Research Monograph 22

HOUSEHOLD FOOD INSECURITY IN BANGLADESH

CONCEPTS, ESTIMATES AND DETERMINANTS

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List of Abbreviations and Acronyms

Agri.	Agriculture
Akal	Bengali term for famine
Ayurvedic	Traditional Medicine
Bazar	Market or shopping area
BBS	Bangladesh Bureau of Statistics
BIDS	Bangladesh Institute of Development Studies
BIDS-FISS	Bangladesh Institute of Development Studies-Food Insecurity Survey
BRAC	Bangladesh Rural Advancement Committees
Cal	Calorie
CBN	Cost of Basic Needs
DCI	Direct Calorie Intake
EFIS	Extreme Food Insecure
EGS	Employment Generation Scheme
EP	Extreme Poor
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus Group Discussion
FIS	Food Insecurity
FPMU	Food Planning and Monitoring Unit
FS	Food Secure
GHI	Global Hunger Index
GR	Gratuitous Relief
HDDS	Household Dietary Diversity Score
HIES	Household Income and Expenditure Survey
IFPRI	International Food Policy Research Institute
IGA	Income Generating Activity
Kg	Kilogram
LFS	Labour Force Survey

Mahajan	Professional money lender in Bangladesh
MDG	Millennium Development Goal
MF	Micro-finance
MFIS	Moderate Food Insecure
Monga	Lean period in rural Bangladesh
MP	Moderate Poor
Nalta	Type of leafy vegetable
NGO	Non Government Organisation
NP	Non-poor
OLS	Ordinary Least Square
PoA	Plan of Action
PRSP	Poverty Reduction Strategy Paper
SFI	Serious Food Insecure
Tk	Taka (Bangladesh Currency)
TV	Television
VGD	Vulnerable Group Development
VGF	Vulnerable Group Feeding
WB	World Bank

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Executive Summary

Objectives of the Study, Rationale and Methodology

The objective of the present study is to focus on household food insecurity and provide an analysis of the factors affecting the food security status so that appropriate counteracting policies may be adopted to ensure better food security prospects. Specifically, the study will examine the impact of paid employment and self-employment on income and prospects of household food security.

Past studies on labour market and employment situation of Bangladesh focused mainly on the macro level issues (Rahman 2004). The links between sector and status of employment (self and paid employment), underemployment (seasonal and year round) and household food security were not adequately examined by the policymakers or researchers. Therefore, the proposed research intends to conduct an indepth analysis of these linkages and focus on the seasonal dimensions as well. Since food insecurity experiences of households are likely to be periodic, and get intensified through seasonal pattern of employment, this aspect deserves specific focus.

A sample survey has been conducted for the study. The survey covers four villages in different proximity to two district centres, namely Mymensingh and Netrokona. Secondary data has been drawn from various national sample survey reports, particularly the HIES. The unit records of the survey (2005) have been reanalysed.

Findings Based on HIES 2005

Using a combination of poverty line and calorie requirement norm (2,122), 15.6 per cent and 10.8 per cent households (HIES 2005) are in extreme food insecure and moderate food insecure group respectively. Given the norm of calorie requirement, those who consume less than the norm form the subset who are likely to be food insecure. However, some of these households may voluntarily consume less than

the norm. Therefore, the study has used the above definition which combines calorie with income where the latter is expected to reflect the involuntariness of lower calorie consumption. In contrast, if income level is ignored, and 2,122 kilo calorie (kcal) is taken as the cut-off line, 39.4 per cent households are below this level.

Within each income group, a larger percentage of households in urban areas are taking less than the recommended calorie. Average calorie intake is 1,950 and 1,863 kcal respectively among extreme poor in rural and urban areas. The average calorie in moderate poor group is 2,255 and 2,159 kcal respectively in rural and urban areas (Table 1). These observations actually raise a fundamental question about the HIES's recommendation of same level of calorie standard for the poverty line in rural and urban areas.

TABLE 1
AVERAGE CALORIE INTAKE IN URBAN AND RURAL AREAS

Poverty group	Rural/urban	Average calorie per person per day
Extreme poor (EP)	Rural	1950.4
	Urban	1862.8
Moderate poor (MP)	Rural	2255.3
	Urban	2159.9
Non-poor (NP)	Rural	2841.1
	Urban	2768.7

Source: Estimated from the HIES 2005 data.

Only 42 per cent of population consume HIES recommended (World Bank 2008) weight of fish and meat (59.11 gms). About 25 per cent consume less than half of the recommended weight. The situation is worse in the rural areas compared to urban for all poverty groups.

The situation is definitely better for vegetables and fruits. Seventy-nine per cent households get adequate intake. The adequacy in urban areas is better, 85.4 per cent compared to 76.3 per cent in rural areas.

Thus household food insecurity extends beyond calorie inadequacy. Inadequacy of protein intake should receive serious policy attention.

Type of employment is associated with both poverty and calorie inadequacy. Highest share of households consuming below 2,122 calories is among the wage employed in non-agriculture, followed by similar group in agriculture (the shares are 41.7 per cent and 37.4 per cent respectively).

A closer look at the extent of food insecurity (combination criterion) and its links with type of employment (Table 2) shows that food insecurity is lower among the self-employed compared to those in paid employment (22.7 per cent and 33.7 per cent respectively).

TABLE 2
FOOD INSECURITY INCIDENCE BASED ON CALORIE AND INCOME COMBINATION CRITERION (FIS-CI) BY EMPLOYMENT STATUS

(Per cent)

FIS-CI	Employment status of head	
	Paid employment	Self-employment
Food secure	66.3	77.3
Food insecure	33.7	22.7
Total	100.0	100.0

Source: Estimated from the HIES 2005 data.

Multiple regression on household income shows that among the three status of employment, those in self-employment have highest income. The dummy variables for wage employment and salaried employment have negative coefficients (self-employment is the base group).

Logit regressions have been estimated in which dependent variable is "whether food insecure" (in binary form). Results show that wage employment raises food insecurity (defined as a combination of below poverty line income and calorie adequacy). The situation is much worse among wage workers in rural areas.

An additional hypothesis that we wish to test is whether production of rice within the household makes an impact on

calorie consumption. The rationale is that there is a difference in the buyers' price of rice in the market and selling price of the producer and the latter is likely to be lower. Moreover, producers of rice can generate savings for periods of shortage. A clear pattern is observed: within each quintile group of income, the per cent of households consuming equal to or higher than calorie norm rises with the increase of amount of rice produced. In the lowest income quintile, among those with no production of rice, 54 per cent consume less than 2,122 calorie, while among households producing 1,600 kg or above, only 28 per cent experienced inadequate calorie intake. Similar relationship holds for non-poor households.

Food Insecurity in the Villages of Mymensingh and Netrokona (BIDS Survey, 2008): Results and Discussion

In the BIDS survey of 2008, data on duration of food insecurity has also been collected and food insecure has been defined to include food insecurity at any time of the year (not only two weeks preceding the interview as in HIES). The survey covers sample from two districts: Mymensingh and Netrokona. Therefore, the results from the two data sets are not comparable.

When cases of food insecurity with duration over 12 days are considered, 54.3 per cent and 52.2 per cent households in the selected villages of Mymensingh and Netrokona are in food insecure group.[1] Long duration food insecurity (more than 36 days a year) is quite high: 39.3 per cent in Mymensingh, 30.3 per cent in Netrokona and 36.0 per cent for the sample as a whole. Food insecurity incidence is 66.7 per cent among the landless (less than 0.50 decimal) households. The share is lower among those with larger land ownership. None of the households with larger than 2.50 acres reported food insecurity (Table 3).

[1] We have used a direct question on food insecurity in this survey. The direct question was "during last one year, have there been days when some persons in the household did not eat even two full meals?" Duration of such food insecurity was also asked.

TABLE 3
DAYS OF FOOD INSECURITY IN MYMENSINGH AND NETROKONA

Land ownership	Households with > 12 days of food insecurity (Per cent)			Households with > 0 days of food insecurity (Per cent)		
	Mymensingh	Netrokona	Both areas	Mymensingh	Netrokona	Both areas
0.0 - 0.10	59.40	49.67	55.65	67.42	72.34	69.12
0.11-0.50	47.80	40.23	43.94	53.19	10.27	60.71
0.51-2.50	38.32	39.20	38.59	31.42	17.86	25.40
2.51 & above	-	-	-	-	-	-
Total	55.80	47.13	52.52	55.50	55.65	55.55

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.
- None

Highest incidence of food insecurity is observed among paid agricultural labour households, followed by self-employed in non-agriculture. Incidence of food insecurity is lowest among self-employed in agriculture. Table 4 presents data for households with food insecurity above 12 days a year.

TABLE 4
EMPLOYMENT TYPE AND FOOD INSECURITY

(Per cent)

District code	Employment type	Household with >12 days of food insecurity
Netrokona	Agri. self	21.05
	Agri. paid	77.92
	Non-agri. self	57.14
	Non-agri. paid	41.67
	Total	52.02
Mymensingh	Agri. self	28.95
	Agri. paid	76.27
	Non-agri. self	62.50
	Non-agri. paid	50.00
	Total	54.28
Netrokona & Mymensingh	Agri. self	25.79
	Agri. paid	76.92
	Non-agri. self	60.47
	Non-agri. paid	47.37
	Total	53.42

Source: BIDS Food Insecurity Survey (BIDS-FISS), 2008.

A comparison of this year (2007-08) with the previous year shows that 46.4 per cent households reported substantial worsening of the food situation, 23.4 per cent experienced slight worsening, and 17.0 per cent reported improvement.

Monthly data on food insecurity reveal large monthly fluctuation in the extent of food insecurity. October to mid-November (*Kartik*) and mid-February to mid-March (Chaitra) are the periods of most severe food insecurity (Figure 1.a-1.c). Duration of food shortage was on average 10.6 days, 12.9 days and 13.3 days respectively in *Ashwin, Kartik* and *Chaitra*. Highest duration of unemployment is also observed during these months. In contrast, in *Baishakh, Jaishta, Agrahayan* and *Poush*, average food insecurity experience was 7.5 to 7.9 days.

The extent (number of days) of food insecurity and employment shows an inverse relationship (Figure 1.a-1.c). There are two periods of low employment, extending over a period of about two months. In both the low employment periods, food insecurity days are high. Both the districts show very similar pattern of seasonal fluctuations of employment and food insecurity. Wage data shows a decline of wage during the slack period.

Such data on the months of food insecurity and employment shortage will help successful implementation of safety net and "employment generation scheme" (EGS) activities, through choice of appropriate period of interventions. Such data base should be developed for all regions to choose correct geographical placement of the government's seasonal safety net and EGS programmes.

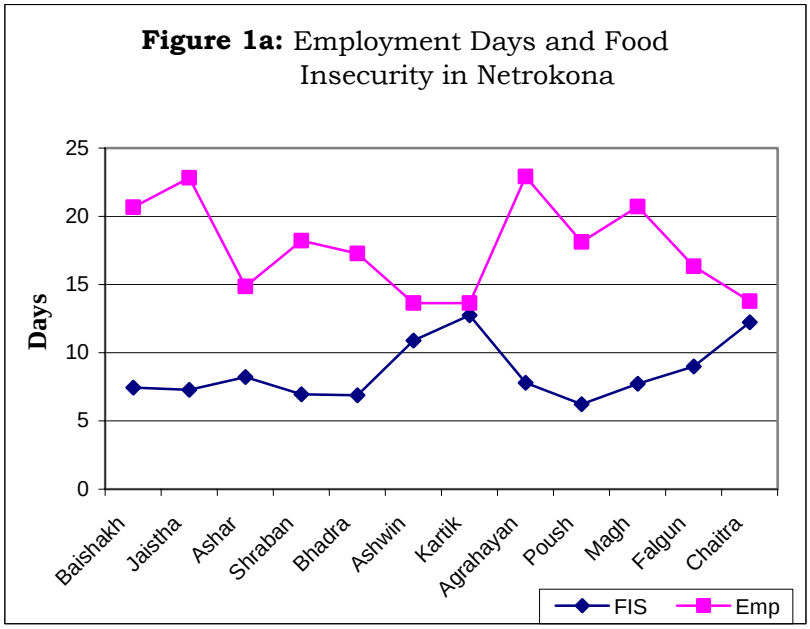
Data also show fluctuation of wage. The ranges between peak and slack wage in both areas are large. In fact, in some villages employers did not report a wage rate for "*Kartik*" and "*Chaitra*," because in these months they do not hire workers. Thus the slack season means both decline of wage and of employment.

At this point, it should be emphasized that this type of survey and data analysis for small regions can be useful to focus on seasonality of employment and wage within a particular area. If such data is averaged for larger

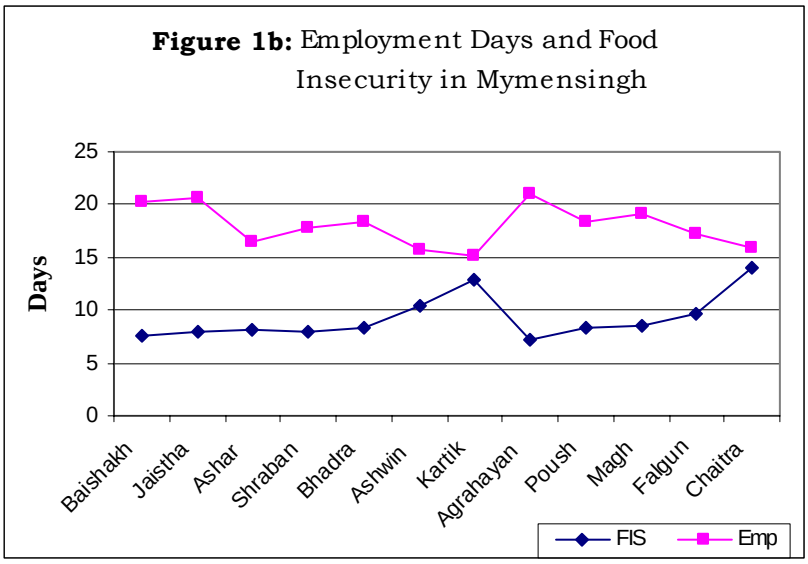
geographical regions, then the seasonal fluctuation will be less prominent because the pattern in one area may counteract the pattern in other areas.

The study examined households' responses to food insecurity. An overwhelming large share of households resort to borrowing from private sources. In the two areas of Mymensingh and Netrokona, 87.22 per cent and 85.51 per cent of food-insecure households respectively reported to have taken loan from various sources. The next frequent answer (39 per cent) is "work more." "Going to the town to take up employment" has been noted as a separate response and about 22 per cent households adopted this. About 4 per cent households reported to have engaged children in income earning work. A few households (1.4 per cent) sent children to better-off relatives' house (Table 5). Pattern of responses is similar to other studies on poverty (Hossain 2009, Rahman and Hossain 1995).

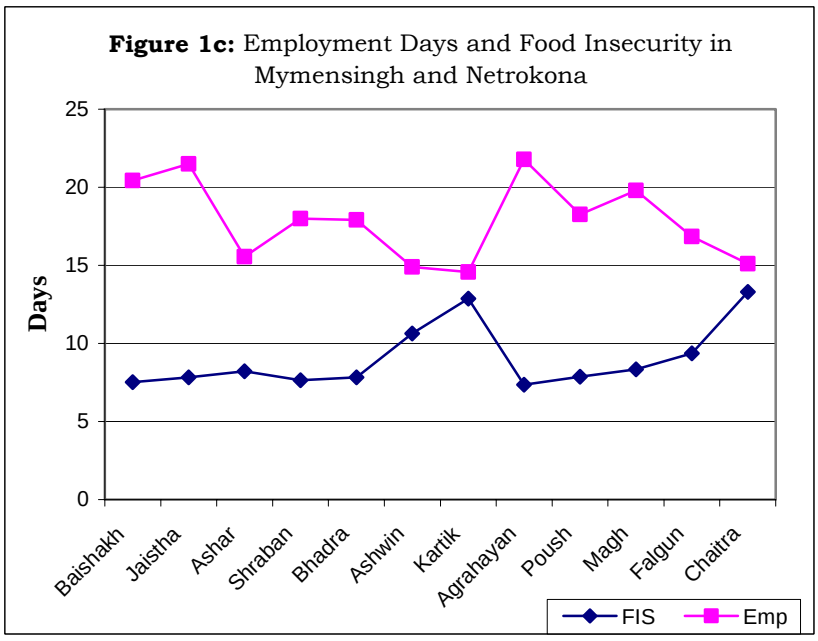
Figure 1a: Employment Days and Food Insecurity in Netrokona



Source: BIDS-FISS data.



Source: BIDS-FISS data.



Source: BIDS-FISS data.

TABLE 5
HOUSEHOLDS' RESPONSES TO THE PROBLEM OF FOOD INSECURITY

Response*	Mymensingh and Netrokona	Mymensingh	Netrokona
Work more	38.9	38.3	39.9
Give children to work	3.8	2.6	5.8
Loan	84.4	82.8	87.0
Go to town to work	21.9	21.1	23.2
Send children to relatives	1.4	0.4	2.9
Others	13.2	9.7	18.8
Nothing	1.9	3.1	
Total	100.0	100.0	100.0

Source: BIDS Food Insecurity Survey (BIDS-FISS), 2008.
* Multiple responses were allowed.

Distribution of responses by status of employment shows that a much larger share of wage employed persons go outside the village to avail employment opportunities. The other response with much larger share among wage employed is "send children to work." Since food-insecure households engaged in wage employment do not have resources that can give them direct access to food, they have no option but to mobilise family's labour and such labour may be contributed by men, women and children.

Table 6 presents data on the role of such migration in the two areas. Among the food-insecure households, about 42 per cent were engaged in temporary migration—45.3 per cent in Netrokona and 39.7 per cent in Mymensingh. Average duration of migration was longer in Mymensingh compared to Netrokona, 100.1 days and 77.4 days respectively. A much larger percentage of workers migrate among the wage employed cases. Extent of migration disaggregated by food insecurity situation has been presented in Table 6. The share of migrants is larger among those facing food insecurity.

