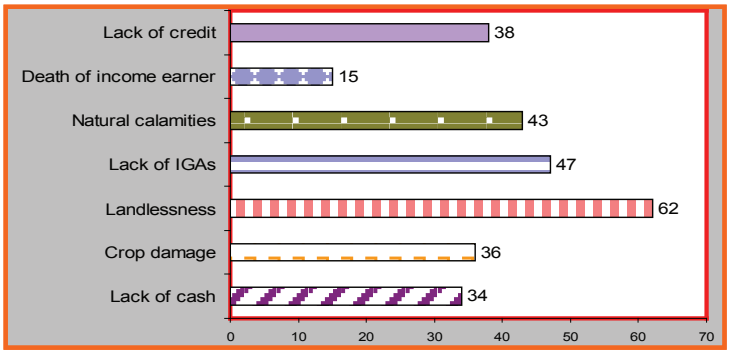


Figure 3 main reasons for households food insecurity

3.1 Coping strategies adopted by small farm households

Food insecurity stricken households always try to cope with the situation in adopting various strategies. Coping strategies can be successful when they are able to preserve vital assets, or negative when they are unable to do so and may lead to downward spirals of impoverishment. Any response should aim to support existing positive coping strategies and release households and communities from dependence on negative ones (FAO and ILO, 2008). Two types of coping strategies are usually adopted by the victims of food insecurity: consumption based or immediate measures and non-consumption based or general measures. Consumption coping strategies are specially related to food consumption and non-consumption coping strategies are related to asset sales and not directly related to food; for example, selling fuel wood is non-consumption but eating seed stock held for next season is a consumption coping strategy which was articulated by Maxwell et al., (2003). In this analysis, consumption coping strategies were further divided into four types, such as: i) Dietary change, ii) Short-term measures to increase household food availability, iii) Short-term measures to decrease numbers of people to feed, and iv) Rationing or managing the shortfall. Consumption coping strategies were identified by asking a simple question to the respondents and the answers were taken following different frequencies such as, every day, sometimes, rarely and never. The coping strategies of the sample households are presented in the Tables 6.

Consumption coping strategies

It was found that 45 and 32 percent of the respondents relied on less expensive foods for 'everyday' and 'sometimes', respectively as consumption coping strategy during food shortage (Table 6). Relying on cheaper and less preferred foods "everyday" and "sometimes" means comparing the quality of the diet and can lead to inadequate intake of micronutrients and increased rates of malnutrition. Not a single farm household was found to be taking wild food and to be remaining without food in a whole day among the small farm households.

Table 6 Consumption coping strategies adopted by small farm households

Coping strategies	% of farmer reported on food taken			
	Every day	Sometimes	Rarely	Never
1. Dietary Change				
a. Rely on less expensive foods	45	32	10	13
2. Increase Short-term household food availability				
b. Borrow food	1	29	45	25
c. Purchase food on credit	-	40	43	17
d.Gather wild food or hunt wild animal	-	-	-	-
e. Harvest immature crops	-	18	22	61
f. Consume seed stock held for next season	-	9	17	74

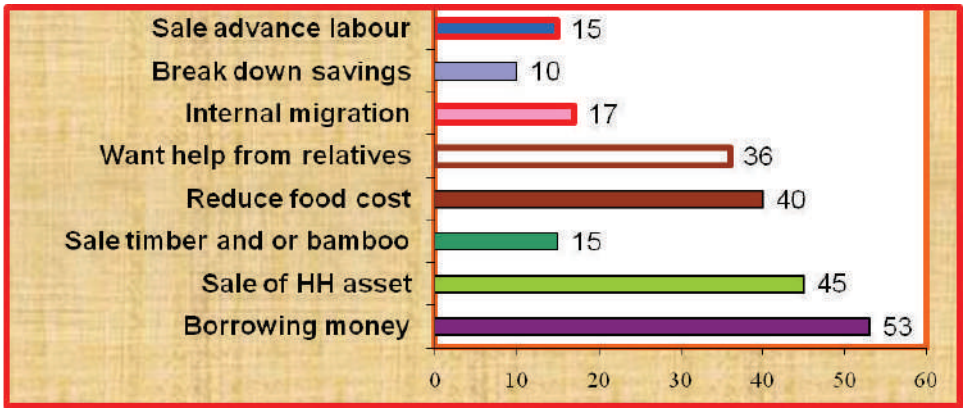
3. Decrease number of people				
g. Send household members to eat elsewhere	-	5	21	75
4. Rationing Strategies				
h. Cut quantity of food per meal	-	18	42	40
i. Adults took less food in order to feed small children	5	28	37	30
j. Reduce number of meals eaten in a day	-	7	35	58
k. Keep entire day without eating	-	-	-	100

Source: Field survey, 2012.