TABLE 6
INTERNAL MIGRATION AMONG FOOD-SECURE AND FOOD-INSECURE HOUSEHOLDS IN MYMENSINGH AND NETROKONA

(Per cent)

District	Food insecure			Food secure			All		
	Yes	No	All	Yes	No	All	Yes	No	All
Mymesingh	45.3	54.7	100.0	26.6	73.4	100.0	37.0	63.0	100.0
Netrokona	39.7	60.3	100.0	23.8	76.2	100.0	32.6	67.4	100.0
Mymensingh & Netrokona	41.8	58.2	100.0	24.8	75.5	100.0	34.3	65.7	100.0

Source: BIDS-FISS, 2008.

An analysis of loss of workdays due to illness shows that health problem and large expenditure for health care services can make a household perpetually food insecure.

Female-headed households of the present survey are more vulnerable to food insecurity. Many women mentioned that they cannot take up more employment due to social restrictions. In times of food crises, women are more concerned and active in gleaning food and seeking help.

Policy Recommendations

Present study shows that the extent of food insecurity is high and reduction of extreme form of food insecurity should be a policy priority. For such households either Employment Guarantee Scheme or direct food support is necessary. More employment generation in food deficit areas is expected to be one of the most effective means of ensuring food security.

Some specific policies have been mentioned below:

i. Wage employed in agriculture should get scope of more employment. Policies for raising productivity of agriculture will be effective for increasing the scope of both self-employment and wage employment.

ii. However, even in months of peak employment, a large share of both self-employed and wage labourers suffer from food insecurity. Therefore, there is need for raising labour force participation in such households, especially among women. This requires policy adoption

for encouraging self-employment of women, especially through provision of training, finance and marketing facilities. Raising wage through enhancing productivity of agriculture should get priority. In this context, agriculture sector policies should aim at raising productivity of crops which have higher intensity of wage labour use.

iii. Present study shows that September–October and February are the months of food insecurity and employment shortage in the survey areas. Therefore, employment generation programmes should target this period. Such data on the seasonal dimensions of employment and food insecurity will help successful implementation of safety net and EGS activities through choice of appropriate period of interventions.

iv. Such data base should be developed for all regions and this can help choose correct geographical placement of the government's seasonal safety net and EGS programmes. Results of the study show that even within a less poor district (Mymensingh) there can be some upazilas/villages with widespread food insecurity. Therefore, employment schemes should carefully choose the geographical location of programmes.

v. In urban areas, a larger share of self-employed as a group suffer food insecurity. However, after controlling for other variables in the regression analysis, self-employment has an insignificant impact. Thus, the disadvantage of this group is possibly because of lack of education and productive asset. Therefore, more analysis on the reasons of higher incidence of food insecurity in this group is needed. In addition, policies for improving productivity of urban self-employment among poor should be a priority. Safety net in the form of benefits for aged and destitutes in urban areas should be scaled up.

vi. Availability of credit at low rate of interest can help overcome severe food shortage periods. In addition, health problem and large expenditure for health care services can make a household perpetually food insecure. Provision of safety net to such households can act as an interim solution. But in the long term, health services for chronically ill and for those with serious health problems must be arranged to bring back such families to normal consumption, and human development tracks. Appropriate health services can work as a mechanism to prevent households' slipping into food insecure situation.

vii. Creation of opportunities of both self and wage employment of woman can enable them overcome the seasonal crisis of food deficit, especially in periods of outmigration of male earning members.

viii. Food insecurity is even worse for female heads who are engaged in wage employment. This occurs because women are in a disadvantageous situation in the labour market and usually receive lower wage compared to men. The policy implications of these observations are quite obvious: female heads of households need more opportunities of employment and they need access to better paid employment.

ix. It should, however, be borne in mind that increase of women's employment cannot take place at the cost of male employment. So overall employment growth must be targeted.

x. Much of the disadvantage of women is due to their lower wage compared to men. However, wages are market determined and cannot be changed overnight. Therefore, supplementary policies of self-employment generation for women is required. In this context, policies should also focus on employment generation for young unmarried girls from food-insecure families. These school dropout girls may be provided with

training and seed capital for new economic activities. This will not only improve the food security situation of households, but also the marriage process can be delayed resulting in multiple social gains.

xi. Provision of employment and safety net during slack seasons should be targeted towards women from food-insecure families because the role of the female earning member has important implications for the well-being of the household and, inter alia, the food security of the family.

xii. Very short term loans for food-insecure households can help meet seasonal food gap.

xiii. Awareness raising about the role of various types of food should aim at young population.

xiv. At the end, it must be emphasised that the long term solution of food insecurity requires more employment intensive growth to absorb the underemployed labour force.

CHAPTER 1

INTRODUCTION

1.1 Objectives and Rationale of the Study

Food security is an important development goal of Bangladesh. The National Food Policy of Bangladesh has explicitly stated that it aims to ensure "a dependable and sustained food security for all people of Bangladesh at all times," (FPMU 2008). Other policy documents also reiterated the importance of this goal. The food security issues at the aggregate level receive more attention of researchers especially because these are linked to policies related to annual food production, import and public food distribution. In contrast, research on household food insecurity received less attention, although it has important implications for nutrition and health status of individuals, for overall household welfare and for aggregate demand for food. Therefore, the present study conducts an assessment of the extent of household food insecurity and such assessment has been conducted both at national level and for pockets of poorer regions. The objectives of the study include analysis of determinants of households' vulnerability to food insecurity and the strategies they choose to overcome the problem. This can provide useful inputs into policy adoption for sustained improvement in household food security situation.

To arrive at estimates of household food insecurity, the issues related to conceptual and methodological aspects need to be addressed. We shall propose concepts and indices for estimating household food insecurity. The methodological improvements are based on reviews

of inadequacy of the existing approaches. A major proximate determinant of household food insecurity is income which, in turn, is linked with type of employment of household members. Therefore, the present study aims to examine the linkages among types of employment, income and household food security. The proposed research intends to conduct an indepth analysis of these linkages and focus on the seasonal dimensions as well. Food insecurity experiences of households are likely to be periodic, and get intensified through seasonal pattern of employment. This aspect deserves specific attention. The study, therefore, conducts an analysis of the link between seasonal underemployment and seasonal food insecurity.

The first part of the study is based on the Household Income and Expenditure Survey 2005 (BBS 2006), which is a national sample survey conducted by the Bangladesh Bureau of Statistics (BBS) (details of the sources of data have been presented in Section 1.2). The specific objectives of this component are the following:

(a) It incorporates methodological improvements for estimation of incidence of food insecurity. The study presents national estimates of household food insecurity on the basis of the traditional as well as the newly defined indices.

(b) The determinants of food insecurity, based on new food insecurity index, have been analysed.

(c) Locationwise (urban-rural) differences related to labour market, income and food intake have been addressed.

Specific objectives of the analysis of the second component (based on the household survey, 2008) are as follows:

(i) It provides estimates of food insecurity based on specific questions in the survey and analyses the difference in the extent of food insecurity among groups based on employment type.

(ii) The impact of paid employment and self-employment on seasonal pattern of food insecurity and employment has been examined.

(iii) This part of the study discusses the strategies used by the low income households to offset the seasonal demand for labour and food insecurity and the supports obtained from institutions and the social network. Whether the response strategies differ between self-employed and wage employed groups receives special attention.

(iv) Women's experience and role in ensuring household food security has been examined.

1.2 Data and Methodology

The proposed study draws upon both secondary data and primary survey data collected specifically for the study. Secondary data has been drawn from various national sample survey reports, particularly the Household Income and Expenditure Survey (HIES). In addition to the published report of the HIES 2005, the unit records of the survey have been re-analysed. Indepth analysis of determinants of food security and its links with employment have been carried out through multiple regression analysis. Since HIES is based on a very large sample, conclusions valid at national level can be obtained. Such conclusions can provide a firm basis for adoption of national policies for reduction of household food insecurity through improvement of labour market outcomes.

In addition to the HIES data analysis, a sample survey has been conducted for the study. The survey covers four villages in two districts. The survey collected data on households' labour force, employment, wage/salary, terms of employment, and selected indicators of food insecurity and households' responses to food insecurity. A household survey was conducted during January 2008 to April 2008 and was followed by focus group discussions (FGDs) and case studies conducted at various times of the year 2008. The survey data is not, however, comparable to HIES data, which is based on representative national sample in the year 2005.

To provide indepth insights into the social dimensions of choice of employment and households' food security strategy, case studies and FGD sessions have been conducted. The case studies and FGDs focus on gender dimensions, health issues and intra-household matters, which cannot be adequately addressed through structured questionnaire survey.

The sample survey covers four villages, as mentioned above. A complete census of households was prepared on the basis of the lists currently available with union parishad and verified through discussion with informed residents of the village. The households were stratified into two categories: landless and those who own arable land. Some household visits have been made for verification purpose. In the sample 50 per cent households from each strata were selected.

Since the survey is based on a small sample in purposively selected villages,[1] it can generate more detailed and indepth data on the processes and

[1] After preliminary visits to some of the poorer areas of the districts, in the central region of the country, the issues of selection of survey areas and sampling methodologies were discussed in a seminar organised by Food Planning Monitoring Unit (FPMU). The final selection incorporated the views and comments given by participants.

experiences of the households. These conclusions may not be generalised at national level but can help in providing insights into the nature and extent of the problem and the households' adaptation to overcome the adversity. The location of the survey villages and size of sample from each village have been shown in Table A1.1 and Maps 1 to 5. Selected characteristics of the villages have been presented in Table A1.2.

TABLE A.1.1
VILLAGES SELECTED FOR BIDS SURVEY, 2008

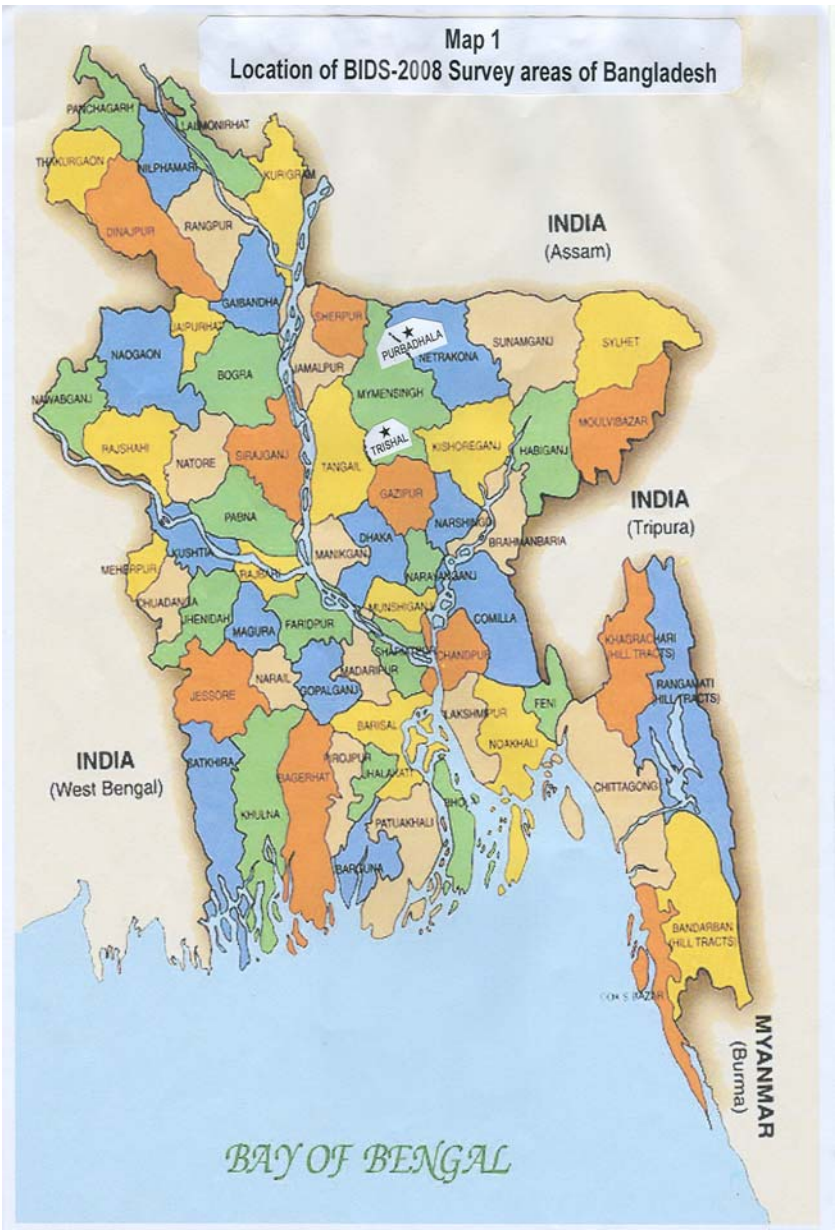
Village	Upazila	District	Number of household	Sample size		Total
				Landless	Landowner	
Gondokhola	Trishal	Mymensingh	427	163	52	215
Lalpur	Trishal	Mymensingh	291	87	61	148
Binna	Purbadhala	Netrokona	275	94	46	140
Sattati	Purbadhala	Netrokona	300	103	51	154
Total			1,293	447	210	657

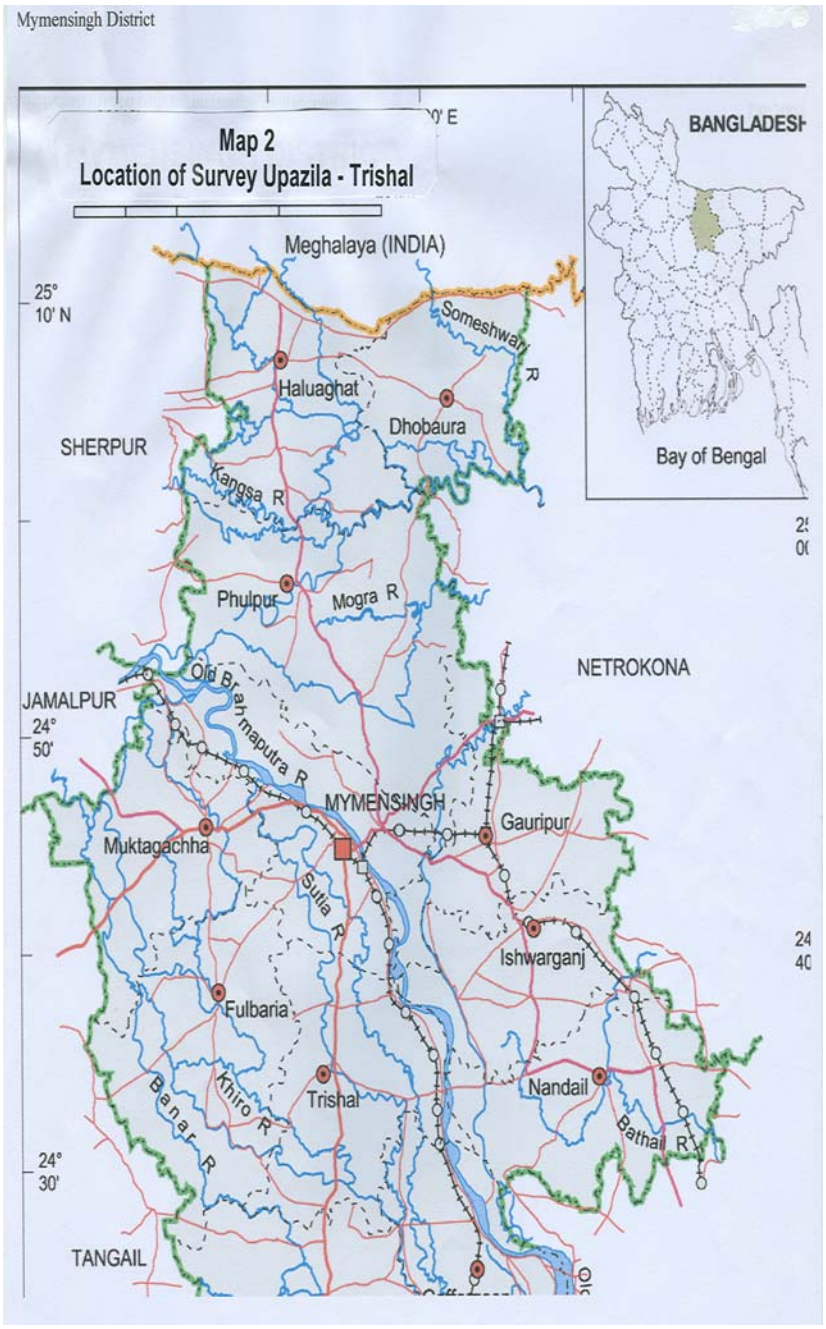
Source: BIDS-Food Insecurity Survey (BIDS-FISS) 2008.

TABLE A.1.2
CHARACTERISTICS OF THE VILLAGES

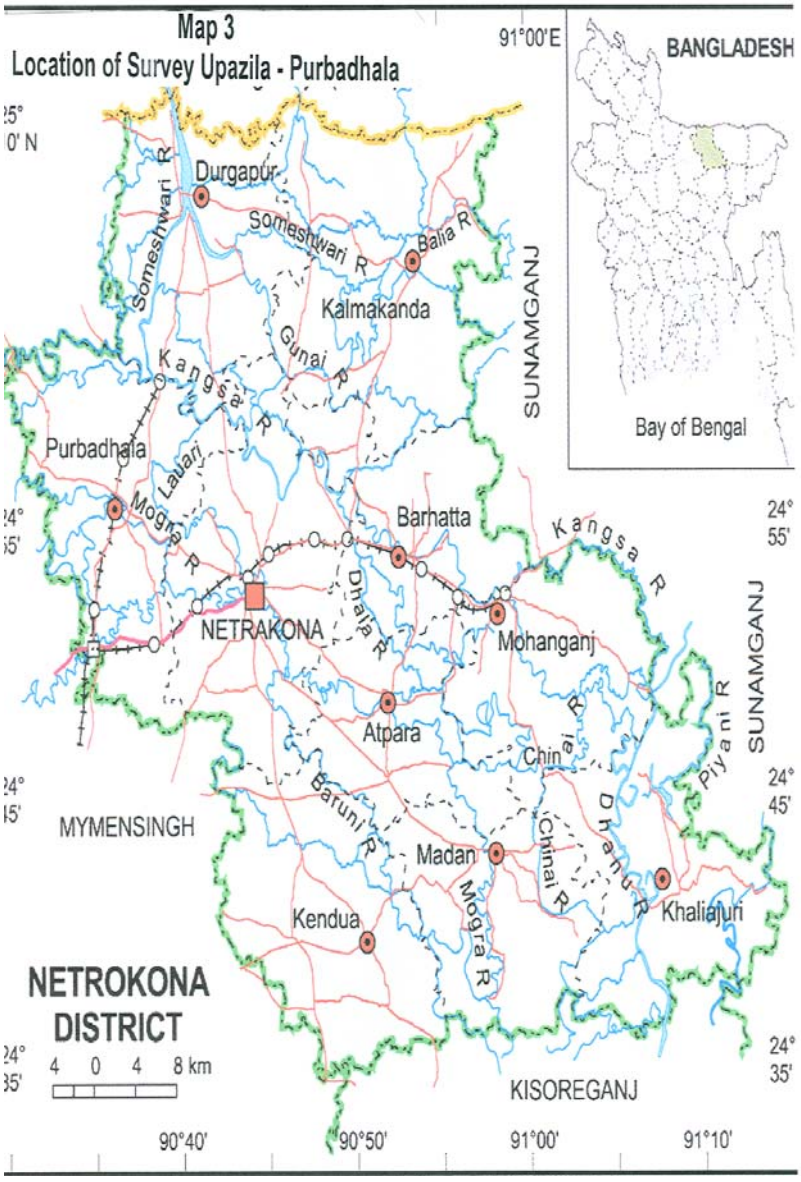
Description of Characteristics	Name of the villages			
	Gondakhola	Lalpur	Binna	Sattati
Location	5 km away from Upazila HQ	24 km away from Upazila HQ	9 km away from Upazila HQ	5 km away from Upazila HQ
Area (in sq. km.)	1.50	2.0	2.0	2.5
Important crops	Paddy, Wheat, Jute, Vegetables	Paddy, Vegetables, Sugarcane, Turmeric	Paddy	Paddy
Distance from nearest bus stand (in km.)	5.0	3.0	7.0	1.5
Distance from market (in km.)	2.0	4.0	1.0	4.0
Electricity in village	Yes	No	No	Yes
Industry in village	Nil	Nil	Nil	Nil
Number of schools	01	02	01	05
Cropped area (in acre)				
Triple cropped	270	100	0	0
Double cropped	20	200	700	150
Single cropped	0	80	600	40

Source: BIDS-Food Insecurity Survey (BIDS-FISS) 2008.

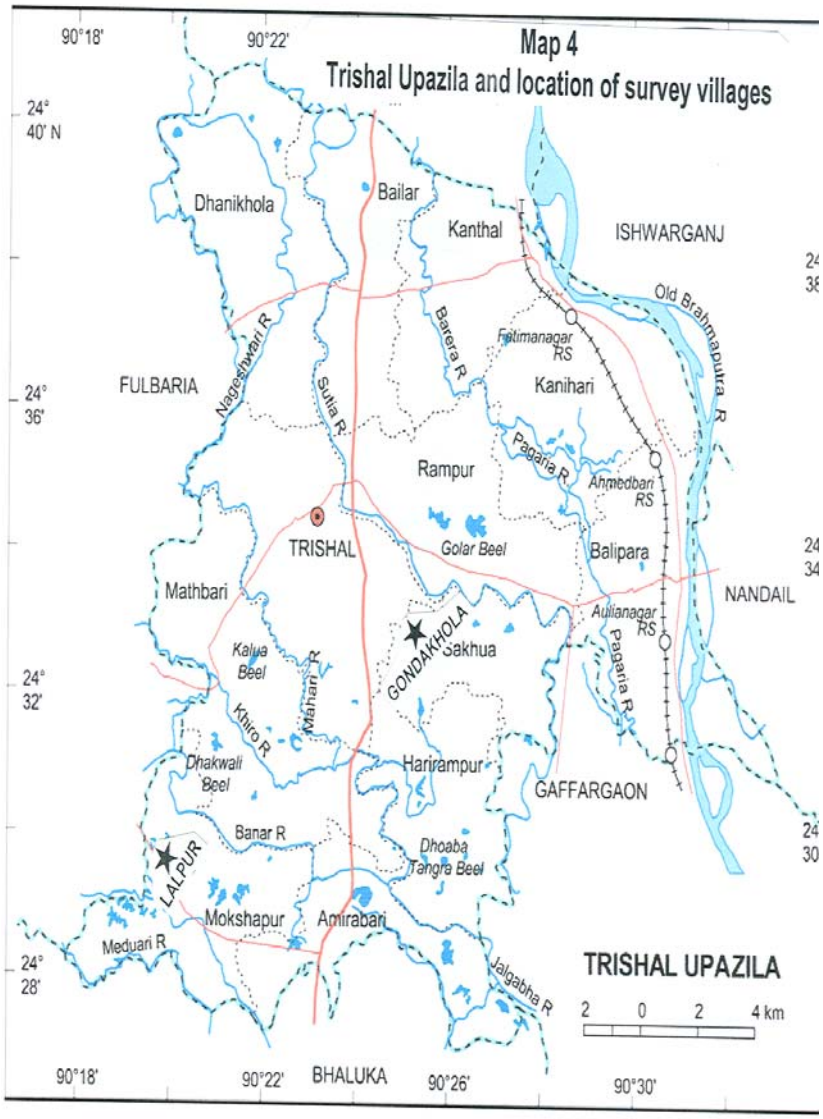

Map 1
Location of BIDS-2008 Survey areas of Bangladesh
INDIA
(Assam)
INDIA
(Tripura)
INDIA
(West Bengal)
MYANMAR
(Burma)
BAY OF BENGAL
PANCHAGARH
LALMONIRHAT
THAKURGAON
NILPHAMARI
KURIGRAM
DINAJPUR
RANGPUR
GAIBANDHA
JAIPURHAT
SHERPUR
PURBADHALA
NETRAKONA
SUNAMGANJ
SYLHET
NAOGAON
BOGRA
JAMALPUR
MYMENSINGH
NAWABGANJ
RAJSHAHI
NATORE
SIRAJGANJ
TANGAIL
TRISHAL
KISHOREGANJ
HABIGANJ
MOULVIBAZAR
GAZIPUR
PABNA
DHAKA
NARSHINGDI
BRAHMANBARIA
KUSHTIA
MANIKGANJ
MEHERPUR
NARAYANGANJ
CHUADANGA
JHENIDAH
MUNSHIGANJ
COMILLA
MAGURA
FARIDPUR
KHAGRACHARI (HILL TRACTS)
CHANDPUR
MADARIPUR
RANGAMATI (HILL TRACTS)
NARAIL
JESSORE
GOPALGANJ
FENI
BARISAL
LAKSHMIPUR
NOAKHALI
BATKHIRA
JHALAKATI
CHITTAGONG
KHULNA
PATUAKHALI
BARGUNA
BANDARBAN (HILL TRACTS)

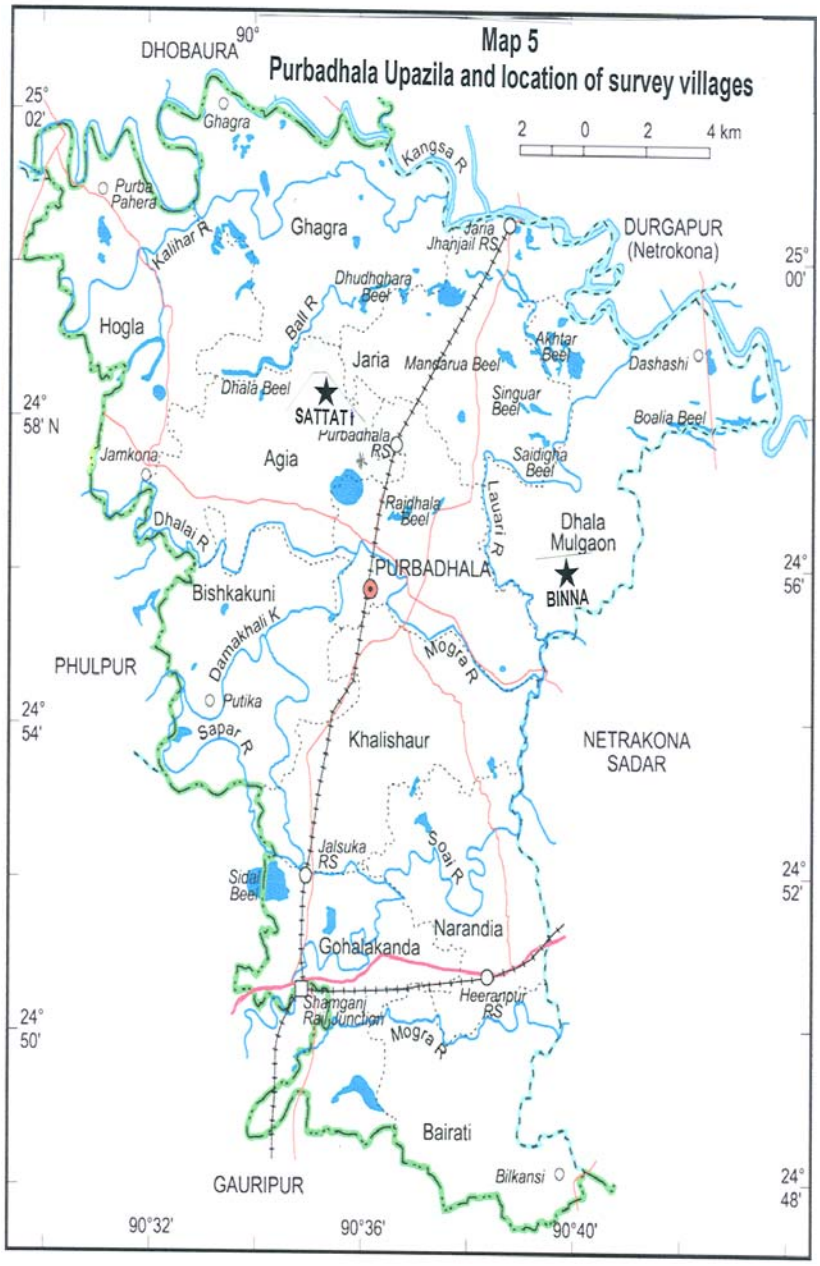

Mymensingh District
Map 2
Location of Survey Upazila - Trishal
BANGLADESH
Bay of Bengal
Meghalaya (INDIA)
25° 10' N
Someshwari R
Haluaghat
Dhobaura
SHERPUR
Kangsa R
Phulpur
Mogra R
NETROKONA
JAMALPUR
24° 50'
Old Brahmaputra R
MYMENSINGH
Gauripur
Muktagachha
Sutia R
Ishwarganj
Fulbaria
Nandail
Trishal
Khiro R
Banar R
Bathail R
24° 30'
TANGAIL

rokona District



Trishal


Map 4
Trishal Upazila and location of survey villages
90°18'
90°22'
90°26'
90°30'
24° 40' N
24° 36'
24° 32'
24° 28'
Dhanikhola
Bailar
Kanthal
ISHWARGANJ
FULBARIA
Nageshwari R
Sutia R
Barera R
Fatimanagar RS
Old Brahmaputra R
Kanihari
Pagaria R
Rampur
Ahmedbari RS
TRISHAL
Golar Beel
Balipara
Mathbari
NANDAIL
Aulianagar RS
Kalua Beel
Mahari R
GONDAKHOLA
Sakhua
Khiro R
Dhakwali Beel
Hariampur
GAFFARGAON
Banar R
Dhoaba Tangra Beel
LALPUR
Mokshapur
Amirabari
Meduari R
Jalgabha R
BHALUKA
TRISHAL UPAZILA
2 0 2 4 km


Map 5
Purbadhala Upazila and location of survey villages
2 0 2 4 km
90°
DHOBAURA
25° 02'
Ghagra
Kangsa R
Purba Pahera
Kalihar R
Ghagra
Jaria Jhanjail RS
DURGAPUR (Netrokona)
25° 00'
Dhudhghara Beel
Bail R
Hogla
Jaria
Mangarua Beel
Akhtar Beel
Dashashi
Dhala Beel
SATTATI
Singuar Beel
Boalia Beel
24° 58' N
Purbadhala RS
Jamkona
Agia
Saidigha Beel
Raidhala Beel
Lauari R
Dhalai R
Dhala Mulgaon
PURBADHALA
BINNA
24° 56'
Bishkakuni
Damakhali K
Mogra R
PHULPUR
Putika
24° 54'
Sapar R
Khalishaur
NETRAKONA SADAR
Jalsuka RS
Soai R
Sidal Beel
24° 52'
Narandia
Gohalakanda
Heerampur RS
Shamganj Rajoonchar
24° 50'
Mogra R
Bairati
Bilkansi
GAURIPUR
24° 48'
90°32'
90°36'
90°40'

CHAPTER 2

METHODOLOGY OF MEASUREMENT OF HOUSEHOLD FOOD INSECURITY: REVIEW OF EXISTING STUDIES

2.1 Introduction

The literature on food security in general and with reference to Bangladesh in particular is voluminous. The main body of research on food security can be grouped into two major categories:

a) The aggregate-level analysis focusing on food availability; and

b) Those focusing on household food security. The intra-household analysis of food security forms a sub-category of household analysis.

The present study and therefore the literature review focuses on the second group. In fact, food security incorporates four components: availability, access, stability and utilisation (Bhattacharya, Currie and Haider 2004, Broca 2002).[1] The present study addresses questions related to access.

In this context, further fine tuning is possible through drawing a distinction between "food insecurity" and "food poverty." While "food insecurity" may include a notion of vulnerability and uncertainty, food poverty

[1] The last category (utilisation) is a relatively neglected area of research. Nutrition or the lack of it is increasingly gaining prominence in the literature, specially in Bangladesh, and as such deserves special mention. In fact, increases in food availability and household access to food alone will not be adequate to address the malnutrition problem in Bangladesh. Major efforts are needed to address nutritional issues more directly and more research should be undertaken on this topic.

involves inadequate food intake. For the purpose of the present study food insecurity has been defined in terms of experience and thus in ex post sense and not in probabilistic terms. Hence, a distinction between food insecurity and food poverty has not been drawn.

One of the objectives of the literature review is to examine the conceptual issues and methodologies used in the assessment of food insecurity at the household level. Section 2.2 presents a review of these conceptual issues. This Chapter also presents findings on the incidence of household food insecurity in Bangladesh (Section 2.3). In the context of the determinants of household food insecurity, the review focuses on whether there has been an analysis of the linkages between unemployment and food security. Section 2.4 presents the findings of studies which examine the interrelationship among household poverty, employment and household food insecurity.

2.2 Methodologies Proposed and Shortcomings

Although the concern about macro or national level food security in Bangladesh and in many parts of the world is quite old and dates back to the 1960s, serious research on this issue began from the early 1980s. The concerns were initially linked to macro level policy issues. The need for measurement and analysis of household level food security was not addressed in the early phase of research.

Beginning from the early 1990s household food security emerged as a research issue in Bangladesh. In fact, this has possibly been linked with the development of research methods for measuring household food insecurity in both low and high income countries. In this context, the methodological papers by USDA deserve special mention. These papers developed standard set of

questions, scoring method and survey method for estimating the extent of household food insecurity (Bickel *et al.* 2000). The methodology is based on twelve months recall based survey with questions covering severity of household food shortage and a composite score obtained from the responses.

A similar approach of survey based measurement of household food insecurity has been adopted by Frongillo *et al.* (2003). The survey instruments were developed on the basis of detailed qualitative investigation. Using the findings from these investigations, Coates, Webb and Houser (2003) developed a detailed survey methodology and questionnaire design and scoring devices for Bangladesh. Frongillo *et al.* (2003) observed that "using naturalistic, emergent inquiry, indepth interviews were conducted with 21 rural women living in diverse situations ... Four gradations of severity of food insecurity resulted, based on nine items: meals, cooking, rice, fish, perishable foods, snacks, festival food, other expenditure and management strategies." It must be recognised that it is important to gain such indepth understanding of food insecurity rather than applying questionnaire developed elsewhere. The set of questions used in this study contains various dimensions of food insecurity. However, attaching equal score to each answer may not be justified in all types of countries. Moreover, when a scoring based on a number of questions is done, errors in the response to one or more questions may affect the total score and introduce error into the results. The set of questions should actually include a smaller number of questions and should not combine access to main food, snacks, management practices, etc.

Another indicator has been suggested for measurement of household food security, which consists of

various dimensions of food availability. This includes "dietary diversity" along with adequate total food intake (Swindale and Bilinsky 2006). "In light of the need to build consensus on household food access impact indicators, two strategic objective level indicators of household food access—Household Dietary Diversity Score (HDDS) and months of inadequate household food provisioning—were identified …" (Swindale and Bilinsky 2006, p.1). HDDS is an attractive proxy because of a number of factors: although it can be an end in itself, it is more likely to be associated with improved outcomes in the areas of child's birth weight, child's anthropometric status, etc. Moreover, higher HDDS will be highly correlated with protein and calorie adequacy.

HDD method identifies 12 food groups and questions include how many groups of food have been consumed during the last 24 hours. Having food from each group will add a score of 1 (if not, addition to score is zero). Those with less than average score have inadequate dietary diversity. Here again, one may raise a question about attaching equal weight to each food component. Moreover, just inclusion of a food item without noting the quantity can be misleading.

Given the inadequacies of above measures, FAO suggests a "hunger index" (Naiken 2003). FAO's Index takes into account calorie intake and compares it with a standard.

Wiesmann (2006) takes a different approach to measurement of food security and its use for international ranking, monitoring and advocacy. The study states, "IFPRI's Global Hunger Index (GHI) captures three dimensions of hunger: insufficient availability of food (at national level), shortfalls in the nutritional status of children (underweight children

under the age of 5 years) and child mortality (under age 5)."