Non-consumption coping strategies

The interviewees were asked about the strategies they mainly adopt to cope with food insecurity. They spontaneously expressed the strategies they resorted during different periods of time over their life span (Figure 4). Very interestingly, the highest percentage of respondents (53 percent) reiterated their reliance upon borrowing money for coping with food insecurity problem obviously bearing the testimony of pervasive existence of exploiting money-lending culture in the survey areas where formal credits are almost inaccessible.

Figure 4 Non-consumption coping strategies adopted by small farm households



Source: Field survey, 2012.

The second and the third highest percentages of respondents (45 and 40 percent, respectively) hinged upon sale of household assets and reducing food cost as they reported for coping with food insecurity. Though the third largest adopted strategy was at their disposal, it results in hazards on their health in terms of hunger and malnutrition in future leading less productivity for the economy; while the fourth largest strategy undermines their prestige and causes indirect moral captivity to their relatives. In the midst of most of the pessimistic strategies, a highly optimistic strategy taken by a considerable percentage of respondents (17%) deserves special mention, which is internal out-migration to other places for livelihood adding

some value to GDP through participating and/or generating temporary economic activities for food insecure people. Further, a significant percentage of respondents rely on the sale of trees and bamboo (15%) and broken down their savings (10%) in resilience with food insecurity.

Measures for household food security

The food insecure respondents were invited to express their perceptions regarding actions/measures for ensuring food security. Table 7 shows those perceived actions to be taken to maintain household food security. Over four fifth of the respondents (85%) mentioned that they need to have work opportunities in all seasons, about three fourths (74%) strongly opted for ensuring agricultural land for farming and more than two third (66%) mentioned for government support programmes. Slightly higher than two-thirds responses advocated for provision of funds for alternative income generating activities and more than half for introducing food bank while 45% for membership under safety net food programme and appropriate actions from NGOs to ensure food security. From the results, it can easily be inferred that provision of government interventions is a must for a secure food situation in the study areas along with complementary support programes of the private sector, especially of the NGOs.

Table 7 Necessary actions to be taken to maintain households' food security

Actions	% of households reported
Ensuring agricultural land for farming	74
Ensuring work opportunity in all seasons	85
Introducing food bank for ensuring food security during crisis period	52
Providing fund for alternative IGA	67
Membership under the safety net food programme	45
NGOs should adopt appropriate action for tackling the situation	46
Government support programme is a must	66

Source: Field survey, 2012.

4. Concluding Remarks

The incidence of poverty by CBN method was found higher than that by the DCI method. According to CBN method, the highest percentage of small farm household lie below the lower poverty line was found in Mymensingh (23.51) followed by Netrokona (22.61) and Kishoreganj (21.98). But in the case of DCI method, the highest percentage of small farm household lie below the absolute poverty line was found in Mymensingh (33.07) followed by Kishoreganj (32.16) and Netrokona (31.12). The incidence of poverty was striking among labourer-headed households, nearly half of them in each category (agriculture and non-agriculture) fell below the upper poverty line. However, the prime strategies for coping with food insecurity for the study area are borrowing money and food, reducing family

expenditure, especially on food and out-migration (particularly temporarily internal migration) in both short run and long run. It is worth mentioning that the coping strategies that deplete the productive assets indirectly are reducing family expenditures and borrowing money; moreover, the sale of land or household assets depletes the productive assets directly. Finally, the findings of the study indicate that food insecurity is existing in the study areas. They need sustainable food security by adopting new adapted technologies and alternate income generating sources along with increasing crop productivity and real income of farm households.

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Appendix Table 1 Per capita per day intake of major food items for 2122 kcal and amount of costs incurred

Food item	Per capita per day intake (gm) (F_i)	Total calorie content	Calorie content per gm	Av. price/kg	Ave. price of required quantity (P_i*F_i)
Cereals					
Rice	460.96	1594.96	3.46	32	14.75
Wheat	36.56	125.035	3.42	32	1.158
Pulses	15.47	53.07	3.43	110	1.7017
Fish	29.09	33.30	1.1447	150	4.3635
Meat	9.19	11.239	1.2229	280	2.5732
Eggs	3.22	5.58	1.7329	260	0.8372
Milk	33.12	22.19	0.7471	60	1.9872
Vegetables	57.26	18.89	0.33	20	1.1452
Potato	61.19	59.35	0.97	18	1.10142
L.vegetables	106.12	47.01	0.44298	22	2.33464
Fruits	20.20	18.58	0.9198	100	2.02
Oil	8.64	77.76	9	125	1.08
Spices	6.63	17.24	2.60	55	0.36465
Onion	19.74	9.87	0.50	40	0.7896
Sugar	7	27.87	3.98	52	0.364
Total	874.39	2121.94			36.57