A composite index with equal weights of the three indicators has been used to rank countries. The paper then explains the cross country variation of GHI. The index, although based on individual's/households' outcome, can be obtained only for national level and will not be relevant for an analysis of household food insecurity incidence within a country.

2.3 Household Food Insecurity Estimates in Bangladesh—A Review

Studies on Bangladesh's household food security in the early stages involved some confusion over the concept and definition. In fact, upto the mid-1990s, extreme poverty was viewed as a proxy measure or indicator of food insecurity.

Chowdhury and Ninno (1998) mentioned that along with adequate calorie, the capacity to absorb calories for adequate nutrition is also important for household food security. This implies that calorie intake plus factors related to absorption will measure food security. But absorption capacity is a complex issue and the authors did not elaborate on this.

In fact, food insecurity is closely linked with hunger. This led to the formulation of the first Millennium Development Goal (MDG) in terms of freedom from "hunger." But the indicators suggested for measurement of MDG 1 has been set in terms of extreme poverty and malnutrition. It may sound somewhat surprising that no methodology for inclusion of indicators of hunger or food insecurity has been devised for monitoring the first MDG. Poverty measure is based on a composite criteria of calorie based food poverty line and a non-food

component, thus pushing hunger further away from the scene. World Bank (2007) has attempted at monitoring of first MDG on the basis of "extreme poverty" indicator and arrived at the conclusion that significant achievement has been made to reduce hunger. However, one cannot arrive at a firm conclusion on food intake or food insecurity or hunger from the estimate of poverty which is based on food and non-food component.

A study by Ahmed (2000) used a number of indicators to arrive at conclusions on household food consumption and nutrition for various socio-economic groups. The study reported the intake of calorie, protein, vitamin and adequacy of calorie. The study, based on data of the early 1990s, shows that about 63 per cent and 77 per cent of low income rural households were calorie deficient in the peak and slack season respectively.

Another study on household food security in rural Bangladesh (Ninno, Smith and Roy 2004) in the pre and post-1998 flood has used a slightly modified method. It used a combination of inadequacy of calorie intake (less than 1818[2] kilo calorie per day) and allocation of more than 70 per cent of expenditure on food. It has categorised 21 per cent households as food insecure. However, the rationale for the inclusion of share of food expenditure has not been spelt out.[3]

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[2] BBS and World Bank poverty estimates use 1,805 kilo calorie per day as the basis for extreme poverty line estimation and 2,122 kilo calorie as the cut off line for moderate poverty.

[3] It is likely that urban poor will end up with a larger share of expenditure in housing compared to their rural counterparts. If one such urban household spends less than 70 per cent on food and the rural household spends more than 70 per cent (both having intake of less than 1800 kilo calorie), the urban household will be identified as food secure, even if they have lower calorie intake than the rural household.

CHAPTER 3

ESTIMATES OF HOUSEHOLD FOOD INSECURITY BASED ON CONVENTIONAL AND MODIFIED INDICATORS: HIES 2005 DATA

3.1 Proposed Indicator of Household Food Security

Household food insecurity has an objective as well as a subjective component. The objective component consists of food availability in comparison to requirement, while the subjective component is mainly about individual's perception of satisfaction of having sufficient food for all members of family. Both these aspects, in turn, depend on the dietary habit and norms of consumption bundles which are rooted in the society's tradition and culture. In the choice of indicators of household food insecurity, the objective component cannot be disjointed from the subjective issue of household preference.[1] Although the nutritional requirements can be defined objectively, consisting of calorie, protein, etc., actual conversion of these norms into weights of food has to refer to commodity bundles actually consumed/preferred by the reference population group and thus involves a subjective component.

A "standard food bundle" for Bangladesh has already been formulated and used in the context of definition of poverty line. The proposed indicator of food security will also refer to the existing "standard food bundle" (BBS 2000). The bundle is based on 2,122 kilo calories (kcal) as the adequacy level. The list of required weights of food

[1] The "BIDS Survey on Food Insecurity," conducted as part of present study, uses the subjective aspect to assess food insecurity. The results have been reported in Chapters 5 to 9.

items in Bangladesh has been provided in Table A3.1. The bundle has been in use in the estimation of poverty line with little modification over several decades. Formulation of a new bundle is beyond the scope of the present study and we shall base the indicator of food insecurity on the existing bundle.

The previous chapter has mentioned that a few studies have provided estimates of "extreme poverty" based on this reference bundle as indicators of household FIS.

However, all those in extreme poverty may not face inadequacy of food and some of the non-poor may also consume less than recommended calorie. Apparently the two sets are likely to overlap to a large extent. Data presented in Table 3.1.1, however, shows that households in poverty and calorie deficiency are not completely overlapping sets. We begin with cross tabulation of three poverty status and three calorie levels. Table 3.1.1 presents relevant data and reveals that in the extreme and moderate poor groups, a significant share of households (about 22 and 50 per cent respectively) consume more than the required calorie. Moreover, it can be observed that in the non-poor group, 8.6 per cent consume less than 85 per cent of requirement (1,806 kcal) and 12.8 per cent consume between 1,806 and 2,122 kcal.

One may find it difficult to explain the divergence. To a large extent, the divergence may be due to methodological problems in defining poverty line expenditure. A few reasons may work behind the voluntary choice of less than the standard calorie norm. Even leaving aside those choosing "diet" as a means of weight loss, some of the children, persons engaged in sedentary work, etc. may require less calorie than the

norm which is actually based on an average figure. Such low calorie consumption may be considered as non-harmful and voluntary.

Similarly, households living below poverty threshold may consume more than required calorie in a variety of circumstances. For example, if food is home grown, people's consumption may be higher. Marketing of the excess food may not be profitable because of transportation cost, lack of manpower, etc. Sometimes a part of wage is paid in the form of meals, resulting in high levels of food intake.

To overcome the above problems, we propose the following indictors to measure household food insecurity of various intensity.

Extreme Food Insecure (EFIS): Those who consume less than 85 per cent of recommended calorie (< 1,806 kcal) and have income below moderate poverty line.[2]

Moderate Food Insecure (MFIS): Those who consume 1,806 to 2,122 kcal and have income below moderate poverty line.

Here food insecurity has been considered to occur only among those living below moderate poverty. Then the proposed indicators choose the sub-sets with overlap of poverty and actual calorie inadequacy and thereby identify households experiencing involuntary food inadequacy.

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[2] The reference to "moderate poverty (MP)" and "extreme poverty (EP)" of the present report is based on poverty lines defined on the basis of CBN method. The methodology of defining CBN poverty lines has been widely used. These are available in annex of the reports of each round of HIES and in World Bank (2008) and therefore, the definitions have not been presented here.

3.2 Food Insecurity Estimates Based on Proposed Definition

Table 3.2.1 uses HIES 2005 data to provide estimates of food insecurity incidence based on definitions of Section 3.1. About 16 per cent and 11 per cent households are in extreme food insecure and moderate food insecure group respectively (a total of 26.4 per cent households are food insecure). However, this may provide an underestimation of food insecurity because it is based on the assumption that consumption of less than standard calorie by non-poor households has been voluntary. However, the validity of the assumption may be questioned in certain circumstances. For example, some of the non-poor who consume less than standard calorie may do so involuntarily as they are unable to maintain food intake due to cost of other essential needs exceeding the amount specified in the poverty line.

If income level is ignored, and only calorie based cut off line is chosen, then 39.4 per cent households would be considered as food insecure (Table 3.1.1). These two figures (26.4 per cent and 39.4 per cent) provide a range within which lies the actual food insecurity incidence.

3.3 Rural-Urban Difference in Calorie Intake

Rural-urban difference in food and calorie intake can have implications for nutrition programmes as well as for conceptual and measurement issues (e.g. in formulating food bundle in the poverty line). From Table 3.2.2 it has been observed that the variation of calorie consumption can be large even within an income poverty group. Whether there are rural-urban differences in the calorie inadequacy and the possible reasons behind the difference may require probing in this context.

Table 3.3.1 presents pertinent data. Within each income poverty group, a larger percentage of households in urban areas are taking less than the recommended calorie. Rural-urban difference in calorie inadequacy incidence is highest among the middle group (i.e. the moderate poor).

Table 3.3.1 also shows that even among the non-poor households, a larger share of urban households' calorie intake is below the recommended level. Average calorie intake is 1,950 and 1,863 kcal respectively among extreme poor in rural and urban areas. The average calorie in moderate poor group is 2,255 and 2,159 kcal respectively in rural and urban areas. Thus, the location factor has an independent influence on calorie consumption.

This observation actually raises a fundamental question about the recommendation of the same level of calorie standard for measuring poverty among rural and urban population. Urbanisation is likely to have a cultural impact on food habit. Availability of a larger range of non-food consumer goods in urban areas is likely to result in higher non-food expenditure in urban areas leaving less for food expenditure. Moreover, physical labour intensities of rural and urban occupations are likely to differ. Future research should focus on decomposition of the rural-urban difference in calorie intake into three parts: difference in non-food essential expenditure requirement, occupational difference and the cultural practices.

The presence of substantial rural-urban difference in calorie intake makes it evident that the formulation of poverty line on the basis of same calorie cut-off for rural and urban areas is questionable. Rural-urban difference in food consumption may extend beyond the total calorie

intake. The intakes of different food groups will be discussed in the next section.

When the combination of income (below poverty level) and calorie inadequacy is used to define food insecurity, urban areas show a smaller percentage of food insecure households, because the share of households below poverty line in total households is much lower in urban areas compared to rural areas (Table 3.3.2).

3.4 Consumption of Different Food Varieties

Although the focus of the present study is food insecurity in terms of total calorie, discussion of consumption of various food items can be useful to demonstrate the extent of nutritional inadequacy. This is particularly important because of the difference in price of rice and prices of food rich in protein. The latter's minimum price is usually about 3 times that of rice. Therefore, poor households are likely to consume more rice and less protein.

For the three poverty groups, extreme poor, moderate poor and non-poor, we shall examine whether they consume at least 50 per cent or more of recommended weight (of HIES) of protein items, vegetables and fruits. These data have been presented in Tables 3.4.1 to 3.4.3.

Table 3.4.1 shows the picture of adequacy of intake of some major protein items and vegetables and fruits. The standard for comparison is the list for Bangladesh (Table A3.1) used by HIES official poverty estimation and World Bank Report (1998). A few studies have provided other standard recommendations for intake of various types of food in Bangladesh (Murshid *et al.* 2008, Jahan and Hossain 1998). However, these are not accepted for official purposes due to a variety of reasons including inadequate coverage of areas of the country, small sample, etc. Jahan and Hossain (1998) present

requirement of nutrient and not weights of actual food items.

Recommended weight of fish and all types of meat is 59.11 grams. Only 42 per cent of population consume this quantity or higher. About 25 per cent consume less than half of the recommended weight (Table 3.4.1). The situation is worse in the rural areas compared to urban areas for all poverty groups taken together.

Pulse was once a cheaper source of protein. But recently its price has increased sharply. Therefore, its adequacy has been examined separately. The conventional wisdom is that poorer households and rural households are likely to consume larger quantity of this item. Data (Table 3.4.2) show the contrary; less than one per cent of extreme poor take the recommended weight of pulse while 1.5 per cent of moderate poor take the standard quantity. Thus the evidence fails to show higher consumption of pulses and its positive role as a substitute for more expensive protein. The third column in the table shows the incidence of households consuming less than 50 per cent of the norm. Ninety-one per cent, 82.4 per cent and 63.1 per cent of extreme poor, moderate poor and non-poor respectively fall within this category. Inadequacies of both pulses and fish plus meat plus chicken are higher in the rural areas than in the urban areas.

The situation is definitely better for vegetables and fruits (Table 3.4.3). Seventy-nine per cent households have reported adequate intake. The adequacy in urban areas is better, 85.4 per cent compared to 76.3 per cent in rural areas. Even among extreme and moderate poor households, about 60 per cent and 75 per cent households' intake of vegetables and fruits is adequate.

Thus household food insecurity extends beyond calorie inadequacy. Inadequacy of protein intake should receive serious policy attention.

TABLE 3.1.1
DISTRIBUTION OF HOUSEHOLDS BY CALORIE CONSUMPTION AND POVERTY STATUS

Poverty status	Calorie group		
	0-1805	1806-2121	2122+
Extreme poor (EP)	49.7	28.4	21.9
Moderate poor (MP)	23.3	26.7	50.0
Non-poor (NP)	8.6	12.8	78.6
All	20.8	18.6	60.5

Source: Estimated from the HIES 2005 data.

TABLE 3.2.1
EXTENT OF FOOD INSECURITY BASED ON CALORIE AND INCOME POVERTY

Category of FIS-CI	Per cent of household
Extreme food insecure	15.6
Moderate food insecure	10.8
Food secure	73.6
Total	100.0

Source: Estimated from the HIES 2005 data.

TABLE 3.2.2
CALORIE INADEQUACY AMONG POVERTY GROUPS IN RURAL AND URBAN AREAS

(Per cent)

Poverty status	Area code	Calorie group			Total
		0-1805	1806-2121	2122 +	
Extreme poor (EP)	Rural	47.8	29.1	23.1	100.0
	Urban	58.2	25.0	16.8	100.0
	Total	49.7	28.4	21.9	100.0
Moderate poor (MP)	Rural	20.3	25.2	54.5	100.0
	Urban	31.0	30.5	38.5	100.0
	Total	23.3	26.7	50.0	100.0
Non-poor (NP)	Rural	7.0	12.4	80.7	100.0
	Urban	11.7	13.6	74.6	100.0
	Total	8.6	12.8	78.6	100.0
Extreme poor (EP)	Rural & Urban	49.7	28.4	21.9	100.0
Moderate poor (MP)	Rural & Urban	23.3	26.7	50.0	100.0
Non-poor (NP)	Rural & Urban	8.6	12.8	78.6	100.0
Total		20.8	18.6	60.5	100.0

Source: Estimated from the HIES 2005 data.

TABLE 3.3.1
AVERAGE CALORIE INTAKE IN URBAN AND RURAL AREAS

Poverty group	Rural/Urban	Average calorie per person per day
Extreme poor (EP)	Rural	1950.4
	Urban	1862.8
	All	1934.3
Moderate poor (MP)	Rural	2255.3
	Urban	2159.9
	All	2228.3
Non poor (NP)	Rural	2841.1
	Urban	2768.7
	All	2816.2

Source: Estimated from the HIES 2005 data.

TABLE 3.3.2
FOOD INSECURITY (BASED ON INCOME POVERTY PLUS INADEQUATE CALORIE) IN URBAN AND RURAL AREAS

Location	Incidence of food insecurity (%)
Rural	28.65
Urban	21.17

Source: Estimated from the HIES 2005 data.

TABLE 3.4.1
FISH, MEAT AND CHICKEN CONSUMPTION BY POVERTY STATUS

(Per cent)

Poverty status	Location	Fish + Meat + Chicken (gms)			Total
		<=29.55	29.55-59.10	>=59.11	
Extreme poor (EP)	Rural	63.7	32.4	3.8	100.0
	Urban	51.6	41.4	7.0	100.0
	Total	61.5	34.1	4.4	100.0
Moderate poor (MP)	Rural	31.1	51.7	17.3	100.0
	Urban	22.7	53.5	23.8	100.0
	Total	28.7	52.2	19.1	100.0
Non-poor (NP)	Rural	9.9	32.5	57.6	100.0
	Urban	5.8	21.8	72.4	100.0
	Total	8.5	28.8	62.7	100.0
All	Rural	28.4	35.3	36.3	100.0
	Urban	15.1	29.2	55.7	100.0
	Total	24.5	33.5	42.0	100.0

Source: Estimated from the HIES 2005 data.

TABLE 3.4.2
ADEQUACY OF PULSE CONSUMPTION BY LOCATION AND POVERTY STATUS

(Per cent)

Poverty status	Location	Pulse consumption group (gms)			Total
		<=19.70	19.71-39.39	>=39.40	
Extreme poor (EP)	Rural	91.7	7.3	1.0	100.0
	Urban	87.9	11.8	0.3	100.0
	Total	91.0	8.1	0.8	100.0
Moderate poor (MP)	Rural	84.3	14.0	1.6	100.0
	Urban	77.7	21.1	1.2	100.0
	Total	82.4	16.0	1.5	100.0
Non-poor (NP)	Rural	69.5	23.9	6.6	100.0
	Urban	51.0	38.7	10.3	100.0
	Total	63.1	29.0	7.9	100.0
All	Rural	78.0	17.7	4.3	100.0
	Urban	60.3	32.2	7.5	100.0
	Total	72.8	22.0	5.2	100.0

Source: Estimated from the HIES 2005 data.

TABLE 3.4.3
ADEQUACY OF VEGETABLES AND FRUITS CONSUMPTION BY LOCATION AND POVERTY STATUS

(Per cent)

Poverty	Location	Consumption group (gms)			Total
		<=83.73	83.75-167.45	>=167.46	
Extreme poor (EP)	Rural	3.7	36.8	59.4	100.0
	Urban	2.7	36.2	61.1	100.0
	Total	3.5	36.7	59.8	100.0
Moderate poor (MP)	Rural	1.6	25.2	73.2	100.0
	Urban	0.6	21.1	78.3	100.0
	Total	1.3	24.1	74.6	100.0
Non-poor (NP)	Rural	0.7	13.7	85.6	100.0
	Urban	0.3	7.8	91.9	100.0
	Total	0.6	11.7	87.8	100.0
All	Rural	1.7	22.0	76.3	100.0
	Urban	0.7	14.0	85.4	100.0
	Total	1.4	19.6	79.0	100.0

Source: Estimated from the HIES 2005 data.

TABLE A3.1
NORMS OF FOOD REQUIREMENT PER PERSON PER DAY IN BANGLADESH USED ON THE BASIS OF HIES POVERTY LINES

Items	Grams/day
Rice	391.06
Wheat	39.40
Pulse	39.40
Meat	11.82
Potato	26.60
Milk	57.13
Oil	19.70
Banana	19.70
Sugar	19.70
Fish	47.28
Vegetables	147.76

Source: World Bank (1998).

CHAPTER 4

DETERMINANTS OF HOUSEHOLD FOOD INSECURITY, CALORIE INTAKE AND HOUSEHOLD INCOME: ANALYSIS OF HIES 2005 DATA

Analysis of the determinants of household food insecurity requires attention to the impact of pattern of employment, ownership of assets and other household characteristics. The objective of the present Chapter is to focus especially on the impact of employment pattern on food security. Therefore, the following questions will receive attention:

(a) Which category of employment (paid or self) can yield better outcomes in terms of food security?

(b) Are there differences between the role of paid employment and self-employment in urban and rural areas in this context?

(c) Whether the extent of underemployment differs among poverty, food security and calorie adequacy groups?

(d) Are the results in terms of households food security outcomes similar to the results in terms of income poverty categories? In this context, food insecurity measured on the basis of only calorie and the proposed combined criterion of income and calorie (suggested in Chapter 3) will be considered separately.

The analysis has been carried out first through an examination of two-way relationships and then the effects of paid and self-employment have been estimated through multivariate analysis.

Analysis of labour market of Bangladesh shows that less than one third of the labour force are engaged in paid (casual and regular) employment, the rest are engaged either as unpaid family worker or as self-employed (Rahman 2007). Labour force from low income households have no choice but to accept whatever employment is available. Such employment may consist of wage employment which is not likely to generate year round work and thus will be associated with higher underemployment. The same is true about family/self-employment. In contrast, regular jobs, by definition, give year-round employment. Whether the regular salaried jobs will generate higher income also depends on the salary level. Thus, the interrelationships among types of employment, underemployment and income can reveal the processes through which poverty and food insecurity operate.

Such analysis can be placed in the perspective that Bangladesh has been traditionally viewed as a "surplus labour economy." Development theories envisaged that the underemployed workers will provide an elastic source of labour supply for the modern industrial sector (Lewis 1954, Fei and Ranis 1964). The underlying assumption behind this type of theorising is that underemployment is associated with low income and poverty. Assumptions underlying the labour supply situation of underemployed persons and its links with income are, however, subjects requiring empirical investigation. Such verification is particularly important in the context of some opposing views on the links between underemployment and poverty. Policymakers sometimes put the blame on the averseness to hard work and preference for lower employment among workers of low income households. Another position is that the extent of underemployment may not be high

and the potential excess supply of labour may be low, because poor persons cannot afford to remain without work. They engage in various types of low productive work to eke out a living.

4.1 Type of Employment, Poverty and Calorie Intake

The analysis begins with a broad differentiation between self-employment and paid employment for the purpose of an analysis of the link between income (or poverty) and type of employment.[1] Further distinction between two types of paid employment, casual/daily wage labour and regular salaried employment, is also pertinent.

Along with the status of employment (self vs paid), sector of employment is likely to be a major determinant of income and poverty. A distinction between agriculture and non-agriculture will be made to distinguish the role of broad sectors of employment along with status (thus giving six groups).

Table 4.1.1 presents data on the distribution of persons in each of these six groups by poverty status. Among those in agricultural self-employment, 18.6 per cent, 13.8 per cent and 67.6 per cent are respectively extreme poor, moderate poor and non-poor. The distribution is similar for non-agricultural self-employment: 18.4 per cent, 13.3 per cent and 68.3 per cent respectively. The share of poor is much higher among those engaged in wage employment. In agricultural wage employment, 47.3 per cent and 19.5 per cent are extreme poor and moderate poor category.

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[1] The study uses the terms "status" and "type" of employment interchangeably.

In non-agricultural wage employment, 37.1 per cent and 20.4 per cent are extreme and moderate poor respectively. Poverty is lowest among salaried persons in non-agriculture. In this group, 13.3 per cent and 12.3 per cent are respectively in extreme poor and moderate poor category. There is a sharp contrast between salaried group in agriculture and non-agriculture. In agriculture, 37.9 per cent and 18.1 per cent of salaried employees are respectively extreme poor and moderate poor.

Type of employment is also associated with calorie inadequacy. As shown in Table 4.1.2, the share of households consuming below 2,122 calories is highest among the wage employed in non-agriculture, followed by similar group in agriculture (the shares are 41.7 per cent and 37.4 per cent respectively). The highest share of self-employed in agriculture (78.3 per cent) consume more than the standard calorie (Table 4.1.2).

It goes against the general perception that a large percentage of salaried employees in both agriculture and non-agriculture consume less than 2,122 calorie (respectively 36.7 per cent and 35.6 per cent). This can be explained by the presence of a strata of low paid salaried workers, especially in agriculture (Table 4.1.2). Moreover, a large share of salaried workers in non-agriculture are likely to be engaged in sedentary nature of work which is likely to be associated with low calorie intake.

A closer look at the combination criterion and its links with type of employment shows patterns similar to the income and calorie based criterion. Food insecurity is lower among the self-employed compared to those in paid employment (Table 4.1.3).

4.2 Rice Production and Calorie Adequacy

The analysis of determinants of food security and calorie intake has so far focused on income and location. An additional hypothesis that we wish to test is whether production of rice within the household makes an impact on calorie consumption. The rationale is that there is a difference in the buyers' price of rice in the market and selling price of the producer and the latter is likely to be lower. Even for the producers who are net buyers, consumption may be higher when rice is available in own house. This may occur due to psychological reasons, giving a feeling of affluence and also because of storage constraint within the homestead which may induce higher consumption. In addition, having self produced cereals in the stock may lead to savings for periods of shortage which is used in bridging consumption shortage in slack seasons.

Relevant data has been presented in Table 4.2.1. A clear pattern is observed: within each quintile group of income, the share of households consuming adequate calorie rises with the increase of amount of rice produced. In the lowest income quintile, among those with no production of rice, about 54 per cent households consume less than 2,122 kcal, while among households producing 1,600 kg or above only 28.1 per cent experienced inadequate calorie intake. Similar relationship holds for non-poor households. For example, among those not producing rice in the second highest income group, 32.5 per cent consumed less than 2,122 kcal and among those producing above 1,600 kg a year, 19.1 per cent consumed less than 2,122 calorie.

One may argue that higher calorie consumption may not necessarily come from rice alone. Nonetheless, discussion in section 3.5 revealed that consumption of

other food, especially protein items, is very low, especially among low income households, which implies that those with larger production of rice get more calorie because of their consumption of rice from own production.

4.3 Underemployment, Poverty and Calorie Intake

For examining the link between underemployment, income and type of employment, we need to begin with a clear definition of underemployment. Bangladesh's Labour Force Survey (LFS) of various years uses 35 hours per week as the cut-off line for identifying underemployment. This gives 228 person days a year as the full employment norm. This is somewhat low in view of the fact that the rural labour force does not enjoy weekly holidays like urban/industrial labour force. Therefore, in the following discussion another higher level cut-off at 48 hours per week (312 person days a year) has also been used to define a higher range of underemployment.[2] Moreover, another lower cut off at 20 hours per week (130 days a year) has been used to give "severe underemployment."

Table 4.3.1 shows that poor groups experience slightly higher rates of underemployment. Under-employment rates among the extreme poor, moderate poor and non-poor are 33.9 per cent, 31.3 per cent and 30.3 per cent respectively.[3] This is also true about the extent of "severe underemployment," although the difference is small in this case (Table A4.3.1). Moreover,

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[2] Underemployment will also depend on the definition of labour force. If the cut-off hour for inclusion in labour force is low, underemployment rate will be obviously high. Similarly, inclusion of family production will raise labour force participation and the extent of underemployment because these activities involve smaller hours of work each day.

[3] This is similar to the findings of Rahman and Islam (2003).

only a small share of households are in "severe underemployed" category. There is difference among the three groups in the case of overemployment: 40.6 per cent, 43.6 per cent and 51.0 per cent among these groups. Thus higher hours of employment contribute to being in non-poor status. Underemployment rate for the entire population is 31.8 per cent.

Calorie fulfillment (or the lack of it) is similar across underemployment based groups, as shown in Table 4.3.2. Data depict a lack of direct link between underemployment and calorie inadequacy. The reason behind this may be that high income jobs (at least some of these) are associated with lower weekly hours and less calorie intake.

Irrespective of poverty group, a much smaller percentage of households in the urban areas compared to rural are underemployed. The same is true for calorie adequacy group (Table A4.3.2).

4.4 Determinants of Poverty and Food Insecurity: Econometric Analysis

Household poverty and food security are influenced not only by its situation in the labour market but also by other characteristics of the household and external factors. Impact of a household's situation in the labour market on its income/food insecurity can be captured through a multiple regression analysis which includes the relevant explanatory variables. In the following analysis, we shall estimate three equations in logit form. The explanatory variables are same in all equations.

The dependent variables in these equations are in binary form and are described below.

Equation 1: $\log \frac{q}{1-q}$

where $\frac{q}{1-q}$ is the odds ratio that a household is food insecure (q being the probability of being food insecure and 1-q is the probability of being food secure). Food insecurity has been defined as a combination of income below moderate poverty level and calorie consumption less than 2,122.

Equation 2: $\log\frac{p}{1-p}$ where p is the probability that a household consumes less than 2,122 calorie and $\frac{p}{1-p}$ is the odds ratio.

Equation 3: $\log\frac{m}{1-m}$

where $\log\frac{m}{1-m}$ is the odds ratio that a household is below moderate poverty level income.

The logit regression results are shown in Tables 4.4.1 to 4.4.3. These equations contain the following explanatory variables:

Personal characteristics:

AGEH	Age of head
SQAGEH	Square of head age
HEDUC	Education of head
EDUCS	Member education score (age 12+)
SEX	Sex (1=Male, 0=Female) dummy of head
WEMP	Whether in wage employment (Yes=1, No=0)
RSALE	Whether regular salaried employee (Yes=1, No=0) (Self-employment is the excluded group and thus provide the benchmark for WEMP and RSALE)

Household Characteristics

AGRID	Agriculture dummy
LOWN	Land ownership
TEARNER	No. of male + female earner (15+ years age)
FFEARNER	Whether the household has a female earner
AGASSET	Whether owns agri. asset (Yes=1, No=0)
WNAGA	Whether owns non-agri. asset (Yes=1, No=0)
DEPEN	Number of dependent members

Region: Five Administrative Divisions (Dhaka being excluded dummy)

BARI	Barisal
CTG	Chittagong
KHUL	Khulna
RAJ	Rajshahi
SYL	Sylhet

The results of the logit regression, which gives log of odds ratio for food insecurity in terms of the new composite definition (equation 1), are discussed first (Table 4.4.1).

In these equations, the impact of wage employment on food insecurity is similar to the results given by two way tables. It increases the odds ratio of food insecurity in both urban and rural equations although the significance is less in the case of urban equation. Marginal effect of wage employment (vis-á-vis self-employment) on probability of food insecurity is 0.61 and 0.55 respectively in rural and urban areas. Salaried employment has an insignificant impact in urban areas.

In rural areas it significantly raises probability of food insecurity, marginal contribution being 0.58. In the rural areas salaried employment in the form of "permanent/annual labour" is taken up by persons from poor/food insecure households. The salary obtained from such job is usually very low. In the urban areas salaried jobs can be highly paid or low paid and therefore the effect turns out insignificant.

The influences of personal and household characteristics are as expected. Education of head has a negative influence on the probability of food insecurity, although it is significant only in the rural areas. Education of other members has significant negative impact. However, other members' education may be a cause or an effect of food insecurity status of a household. Head's education does not have a significant impact on food insecurity in urban areas, because it may work through type of employment and the equations have included these variables. Section 4.5 provides additional analysis of the influence of education on food security. Due to similar reason, the dummy for sex has turned out insignificant.

Among household level variables we have included land ownership, asset ownership (for agriculture and non-agriculture), and composition of households. The effects are as expected: Ownership of assets has negative impact and number of members in the household has positive impact on the probability of food insecurity.

Among the Division dummies, Barisal, Khulna and Rajshahi are more vulnerable to food insecurity, especially in the rural areas. Among urban areas, only Rajshahi dummy is significant and positive. This result should be interpreted in combination with the results in the equations on income based poverty and calorie

based food insecurity, which will be done at the end of this section.

Next we examine the equation on probability of inadequate calorie intake (Table 4.4.2). Types of employment have similar impact in this equation. In the equation for rural area, both wage employment and salaried employment have positive impact on food insecurity in the form of inadequate calorie intake and are statistically significant. The marginal contribution of these two types of employment to probability of poverty is .63 and .64 respectively. In the urban areas, none of these coefficients are statistically significant and this result is different from the rural equation.

In the rural area, only Barisal has significant positive impact on probability of consuming inadequate calorie. Barisal, Khulna and Rajshahi have significant positive impact in the urban equation. Thus rural Barisal and rural and urban Rajshahi are more vulnerable to food insecurity, as shown by both combination criterion and calorie criterion.

Education's impacts are similar to equation 1 and have similar interpretation. In general, in the urban equation fewer explanatory variables have significant coefficients.

Equation 3, which relates only to income, has similar results to equation 1 (Table 4.4.3). The probability of income based poverty is higher for wage employed. This is true in both urban and rural areas. Wage employment raises the probability of poverty much more than the salaried employment. Its marginal contribution to probability is 0.65 in both urban and rural areas. The coefficients of salaried employment are insignificant. Divisions Barisal, Rajshahi and Khulna significantly raise the probabilities of poverty in both urban and rural

areas. In the rural areas, wage employment raises the probability of poverty much more than the salaried employment.

Table A4.5.1 shows the results of the OLS regression on household income. Among the three status of employment, those in self-employment have highest income. In both urban and rural areas, wage employment generates lower income than other status of employment. Family's demographic characteristics have the expected influence on poverty. Education of head and of other members has significant positive impact. Male-headed households have much higher income. Dummy for head of household's employment in agriculture have negative and significant coefficients. The positive impact of owning assets for non-farm production is larger than the effect of farm asset ownership. Effect of land ownership is positive and significant.

Among the divisions, Dhaka is the omitted one, so the coefficients show to what extent income in other divisions is lower/higher than Dhaka. Barisal, Khulna and Rajshahi have negative coefficients in urban equation. These variables have insignificant coefficients in the rural equation.

The F-values are highly significant, indicating the suitability of the equation. Value of adjusted R-square are 0.38 and 0.45 in rural and urban equation respectively.

4.5 Comparative Analysis of the Regression Results

From the econometric results of the previous section we shall compare the impact of the common explanatory variables, respectively, on food insecurity defined as a combination of income (access to food) and calorie intake

deficit (Equation 1), food insecurity only in terms of calorie intake (Equation 2), and income poverty (access to food) (Equation 3).

a) Impact of paid and salaried employment (compared to the baseline self employment) on food insecurity and poverty

Since the major focus of the study is employment status variables, these are discussed first. Summary Table 4.5.1 shows the effects obtained from the three regressions. The findings are:

- Salaried labour would not be necessarily worse-off than the self-employed in the rural area, especially in terms of income poverty. But this group is significantly worse-off in terms of calorie intake. This is at least partly explained by the self-consumption of food products by self-employed.
- In the urban areas, salaried labour is not significantly worse-off than the self-employed in terms of food insecurity and poverty. Wage employment affects food insecurity essentially through the income channel, with no significant effect in terms of calorie intake. This difference implies that income and food security are not perfectly correlated as mentioned earlier.

These results warrant that further research is carried out on the impacts of different types of self-employment activities in rural areas and on food habits for different categories of earners in urban areas.

b) Impacts of agricultural activities and related variables on food insecurity and income poverty

The coefficients of these variables should be treated cautiously because there may be some colinearity between the agriculture dummy, landownership (LOWN) and agricultural asset (AGASSET) variables, explaining

why some of the dummy variables do not perform well especially in rural areas (Table 4.5.2). In rural areas, land ownership and other agricultural assets are major determinants of both income poverty and food insecurity, consistent with earlier findings. In urban areas, agricultural activity (peri-urban agriculture) turns out to be a source of greater food security in terms of calorie intake compared to other activities, although it does not affect income poverty. Results of the agricultural asset variable may be due to limited scope of such assets in urban areas.

Land ownership has the expected negative impact in two equations. In urban areas, a smaller percentage of households are engaged in agriculture. The type of agriculture is also more diverse. This may have contributed to the insignificance of some of these coefficients.

These results would also warrant more research on relationships between urban agriculture and food insecurity. In terms of policy implications, the results also lead to stress the need for social safety net expansion towards the landless and improving access to agricultural assets in rural areas (agricultural credit, etc.).

c) *Impacts of education, age and gender on food insecurity and income poverty*

In the rural areas education of head and other members reduces food insecurity. In urban areas only other member's education is significant (multicollinearity may be responsible for the insignificance of one of the education variables).

To capture the effect of gender the variables used are: "whether head is male" and "the number of female

earners." Since there is a variable on total earning members, the number of female earner actually means the extent of dependence on female earners controlling for total earners. Therefore, the number of female earners in the household turns out as a significant source of both food insecurity and income poverty in both rural and urban areas (Table 4.5.3). While the "income effect" arises from the fact that women are low-paid compared to men, the effect on the "calorie intake" tends to suggest that women's low earning also leads to reduced food security. Due to similar reasons, male head implies less food maturity.

The effects of the age variables (AGE and Squared AGE) suggest that there is a threshold beyond which age becomes of a source of food insecurity.

d) Impact of region

Recently the regional dimensions of poverty have been focused by researchers and policymakers (General Economics Division 2008). The regional dimension in the equations on food security therefore deserves attention. Table 4.5.4 compares the coefficients of the five dummies for "Divisions" (Dhaka being the excluded base).

All equations have significant positive coefficients for urban areas of Barisal, Khulna and Rajshahi, implying higher food insecurity. In the rural areas, these Divisions have significant impact in the first and third equation, but not in the "calorie inadequacy" equation. It implies that in rural areas households in income poverty could maintain required calorie intake. These findings higlight the need for special attention to calorie inadequacy, especially in the urban areas of poorer regions.

4.6 Education and Food Security

Education affects food security status of a household through two distinct routes. First, through its positive impact on income it raises access to food. Second type of effect takes place through the "improvement of knowledge" about the requirements of various types of food. It is difficult to distinguish between the two effects, especially from survey data. Therefore, in the present study we shall supplement survey data with findings from FGD.

To analyse whether education has an independent impact apart from its impact through income, we shall examine the calorie intake among different income quintiles and with various levels of education of household head. Relevant data have been presented in Table 4.6.1. Within each income quintile, there is no systematic relationship between education level and share of households consuming less than 2,122 calorie.

FGD Session: School Dropout Adolescent Girls, Village: Gondakhola (Group size: Six girls, Age: 12 years to 16 years, conducted during May 2008)

Does education make people more aware about the role of various types of food? This has been discussed in two FGD sessions. In one session, six girls who dropped out from high school (from grades VI to VIII) joined the discussion on what they ate with rice during the last three days. "We ate a curry," they said. Then they were asked to remember what the curry consisted of. Most of them said small fish and potato and tomato. Some of them added sweet pumpkin. It could not be confirmed whether they have taken green leafy vegetables (Shaak). When specifically they were asked whether they take "shaak," they said "oh, yes, when someone brings it."

Then the girls were asked whether they know why one should eat (a) vegetables, (b) fruits and (c) fish/egg/meat, etc. To each item, they answered, "to keep good health and to be strong." They did not have an idea that each food group plays a separate role. It seemed that they vaguely know about vitamin but not about their specific functions.

FGD Session with High School Going Girls: Village: Gondokhola (Group size: 7 girls, Age: 13 years to 16 years, May 2008)

The first FGD group consisted of school dropouts and, there is a possibility that they were not so good performers in school and did not get sufficient knowledge about various aspects of nutrition. Another FGD was conducted with a group of adolescent girls who are studying in schools (between grades VIII and X). Girls who finish school are usually from better off families compared to the school leavers and this group was not faced with food insecurity as such. Discussion with this group is expected to throw light on more relevant practical experience and overall knowledge about the role of food groups.

During the last three days, they ate fish, chicken and vegetables. The girl who mentioned chicken was asked whether men get larger shares. She thought that each obtained a share and there is nothing much to worry about unequal sharing. Among vegetables, potato and tomato were named. When asked about "shaak" (leafy vegetable), some of them said yes and to confirm, they were asked which variety. It was "nalta" which was in plenty in the lands close to homestead.

Then we asked specifically about the role of each food group. Again, the responses did not reveal much

knowledge on the difference. They thought that "good food like fish, milk, etc. make one healthy."

They were not aware about protein or vitamin. Only specific thing one girl said is "Dhela Fish (type of small fish) is good for eyes." This information was given through some TV programmes.

The lack of knowledge about nutrition can be attributed to the curriculum content in school. There is no direct focus on this subject. Moreover, for many students from very low income households, information on types of food may sound somewhat irrelevant as they would hardly have access to those food.

The above findings are consistent with the quantitative analysis that women's education has no direct relationship with intake of each food item and total calorie (presented in Section 4.5).

TABLE 4.1.1
POVERTY BY TYPE OF EMPLOYMENT

(Per cent)

Type of employment	Poverty group			Total
	EP	MP	NP	
Agri. self	18.6	13.8	67.6	100.0
Agri. wage	47.3	19.5	33.2	100.0
Agri. salary	37.9	18.1	44.0	100.0
Non-agri. self	18.4	13.3	68.3	100.0
Non-agri. wage	37.1	20.4	42.5	100.0
Non-agri. salary	13.3	12.3	74.4	100.0

Source: Estimated from the HIES 2005 data.

TABLE 4.1.2
CALORIE ADEQUACY BY TYPE OF EMPLOYMENT

(Per cent)

Type of employment	Kcal			Total
	<1805	1805-2122	>2122	
Agri. self	8.3	13.4	78.3	100.0
Agri. wage	17.8	19.6	62.5	100.0
Agri. salary	9.4	27.3	63.3	100.0
Non-agri. self	14.5	16.4	69.1	100.0
Non-agri. wage	21.9	19.8	58.3	100.0
Non-agri. salary	19.0	16.6	64.5	100.0
Total	15.8	16.9	67.3	100.0

Source: Estimated from the HIES 2005 data.

TABLE 4.1.3
FOOD INSECURITY BASED ON CALORIE AND INCOME COMBINATION CRITERION BY EMPLOYMENT STATUS

(Per cent)

Combination criterion - status	Employment status		Total
	Paid employment	Self-employment	
Food secure	66.3	77.3	71.6
Food insecure	33.7	22.7	28.4
Total	100.0	100.0	100.0

Source: Estimated from the HIES 2005 data.

TABLE 4.2.1
RICE PRODUCTION AND CALORIE CONSUMPTION AMONG INCOME QUINTILE GROUPS IN RURAL BANGLADESH

(Per cent)

Income quintile	Rice production group	Calorie consumption		Total
		<2122 Cal.	>=2122 Cal.	
Lowest 20%	0	53.8	46.2	100.0
	1-800 kg.	38.9	61.1	100.0
	800-1600 kg.	41.1	58.9	100.0
	1600 + kg.	28.1	71.9	100.0
	All	45.4	54.6	100.0
Second Lowest 20%	0	43.6	56.4	100.0
	1-800 kg.	35.2	64.8	100.0
	800-1600 kg.	32.7	67.3	100.0
	1600 + kg.	25.9	74.1	100.0
	All	37.5	62.5	100.0
Third Lowest 20%	0	36.7	63.3	100.0
	1-800 kg.	32.2	67.8	100.0
	800-1600 kg.	23.9	76.1	100.0
	1600 + kg.	18.5	81.5	100.0
	All	29.8	70.2	100.0
Fourth Lowest 20%	0	32.5	67.5	100.0
	1-800 kg.	28.8	71.2	100.0
	800-1600 kg.	19.7	80.3	100.0
	1600 + kg.	19.1	80.9	100.0
	All	26.4	73.6	100.0
Highest 20%	0	17.8	82.2	100.0
	1-800 kg.	21.2	78.8	100.0
	800-1600 kg.	15.1	84.9	100.0
	1600 + kg.	13.8	86.2	100.0
	All	16.3	83.7	100.0

Source: Estimated from the HIES 2005 data.

TABLE 4.3.1
UNDEREMPLOYMENT AND POVERTY

(Per cent)

Underemployment	Employment person days	Poverty			
		EP	MP	NP	All
Yes	0-130	13.6	11.1	12.1	12.3
Yes	130-228	20.3	20.2	18.2	19.0
No	228-312	25.5	25.0	18.7	21.4
No	>312	40.6	43.6	51.0	47.3
	All	100.0	100.0	100.0	100.0

Source: Estimated from the HIES 2005 data.

TABLE 4.3.2
UNDEREMPLOYMENT AND CALORIE ADEQUACY

(Per cent)

Underemployment status	Employment person days (8 hrs)	Calorie		Total
		<2122 Cal.	>=2122 Cal.	
Yes	0-130	12.0	12.5	12.3
Yes	130-228	18.2	19.5	19.0
No	228-312	21.8	21.2	21.4
No	>312	48.1	46.9	47.3
	All	100.0	100.0	100.0

Source: Estimated from the HIES 2005 data.

TABLE 4.3.3
FOOD INSECURITY BASED ON CALORIE AND INCOME COMBINATION CRITERION BY EMPLOYMENT DAYS

(Per cent)

FIS-HIES	Employment days				Total
	0-130	130-228	228-312	312+	
Food secure	8.8	15.9	28.7	46.6	100.0
Food insecure	9.3	17.2	35.5	38.0	100.0
Total	8.9	16.3	30.6	44.2	100.0

Source: Estimated from the HIES 2005 data.

TABLE 4.3.4
TYPE OF EMPLOYMENT AND EXTENT OF UNDEREMPLOYMENT

(Per cent)

Type of employment	Employment person days				Total
	0-130	130-228	228-312	>312	
Agri. self	27.8	30.7	18.2	23.4	100.0
Agri. wage	13.1	28.5	33.2	25.2	100.0
Agri. salary	1.5	13.1	22.3	63.2	100.0
Non-agri. self	7.7	14.5	17.6	60.2	100.0
Non-agri. wage	9.0	18.3	31.3	41.4	100.0
Non-agri. salary	3.0	5.7	12.9	78.4	100.0
Total	12.2	19.0	21.4	47.3	100.0

Source: Estimated from the HIES 2005 data.

TABLE 4.4.1
DETERMINANTS OF FOOD INSECURITY (DEFINED AS COMBINATION OF LESS THAN REQUIRED CALORIE INTAKE AND INCOME POVERTY): RESULTS OF LOGIT REGRESSION

Expl. var.	Rural		Urban	
	Coeff.	Exp	Coeff.	Exp
AGEH	-.09***	.92	-.07***	.93
SQAGEH	.00***	1.00	.00***	1.00
HEDUC	-.04***	.96	-.02	.98
EDUCS	-.03***	.97	-.07***	.94
SEX	.02	1.02	.24	1.27
WEMPL	.46***	1.58	.22*	1.24
RSALE	.32**	1.37	.06	1.06
AGRI-D	.08	1.09	-.16	.85
LOWN	-.38***	.69	-.54***	.58
TEARNER	.11	1.12	.24***	1.27
FEARNER	.66***	1.94	.75***	2.11
DEPEN	.43***	1.54	.52***	1.68
AGASSET	-.49***	.61	-.07	.94
WNAGA	-.33	.97	-.23	.80
BARI	1.02***	2.77	1.25*	3.49
CTG	-.29***	.75	-.06	.94
KHUL	.29**	1.33	.72	2.06
RAJ	.30***	1.34	.70***	2.02
SYL	-.22	.80	-.48***	.62
Constant	-.10	.91	-.89**	.41
Sample size	6040	-	4040	-
-2 log likelihood	6159.9***	-	3473.6***	-
Nagelkerke R Square	0.24	-	0.34	-

Source: Estimated from the HIES 2005 data.
Note: ***, ** and * imply significant at .00, .05 and .10 level respectively.

TABLE 4.4.2
DETERMINANTS OF INADEQUATE CALORIE INTAKE (<2122): RESULTS OF LOGIT REGRESSION

Expl. var.	Rural		Urban	
	Coeff.	Exp	Coeff.	Exp
AGEH	-.10***	.91	-.06*	.94
SQAGEH	.00***	1.00	.00	1.00
HEDUC	-.02	.98	.00	1.00
EDUCS	-.018	.99	-.03***	.97
SEX	-.11	.90	.27	1.30
WEMPL	.55***	1.74	.19	1.21
RSALE	.59***	1.81	.12	1.12
AGRI-D	-.06	.94	-.63**	.54
LOWN	-.17***	.84	-.08	.93
TEARNER	-.03	.97	.13	1.14
FEARNER	.52**	1.68	.68**	1.97
DEPEN	.36***	1.43	.44***	1.56
AGASSET	-.35*	.70	-.29	.75
WNAGA	.10	1.11	-.28	.75
BARI	.82***	2.28	.96**	2.60
CTG	.02	1.02	-.29	.75
KHUL	.06	1.06	.62**	1.87
RAJ	.13	1.14	.53**	1.70
SYL	-.10	.90	-.88**	.42
Constant	1.02**	2.77	-.40	.67
Sample size	6040	-	4040	-
-2 log likelihood	2440.2***	-	1014.1***	-
Nagelkerke R Square	0.17	-	0.18	-

Source: Estimated from the HIES 2005 data.
Note: ***, ** and * imply significant at .00, .05 and .10 level respectively.

TABLE 4.4.3
DETERMINANTS OF LESS THAN POVERTY LINE EXPENDITURE: RESULTS OF LOGIT REGRESSION

Expl. var.	Rural		Urban	
	Coeff.	Exp	Coeff.	Exp
AGEH	-.05**	.95	-.09**	.91
SQAGEH	.00	1.00	.00**	1.00
HEDUC	-.04	.96	-.00	1.00
EDUCS	-.05***	.95	-.09***	.92
SEX	.17	1.18	-.02	.98
WEMPL	.64***	1.90	.64**	1.90
RSALE	.05	1.06	.39	1.47
AGRI-D	.29**	1.34	.34	1.40
LOWN	-.47***	.62	-.48**	.62
TEARNER	.25***	.-1.28	.41**	1.51
FEARNER	.86***	2.35	.58*	1.78
DEPEN	.50***	1.64	.59***	1.81
AGASSET	-.45**	.64	-.25	.78
WNAGA	-.16	.86	-.21	.81
BARI	1.14***	3.13	1.11**	3.05
CTG	-.39**	.68	.28	1.32
KHUL	.47**	1.59	1.11***	3.05
RAJ	.66***	1.93	1.27***	3.56
SYL	-.51**	.60	-.81	.45
Constant	-.92	.40	-.72	.49
Sample size	6040	-	4040	-
-2 log likelihood	2138.4	-	716.6***	-
Nagelkerke R Square	0.36	-	0.43	-

Source: Estimated from the HIES 2005 data.

Note: ***, ** and * imply significant at .00, .05 and .10 level respectively.

TABLE 4.5.1
COMPARISON OF THE IMPACT OF VARIOUS STATUS OF EMPLOYMENT IN THE THREE EQUATIONS ON FOOD INSECURITY

Location	Status of employment (control group–self employment)	Probability of being food insecurity (in terms of calorie intake + income) Eq. 1	Probability of being food insecurity (in terms of calorie intake) Eq. 2	Probability of being income poor Eq. 3
Rural	Wage employment (WEMP)	+	+	+
	Salaried employment (RSALE)	+	+	NS
Urban	Wage employment (WEMP)	+	NS	+
	Salaried employment (RSALE)	NS	NS	NS

Source: Tables of Section 4.3.
Notes: NS=effect is not significant.
+ = significantly increases the probability of being food insecure/income poor.
– = significantly reduces the probability of being food insecure/income poor.

TABLE 4.5.2
COMPARISON OF AGRICULTURAL ACTIVITY VARIABLES IN THE THREE EQUATIONS ON FOOD INSECURITY

Location	Indicators of agricultural activity	Probability of being food insecurity (in terms of calorie intake+income) Eq. 1	Probability of being food insecurity (in terms of calorie intake) Eq. 2	Probability of being (income) poor Eq. 3
Rural	Being engaged in agriculture (AGRI-D)	NS	NS	+
	Land ownership (LOWN)	-	-	-
	Ownership of agricultural assets (AGASSET)	-	-	-
Urban	Being engaged in agriculture (AGRID)	NS	-	NS
	Land ownership (LOWN)	-	NS	-
	Ownership of agricultural assets (AGASSET)	-	NS	NS

Source: Tables of Section 4.3.
Notes: NS=effect is not significant.
+ = significantly increases the probability of being food insecure/income poor.
– = significantly reduces the probability of being food insecure/income poor.

TABLE 4.5.3
COMPARISON OF THE IMPACT OF EDUCATION AND AGE ON THE THREE EQUATIONS ON FOOD INSECURITY

Location	Indicators	Probability of being food insecure (in terms of calorie intake + income) Eq. 1	Probability of being insecure (in terms of calorie intake) Eq. 2	Probability of being (income) poor Eq. 3
Rural	Education HEDUC/EDUCS	- / -	- / -	- / -
	Gender SEX/FEARNER	NS / +	NS / +	NS / +
	Age AGEG/SQAGEH	-	-	-
Urban	Education HEDUC/EDUCS	NS / -	NS / -	NS / -
	Gender SEX/FEARNER	NS / +	NS / -	NS / -
	Age AGEG/SQAGEH	- / +	- / +	- / +

Source: Tables of Section 4.3.
Notes: NS=effect is not significant.
+ = significantly increases the probability of being food insecure/income poor.
– = significantly reduces the probability of being food insecure/income poor.

TABLE 4.5.4
IMPACT OF 'REGION DUMMIES' ON THE THREE EQUATIONS ON FOOD INSECURITY

Division (base Dhaka)	Eq. 1		Eq. 2		Eq. 3	
	Rural	Urban	Rural	Urban	Rural	Urban
Barisal	+	+	+	+	+	+
Chittagong	-	-	NS	NS	-	NS
Khulna	+	NS	NS	+	+	+
Rajshahi	+	+	NS	+	+	+
Sylhet	NS	-	NS	-	-	NS

Source: Tables of Section 4.3.
Notes: NS=effect is not significant.
+ = significantly increases the probability of being food insecure/income poor.
– = significantly reduces the probability of being food insecure/income poor.

TABLE 4.6.1
CALORIE INADEQUACY BY HEAD'S EDUCATION AND INCOME GROUP

(Per cent)

Income group	Head (Male) education	Calorie		Total
		<2122 Cal.	>=2122 Cal.	
Lowest 20%	No male member	50.5	49.5	100.0
	No education	46.5	53.5	100.0
	Class I-V	46.2	53.8	100.0
	Class VI-IX	33.7	66.3	100.0
	SSC/HSC	40.0	60.0	100.0
	Other	60.3	39.7	100.0
	Total	45.7	54.3	100.0
Second Lowest 20%	No male member	39.5	60.5	100.0
	No education	39.4	60.6	100.0
	Class I-V	40.4	59.6	100.0
	Class VI-IX	41.2	58.8	100.0
	SSC/HSC	29.8	70.2	100.0
	Other	70.6	29.4	100.0
	Total	39.6	60.4	100.0
Third Lowest 20%	No male member	28.0	72.0	100.0
	No education	33.1	66.9	100.0
	Class I-V	34.0	66.0	100.0
	Class VI-IX	32.1	67.9	100.0
	SSC/HSC	33.1	66.9	100.0
	Other	24.3	75.7	100.0
	Total	32.5	67.5	100.0
Fourth Lowest 20%	No male member	32.0	68.0	100.0
	No education	27.9	72.1	100.0
	Class I-V	25.8	74.2	100.0
	Class VI-IX	25.9	74.1	100.0
	SSC/HSC	35.6	64.4	100.0
	Other	34.3	65.7	100.0
	Total	29.0	71.0	100.0
Highest 20%	No male member	15.6	84.4	100.0
	No education	17.4	82.6	100.0
	Class I-V	15.5	84.5	100.0
	Class VI-IX	20.9	79.1	100.0
	SSC/HSC	19.7	80.3	100.0
	Other	16.7	83.3	100.0
	Total	17.9	82.1	100.0

Source: Estimated from the HIES 2005 data.

TABLE A4.3.1
UNDEREMPLOYMENT (EXTREME AND MODERATE) AND POVERTY

(Per cent)

Employment days	RURAL			Total
	Poverty group			
	EP	MP	NP	
0-130	14.7	13.1	15.0	14.6
130-228	22.1	23.2	23.0	22.7
228-312	26.0	27.0	20.3	23.0
>312	37.2	36.7	41.8	39.7
All	100.0	100.0	100.0	100.0
	URBAN			
0-130	9.0	6.3	6.7	7.0
130-228	13.0	13.1	9.4	10.5
228-312	23.3	20.4	15.9	17.8
>312	54.8	60.2	68.0	64.7
All	100.0	100.0	100.0	100.0

Source: Estimated from the HIES 2005 data.

TABLE A4.3.2
UNDEREMPLOYMENT (EXTREME AND MODERATE) AND CALORIE

(Per cent)

Employment days	RURAL		Total
	Calorie		
	<2122 Cal.	>=2122 Cal.	
0-130	14.3	14.8	14.6
130-228	21.5	23.3	22.7
228-312	23.8	22.6	23.0
>312	40.3	39.4	39.7
All	100.0	100.0	100.0
	URBAN		
0-130	7.0	7.0	7.0
130-228	10.9	10.3	10.5
228-312	17.3	18.0	17.8
>312	64.8	64.7	64.7
All	100.0	100.0	100.0

Source: Estimated from the HIES 2005 data.

TABLE A4.3.3A
TYPE OF EMPLOYMENT, UNDEREMPLOYMENT (EXTREME AND MODERATE) AND POVERTY (RURAL)

(Per cent)

Type of employment	Employment days	Poverty group			Total
		EP	MP	NP	
Agri. self	0-130	24.9	11.8	63.3	100.0
	130-228	17.1	14.0	68.9	100.0
	228-312	15.0	15.4	69.6	100.0
	>312	17.4	14.4	68.2	100.0
	All	18.9	13.7	67.3	100.0
Agri. wage	0-130	37.6	21.3	41.1	100.0
	130-228	41.5	19.7	38.8	100.0
	228-312	50.2	19.0	30.8	100.0
	>312	55.9	16.9	27.2	100.0
	All	47.4	19.0	33.6	100.0
Agri. salary	0-130	100.0	0.0	0.0	100.0
	130-228	84.1	0.0	15.9	100.0
	228-312	42.3	23.4	34.3	100.0
	>312	38.4	23.2	38.4	100.0
	All	46.5	19.8	33.7	100.0
Non-agri. self	0-130	28.5	11.5	60.0	100.0
	130-228	25.9	13.1	31.0	100.0
	228-312	28.2	17.2	54.7	100.0
	>312	20.5	13.8	65.6	100.0
	All	23.6	14.1	62.2	100.0
Non-agri. wage	0-130	38.8	19.2	42.0	100.0
	130-228	37.7	16.5	45.8	100.0
	228-312	38.4	20.4	41.2	100.0
	>312	42.6	19.7	37.7	100.0
	All	39.9	19.2	40.8	100.0
Non-agri. salary	0-130	16.6	4.6	78.8	100.0
	130-228	21.0	17.8	61.2	100.0
	228-312	18.0	19.9	62.1	100.0
	>312	17.2	10.6	72.2	100.0
	All	17.6	12.3	70.1	100.0

Source: Estimated from the HIES 2005 data.

TABLE A4.3.3B
TYPE OF EMPLOYMENT, UNDEREMPLOYMENT (EXTREME AND MODERATE) AND POVERTY (URBAN)

(Per cent)

Type of employment	Employment days	Poverty group			Total
		EP	MP	NP	
Agri. self	0-130	19.7	10.5	69.9	100.0
	130-228	8.9	17.5	73.6	100.0
	228-312	17.4	15.2	67.4	100.0
	>312	16.6	13.2	70.2	100.0
	All	15.4	14.0	70.6	100.0
Agri. wage	0-130	46.4	27.6	26.0	100.0
	130-228	35.8	31.0	33.1	100.0
	228-312	43.3	20.6	36.2	100.0
	>312	60.1	22.1	17.8	100.0
	All	46.4	24.1	29.4	100.0
Agri. salary	0-130	0.0	0.0	0.0	100.0
	130-228	0.0	0.0	100.0	100.0
	228-312	0.0	0.0	100.0	100.0
	>312	0.0	13.8	86.2	100.0
	All	0.0	10.7	89.3	100.0
Non-agri. self	0-130	11.9	9.3	78.8	100.0
	130-228	12.7	9.1	78.2	100.0
	228-312	15.0	12.5	72.5	100.0
	>312	9.6	12.7	77.7	100.0
	All	10.9	12.1	77.0	100.0
Non-agri. wage	0-130	22.8	20.6	56.6	100.0
	130-228	27.6	24.4	47.9	100.0
	228-312	32.4	20.7	46.9	100.0
	>312	32.8	24.4	42.8	100.0
	All	31.0	22.9	46.0	100.0
Non-agri. salary	0-130	19.8	10.1	70.1	100.0
	130-228	20.6	14.2	65.1	100.0
	228-312	6.1	16.3	77.5	100.0
	>312	9.3	11.7	79.0	100.0
	All	9.6	12.3	78.1	100.0

Source: Estimated from the HIES 2005 data.

TABLE A4.3.4
TYPE OF EMPLOYMENT AND CALORIE ADEQUACY
(RURAL AND URBAN)

(Per cent)

Type of employment	Rural			Total
	<1805	1805-2122	>2122	
Agri. self	8.3	13.4	78.3	100.0
Agri. wage	17.7	20.1	62.2	100.0
Agri. salary	10.9	25.2	63.9	100.0
Non-agri. self	15.4	15.3	69.3	100.0
Non-agri. wage	21.0	20.1	58.9	100.0
Non-agri. salary	19.0	17.5	63.5	100.0
Total	15.2	16.9	68.0	100.0
		Urban		
Agri. self	8.2	13.8	78.0	100.0
Agri. wage	19.4	14.8	65.7	100.0
Agri. salary	3.0	36.6	60.4	100.0
Non-agri. self	13.2	18.0	68.7	100.0
Non-agri. wage	23.8	19.0	57.2	100.0
Non-agri. salary	18.9	15.8	65.3	100.0
Total	17.3	16.8	65.8	100.0

Source: Estimated from the HIES 2005 data.

TABLE A4.5.1
DETERMINANTS OF HOUSEHOLD INCOME: OLS REGRESSION

Dependent variable: log of income

Indep. Variables	Rural			Urban		
	Coeff.	t-value	Signif.	Coeff.	t-value	Signif.
(Constant)	7.137	73.038	.00	7.195	59.736	.00
Age of head	.015	3.710	.00	.021	4.219	.00
Square of head age	.000	-4.241	.00	.000	-4.364	.00
Education of head	.015	4.580	.00	.038	10.615	.00
Member education score (Age 15 +)	.013	11.915	.00	.013	11.047	.00
Sex (1=Male, 0=Female) dummy of head	-.021	-.603	.55	.006	.139	.89
Whether wage employment	-.012	-.503	.61	-.092	-2.623	.01
Whether regular salaried employee	.189	5.004	.00	.049	1.369	.17
Agriculture dummy	-.204	-9.172	.00	-.191	-5.307	.00
Land ownership	.086	14.925	.00	.056	9.149	.00
No. of male + female earner (15 +)	.212	14.862	.00	.180	9.706	.00
Whether feamle earner in the household	-.228	-6.011	.00	-.082	-2.224	.03
No. of dependent	.073	12.348	.00	.069	9.084	.00
Whether agri. asset	.247	7.870	.00	.221	3.327	.00
Whether Non-agri. asset	.261	9.902	.00	.237	7.329	.00
Barisal dummy	.027	.772	.44	-.099	-2.140	.03
Chittagong dummy	.257	8.989	.00	.092	2.798	.00
Khulna dummy	-.035	-1.139	.22	-.125	-3.627	.00
Rajshahi dummy	.013	.498	.62	-.198	-6.444	.00
Sylhet dummy	.247	5.647	.00	.188	3.662	.00
Sample size	6040	-	-	4040	-	-
Value of F	199.16	-	.00	174.04	-	.00
Adjusted R Square	0.38	-	-	0.45	-	-

Source: Estimated from the HIES 2005 data.

Chapter 5

FOOD INSECURITY IN THE VILLAGES OF MYMENSINGH AND NETROKONA

5.1 Survey for Measuring Household Level Food Insecurity: Methodological Issues

The analysis begins with a broad differentiation between self-employment and paid employment for the The second part of the study (Chapters 5 to 9) is based on the special BIDS-Food Insecurity Survey (BIDS-FISS), 2008 in two districts: Mymensingh and Netrokona. The objective of the survey is to estimate household food insecurity. Data from the survey has been used to examine the seasonal nature of food insecurity and its links with seasonality of employment and the household responses to food insecurity (Chapters 6 and 7). The links among food insecurity, types of employment, gender and health issues have also been covered by the survey (Chapters 8 and 9).

The overall picture of food insecurity in these areas will be examined in this chapter. Since we have used a direct question on food insecurity in this survey, it will be useful to begin with an overall assessment of food insecurity based on this question. The form of the question was “During the last one year, have there been days when some persons in the household did not eat even two full meals?” This was followed by a question on the number of such days in each of last 12 months.

The definition of household food insecurity involves choices related to two questions. These are:

(a) How many meals per day should be considered as sufficient (and its reverse, i.e. what extent of inadequacy reflects food insecurity)?

(b) How many days of inadequate meals should be taken as the cut-off for categorizing a household as food insecure?

In the present study less than two full meals were used as an answer to the first question. The decision was taken on the basis of FGD among landless households, who are likely to face food insecurity. Although richer households in a village may eat three meals a day, the poorer households found two full meals a day quite acceptable.[1]

The second question actually will not generate a universally acceptable cut-off line. The present study used more than 12 days of inadequate meals as the cut-off line in the analysis of determinants and responses to food shortage. This is obviously a practical choice. However, data on extent of food insecurity with higher number of days of food shortage have also been presented in this Chapter. The higher lines were chosen at 36 days and 60 days of food inadequacy (respectively 10 and 16 per cent days of a year) and these are actually arbitrary cut-off lines.

In fact, this study is the first of its kind and therefore past researcher do not provide scientific data on the number of food inadequate days faced and its links with decline of productivity or vulnerability to health risks etc. In future more research on these methodological dimensions should be undertaken.

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[1] This was also discussed in the work in-progress seminar presentation of the study and experts agreed to this view.

5.2 Estimates of Household FIS in Two Areas

Table 5.2.1 provides estimates of households facing food insecurity. The percentages of food-insecure households are quite close in the sample from two districts. Poverty estimates of HIES (2005) show that Netrokona is a poorer district compared to Mymensingh. The situation of food insecurity in the two areas shows that even in districts with less poverty, there are pockets of severe food insecurity which deserves policy interventions.

The share of food-insecure households is higher than the poverty incidence/food insecurity estimates (Chapter 3) obtained from HIES (2005). It should be mentioned here that the two estimates cannot be directly compared. The HIES sample consists of both rural and urban households and the BIDS survey was conducted only in rural areas. The indicators of food insecurity are also different. Moreover, the present survey has been conducted during a period of rising food prices (February–May 2008). Households may find it difficult to adapt to rapidly rising prices through adjustments in other expenditure.

The other reason behind the higher incidence of food insecurity from the present survey is that it refers to whole year's experience, whereas HIES's reference period is last 14 days. Since food insecurity is in most cases a seasonal phenomenon, reference to last fourteen days only will provide underestimation of the annual food insecurity. The difference, therefore, highlights the need for a focused survey to capture the extent of national food insecurity incidence more accurately.

The present survey also collected data on the duration of food insecurity. There are households who report food insecurity even if the span is short.

Therefore, the share of households with various duration of food insecurity deserves attention. Duration of less than 12 days, spread over a year, may be less serious in the sense that it reflects vulnerability of a household, but this may not lead to health problems caused by nutritional inadequacy. More than one day per month on average should receive more serious attention. Data on duration of food insecurity in the two districts have been shown in Table 5.2.2. When cases of food insecurity with duration over 12 days are considered, 54.3 per cent and 52.0 per cent households in Mymensingh and Netrokona are food insecure. Long duration food insecurity may be defined as those who reported more than 36 days (about 10 per cent of total days of a year) of food shortage. The shares of such households are quite high: 39.4 per cent in Mymensingh, 30.2 per cent in Netrokona and 36.0 per cent for the sample as a whole.

Table 5.2.2 shows that those with more than 60 days of shortage in a year are about 15 per cent of the households. These households should be covered by some form of safety net provisions, especially in the periods of continuous shortfalls. Mymensingh villages and Netrokona villages have respectively 16.6 per cent and 13.3 per cent households in such severe food insecurity category.

These data are not representative of the national picture because these are obtained from areas which are not the worst poverty pockets in the country. These upazilas are of course not from the poorest North-Western districts of Bangladesh. Therefore, there are areas where the food insecurity situation is likely to be worse. But it should be borne in mind that the concern related to food insecurity is not one related to national

average but related to the poorer households and poor areas. Thus, this type of survey may be conducted in other poorer areas as well. For monitoring of the impact of interventions for ensuring food security, such data can be particularly useful and can be collected within a short period.

5.3 Determinants of Food Insecurity: Analysis Based on Special Survey Data

In addition to the aggregate data on incidence of food insecurity, data on food insecurity by landownership can be helpful as a targeting device. Table 5.3.1 presents data on food insecurity by landownership. Land-ownership has a positive impact on reducing food insecurity. It is higher (60.7 per cent) among the landless (less than 0.50 acre) households. The share is lower among those with .51-2.50 acres of land. None of the households with larger than 2.50 acres reported food insecurity. Among the landless, average duration of food insecurity was 54 days.

The other question that was asked in this context is a comparison of the survey year with the previous year. Table 5.3.2 shows that 46.4 per cent households reported substantial worsening of the food situation, 23.4 per cent experienced slight worsening, and 17.0 per cent reported improvement. Table 5.3.2 also shows that landownership group of less than half acre not only has high incidence of food insecurity but also has substantially high incidence of worsening of food insecurity. Among households in landownership groups above 2.5 acres, the percentage of households reporting improvement in food situation is higher than the percentage reporting worsening of food situation. This is

possibly because rising food price raises income of households who are net sellers of food.

The link between type of employment and food insecurity in these two areas has been examined. Relevant results are presented in Table 5.3.3. Results show a clear pattern in both areas. In agriculture, self-employed households are much less food insecure compared to paid workers. Highest incidence of food insecurity is observed among paid agricultural labour households, followed by self-employed in non-agriculture. Incidence of food insecurity is lowest among self-employed in agriculture. The pattern holds for both cut off points presented in the table.

Other characteristics of households with varying length of food insecure days have been presented in Tables A5.1 and A5.2. These tables indicate that demographic features of food-secure households are more favourable. Households with longer duration of food insecurity are observed to have more dependent members, and less earning members.

Multiple regression analysis has been conducted to examine the influences of type of employment and other family characteristics on the duration of food insecurity. The results (Table 5.3.4) conform to a priori expectations. When personal and family characteristics are included as explanatory variables, the impact of wage employment is found to be positive and significant. In contrast, salaried and self-employed face smaller number of days of food insecurity. Personal characteristics have the expected impacts on days of food insecurity. Education of head of household and other members of household reduces the duration of

food insecurity. Estimated co-efficient of education of other household members is not significant while the coefficient of education of head is statistically significant. It works possibly through the income enhancing route. The education of other members may show reverse causality in the sense that the families who are experiencing less food insecurity can afford to educate children. Female-headed households are observed to face much longer duration of food insecurity. Number of earners has positive coefficient contrary to expectation. The coefficient, however, is weakly significant. "Number of earners" has actually two effects—it raises income and also raises total food consumption needs. The two have thus neutralised the impact. The number of dependent members in the family has a significant positive coefficient as it raises the total consumption need of the family. All types of assets have expected impact on days of food insecurity. Cultivable land, other agricultural asset and non-farm productive asset ownerships have negative and significant coefficients. The results are similar to the findings observed in Chapter 4.[2]

[2] The explanatory power of the estimated regression equation is reasonably high (.25) for cross section data, which is statistically significant as well (as reflected in high value of F).

TABLE 5.2.1
DURATION OF FOOD INSECURITY IN THE SELECTED VILLAGES OF MYMENSINGH AND NETROKONA

Area	Average duration (days) of food insecurity	
	Among food-insecure households (those with more than 12 days of less than 2 meals)	Among all households
Mymensingh	55.8	31.0
Netrokona	47.1	26.2
Mymensingh & Netrokona	55.5	29.2

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 5.2.2
DISTRIBUTION OF HOUSEHOLDS BY NUMBER OF DAYS OF FOOD INSECURITY BY DISTRICT

(Per cent)

No. of days of food shortage	District		Total
	Netrokona	Mymensingh	
0	44.4	44.5	44.4
1-12	3.6	1.2	2.1
13-24	9.3	5.4	6.8
25-36	12.5	9.5	10.7
37-48	8.9	13.2	11.6
49-60	8.1	9.5	9.0
61-84	7.7	6.8	7.2
85+	5.6	9.8	8.2
Total	100.0	100.0	100.0

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 5.3.1
DAYS OF FOOD INSECURITY IN MYMENSINGH AND NETROKONA

Landownership (in acre)	Households with > 12 days of food insecurity (Per cent)			Households with > 0 days of food insecurity (Per cent)		
	Mymensingh	Netrokona	Both areas	Mymensingh	Netrokona	Both areas
0.0-0.10	59.40	49.67	55.65	67.42	72.34	69.12
0.11-0.50	47.80	40.23	43.94	53.19	10.27	60.71
0.51-2.50	38.32	39.20	38.59	31.42	17.86	25.40
2.51 & above	-	-	-	-	-	-
Total	55.80	47.13	52.52	55.50	55.65	55.55

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.
- None

TABLE 5.3.2
COMPARISON OF THE SURVEY YEAR'S FOOD SITUATION WITH THE PREVIOUS YEAR

(Per cent)

District	Landownership (in acre)	This year				Total
		Better	Same	Slightly worse	Much worse	
Mymensingh and Netrokona	0.0-0.10	9.3	8.6	23.8	58.3	100.0
	0.11-0.50	20.2	8.3	28.6	42.9	100.0
	0.51-2.50	31.8	22.2	22.2	23.8	100.0
	2.51+	43.6	41.0	12.8	2.6	100.0
	Total	17.0	13.2	23.4	46.4	100.0
Netrokona	0.0-0.10	12.1	12.8	25.5	49.6	100.0
	0.11-0.50	21.6	8.2	29.7	40.5	100.0
	0.51-2.50	46.4	28.6	17.9	7.1	100.0
	2.51+	57.2	28.6	7.1	7.1	100.0
	Total	23.8	16.5	23.4	36.3	100.0
Mymensingh	0.0-0.10	7.9	6.4	22.8	62.9	100.0
	0.11-0.50	19.1	8.5	27.7	44.7	100.0
	0.51-2.50	20.0	17.2	25.7	37.1	100.0
	2.51+	36.0	48.0	16.0	0.0	100.0
	Total	13.0	11.0	23.6	52.6	100.0

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 5.3.3
EMPLOYMENT TYPE AND FOOD INSECURITY

(Per cent)

District code	Employment type	Household with >0 days of food insecurity	Household with >12 days of food insecurity
Netrokona	Agri. self	25.00	21.05
	Agri. paid	80.52	77.92
	Non-agri. self	65.31	57.14
	Non-agri. paid	41.67	41.67
	Total	55.65	52.02
Mymensingh	Agri. self	30.70	28.95
	Agri. paid	78.81	76.27
	Non-agri. self	62.50	62.50
	Non-agri. paid	50.00	50.00
	Total	55.50	54.28
Netrokona & Mymensingh	Agri. self	28.42	25.79
	Agri. paid	79.49	76.92
	Non-agri. self	63.57	60.47
	Non-agri. paid	47.37	47.37
	Total	55.56	53.42

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 5.3.4
DETERMINANTS OF DAYS OF FOOD INSECURITY IN VILLAGES OF MYMENSINGH AND NETROKONA: RESULTS OF OLS REGRESSION

Dependent Variable: Number of days of food insecurity

Expl. var.	Coeff.	t-value
Constant	77.32***	5.10
Age of head	-.22	-.48
Square of head age	.01	1.42
Education of head	-1.43***	-2.86
Members education score	-.16	-.84
Sex (1=male, 0=female) dummy of head	-26.32***	-3.37
Wage employment dummy (Yes=1)	17.43***	5.37
Salaried employment dummy (Yes=1)	4.31	.82
Agriculture dummy (Yes=1)	-2.00	-.65
Land owned	-.05***	3.69
No. of male + female earners (15+)	4.00*	1.86
Female earner in the household	-12.10**	-2.35
Dependent Members (No.)	2.30**	2.72
Possesses Agri. asset (Yes=1, No =0)	-8.52***	-3.19
Possesses Non-agri. asset (Yes=1, No =0)	-5.88*	-1.63
District dummy for Mymensingh	4.05	1.60
Sample size	657	-
Value of F	15.59***	-
Adjusted R-Square	0.25	-

Source: Estimated from BIDS-FISS survey data.
Note: ***, ** and * imply significant at .00, .05 and .10 level respectively.

TABLE A5.1
CHARACTERISTICS OF FAMILIES WITH VARYING DURATION OF FOOD INSECURITY

Food insecure days	Average no. of male earners	Average no. of female earners	Average dependent aged <5 years	Average dependent all ages	Land owned (dec.)	Average years of education of head	Average years of education of other members
0 days	1.47	0.08	0.50	3.36	100.22	4.46	12.96
1-12 days	1.36	0.07	0.71	3.29	27.57	0.71	6.77
13-36 days	1.27	0.07	0.68	3.16	17.28	1.38	6.01
37+ days	1.19	0.15	0.66	3.24	8.89	1.20	5.67
Total	1.33	0.10	0.59	3.28	51.35	2.67	9.02

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE A5.2
TYPE OF HOUSE BY DURATION OF FOOD INSECURITY

(Per cent)

District	Type of roof	Food insecure days			
		0-11 days	12-35 days	36+ days	Total
Netrokona	Cement	0.9	0.0	0.0	0.4
	CI Sheet	82.1	60.4	57.7	69.8
	Hemp	17.1	39.6	42.3	29.8
	Total	100.0	100.0	100.0	100.0
Mymensingh	Cement	0.5	0.0	0.6	0.5
	CI Sheet	97.3	85.0	87.7	91.7
	Hemp	1.6	15.0	11.0	7.3
	Total	100.0	100.0	100.0	100.0
Mymensingh & Netrokona	Cement	0.7	0.0	0.4	0.5
	CI Sheet	91.4	73.5	78.0	83.4
	Hemp	7.6	26.5	21.2	15.8
	Total	100.0	100.0	100.0	100.0

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

Chapter 6

SEASONALITY OF FOOD INSECURITY AND EMPLOYMENT IN THE VILLAGES OF MYMENSINGH AND NETROKONA

6.1 Seasonal Fluctuation of Food Insecurity

Food insecurity generally manifests itself in two forms: first, year round/chronic food insecurity and second, seasonal food insecurity. Seasonal nature of food insecurity has been emphasized by policymakers. However, there is hardly any information on the extent of seasonal variation of food insecurity in Bangladesh. Household income may also serve as a proxy of household food insecurity. But data on monthly income of households is not available from any source. In fact, it will be difficult to estimate monthly income, especially among rural households engaged in agriculture and other self-employment where output may not correspond to months but are less frequent and lumpy in nature. In contrast, food insecurity data can be collected for each month of the year.

Rural survey conducted for the present study (BIDS-FISS of 2008) has collected month wise data on food insecurity and on days of employment of all employed persons. These data will be used to examine the link between seasonal variations in food insecurity and labour in the rural market.

Table 6.1.1 presents monthly data on food insecurity. Data reveal large monthly fluctuation in the extent of food insecurity. The range is 6.2 days to 12.7 days in Netrokona and 7.1 days to 13.9 days in Mymensingh and 7.3 days to 13.3 days for the two areas

combined. Mid-October to mid-November (Kartik) and mid-February to mid-March (Chaitra) are the periods of most severe food insecurity. The monthly patterns of fluctuations are similar in the two areas. Table 6.1.1 confirms that the months of Ashwin-Kartik, traditionally known as Monga period, are actually periods of food insecurity. Moreover, Falgun and Chaitra, especially the latter, are months of extended food insecurity for the households.

To understand the determinants of seasonal variation of food insecurity, the present chapter examines its links with the labour market and the agricultural production cycles. The fluctuations of prices of foodgrains may also play a role in this context. Therefore, the monthly variation of rice prices in these two areas is also presented.

Figures 6.1a-6.1c show the monthly fluctuations of the two variables, employment[1] and food insecurity. The extent (number of days) of food insecurity and employment shows an inverse relationship as expected. There are two periods of low employment, extending over a period of about two months. In both the low employment periods, food insecure days are high. The reverse is the case in months of higher employment. Both the districts show very similar pattern of seasonal fluctuations of employment and food insecurity (Figures 6.1a-6.1c).

Impact of days of employment on food insecurity actually operates through its links with income. Low

[1] These figures are based on total of paid and self employment in both agriculture and non-agriculture. In fact, non-agricultural employment is likely to show less seasonal fluctuation. But total employment being dominated by agriculture shows considerable seasonal fluctuation.

employment implies low income in slack season/ months, which leads to food insecurity.

In the case of self-employment, especially in agriculture, seasonal fluctuation of employment may not be directly linked to income flow. Both employment and income flows in this case are determined by the production cycle of agricultural crops. This may require some elaboration. In both areas of survey, Aman and Boro rice are major crops. These rice crops are sown and harvested as follows:

Aman rice:	Transplanted/sown in July-August, harvested in December
Boro rice:	Transplanted in February-March, harvested in May-June
Aus rice:	Sown in April-May, harvested in July (not important in these areas)

The months of low employment are September-October and March-April (Table 6.1.2). None of the major agricultural crops are harvested in these months. This implies that there is hardly any income flow during the slack employment periods. Therefore, in the case of self-employment as well, food insecurity will be observed during the low employment periods. In both areas April to June and November-December are months of peak employment (Table 6.1.2). If 20 days of employment in a month is taken as the full employment norm, then these months show over employment.

6.2 Monthly Variation of Wage

Wage data presented here has been obtained from the employers within the village. This will reflect the labour market in the space around their residence and within or neighbouring their own village. In contrast,

wage data obtained from workers' responses will involve a mixture of wage obtained from various places—as the workers sometimes go outside the village to seek wage employment in other villages and distant towns as well.

Data presented in Table 6.2.1 show substantial monthly fluctuation of wage. A decline of wage during the slack period can be observed. The ranges between peak and slack wage in both areas are large. In fact, in some villages employers did not report a wage rate for "*Kartik*" and "*Chaitra*," because in these months they do not hire workers. Thus the slack season is characterised by both decline of wage and of employment.

At this point, it should be emphasised that this type of survey and data analysis for small regions can be useful to focus on seasonality of employment and wage within a particular area. If such data is averaged for larger geographical regions, then the seasonal fluctuation will be less pronounced because the pattern in one area may counteract the pattern in other areas. This may be one of the reasons that the wage data provided by Monthly Statistical Bulletin (BBS, various years) do not show large monthly fluctuation of wage.

6.3 Monthly Variation of Rice Price

While the labour market plays an important role as a determinant of "entitlement" of the labour market participants which, in turn, determines their food security position, the other side of the picture involves the supply situation of foodgrains. An analysis of the supply situation is beyond the scope of the present study. We shall present data on relevant rice price on a monthly basis, so that an idea can be formed about the role of price fluctuations on seasonal food insecurity in the survey areas.

Table 6.3.1 provides data on rice price. During the last twelve months, rice price displayed more or less a continuous increase. However, the incremental changes during Ashwin, Kartik or Falgun were not larger than the changes observed in other months. In the study year this may have been due to rapid rise in rice price which overshadowed the monthly fluctuation. As a result, the link between monthly fluctuation of rice price and food inadequacy was not quite apparent.

6.4 Monthly Variation of Paid Employment and Self-employment and Food Insecurity

It will be interesting to examine whether monthly variation of food insecurity experience and days of employment differs between those who are in self-employment and those who are in paid employment. Tables 6.4.1 and 6.4.2 show the results. For both types of employment, Ashwin, Kartik and Chaitra are months of smaller number of days of employment and greater extent of food insecurity. The only month when wage employed is worse off is Ashar (Figures 6.2 and 6.3) when there is hardly any scope for wage employment in rural Bangladesh.

TABLE 6.1.1
MONTHWISE FOOD-INSECURE DAYS IN MYMENSINGH AND NETROKONA

Name of month in Bengali calendar	Average days of food shortage		
	Netrokona	Mymensingh	Both areas
Baishakh (15 April–14 May)*	7.43	7.57	7.52
Jaistha (15 May–14 June)	7.27	8.00	7.82
Ashar (15 June–14 July)	8.21	8.21	8.21
Shraban (15 July–14 August)	6.94	7.97	7.65
Bhadra (15 August–14 September)	6.88	8.28	7.82
Ashwin (15 September–14 October)	10.89	10.48	10.63
Kartik (15 October–14 November)	12.74	12.93	12.86
Agrahayan (15 November–14 December)	7.80	7.17	7.36
Poush (15 December–14 January)	6.23	8.31	7.87
Magh (15 January–14 February)	7.73	8.54	8.35
Falgun (15 February–14 March)	9.00	9.59	9.36
Chaitra (15 March–14 April)	12.23	13.95	13.30
All	47.13	55.80	55.53

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.
* Approximate correspondence.

TABLE 6.1.2
MONTHLY EMPLOYMENT IN MYMENSINGH AND NETROKONA

Name of month in Bengali calendar	Average days of employment of earners		
	Netrokona	Mymensingh	Both areas
Baishakh (15 April–14 May)*	20.65	20.29	20.43
Jaistha (15 May–14 June)	22.82	20.65	21.49
Ashar (15 June–14 July)	14.86	16.46	15.86
Shraban (15 July–14 August)	18.21	17.87	18.00
Bhadra (15 August–14 September)	17.27	18.28	17.90
Ashwin (15 September–14 October)	13.65	15.64	14.90
Kartik (15 October–14 November)	13.64	15.10	14.57
Agrahayan (15 November–14 December)	22.92	21.10	21.79
Poush (15 December–14 January)	18.12	18.33	18.25
Magh (15 January–14 February)	20.70	19.22	19.79
Falgun (15 February–14 March)	16.34	17.16	16.84
Chaitra (15 March–14 April)	13.77	15.91	15.10
Total	17.89	18.06	18.00

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.
* Approximate correspondence.

TABLE 6.2.1
MONTHLY WAGE RATE IN AGRICULTURAL ACTIVITY IN MYMENSINGH AND NETROKONA

Name of Month in Bengali calendar	Average wage rate (Taka per day)		
	Netrokona	Mymensingh	Both areas
Chaitra (15 March–14 April)*	77	116	98
Baishakh (15 April–14 May)	200	182	191
Jaistha (15 May–14 June)	205	211	208
Ashar (15 June–14 July)	166	167	166
Shraban (15 July–14 August)	144	149	147
Bhadra (15 August–14 September)	134	143	138
Ashwin (15 September–14 October)	127	134	130
Kartik (15 October–14 November)	90	131	115
Agrahayan (15 November–14 December)	187	191	189
Poush (15 December–14 January)	202	213	208
Magh (15 January–14 February)	184	201	192
Falgun (15 February–14 March)	160	170	165

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.
Note: Wage rate reported by employers in the selected villages. Wage includes cash plus kind/food.
* Approximate correspondence.

TABLE 6.3.1
MONTHLY RETAIL RICE PRICE IN MYMENSINGH AND NETROKONA

Name of month in Bengali calendar	Price of rice (per kg)		
	Netrokona	Mymensingh	Both areas
Chaitra (15 March–14 April)*	25.00	19.00	22.00
Baishakh (15 April–14 May)	26.00	19.00	22.50
Jaistha (15 May–14 June)	27.00	22.00	24.50
Ashar (15 June–14 July)	28.00	22.00	25.00
Shraban (15 July–14 August)	28.00	24.00	26.00
Bhadra (15 August–14 September)	27.00	27.00	27.00
Ashwin (15 September–14 October)	29.00	27.00	28.00
Kartik (15 October–14 November)	30.00	28.00	29.00
Agrahayan (15 November–14 December)	32.00	30.00	31.00
Poush (15 December–14 January)	33.50	32.00	32.75
Magh (15 January–14 February)	36.50	35.00	35.75
Falgun (15 February–14 March)	36.50	35.00	35.75

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.
Note: Price reported by retail shops.
* Approximate correspondence.

TABLE 6.4.1
MONTH-WISE DAYS OF EMPLOYMENT AMONG SELF-EMPLOYED AND WAGE EMPLOYED HOUSEHOLDS IN MYMENSINGH AND NETROKONA*

Month	Self-employment	Paid employment
Baishakh	19.7	25.7
Jaistha	20.8	26.9
Ashar	17.4	22.2
Shraban	18.3	24.6
Bhadra	18.5	23.6
Ashwin	16.7	20.7
Kartik	17.3	21.9
Agrahayan	21.3	27.4
Poush	19.2	24.1
Magh	19.4	25.2
Falgun	17.2	22.0
Chaitra	15.7	20.6

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.
* For head of households in food-insecure households.

TABLE 6.4.2
MONTH-WISE FOOD-INSECURE DAYS FOR DIFFERENT TYPES OF EMPLOYMENT OF HEAD IN MYMENSINGH AND NETROKONA FOR FOOD INSECURE HOUSEHOLDS

Month	Self-employment	Paid employment
Baishakh	6.5	9.1
Jaistha	6.5	7.1
Ashar	7.5	7.5
Shraban	7.3	7.5
Bhadra	8.2	8.6
Ashwin	10.2	10.5
Kartik	12.1	13.7
Agrahayan	7.3	8.8
Poush	7.8	8.2
Magh	8.4	9.1
Falgun	9.0	10.7
Chaitra	12.7	15.0

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

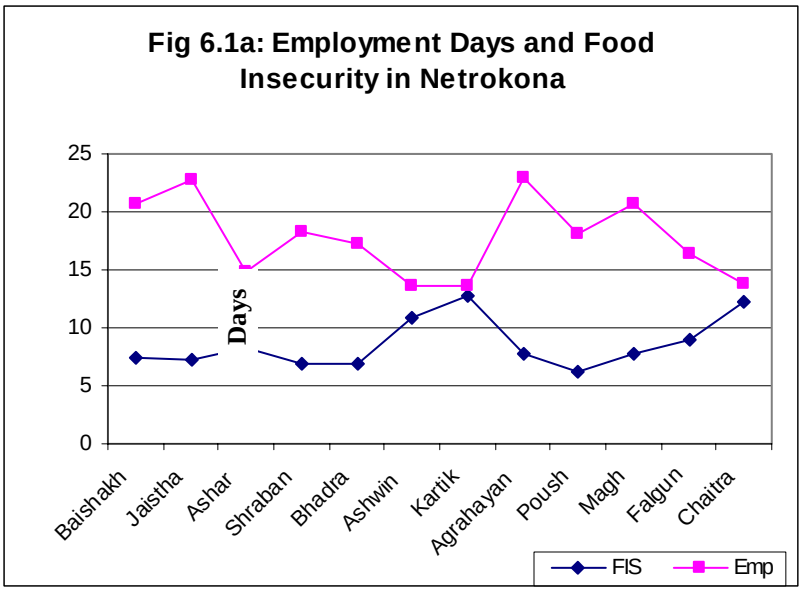


Fig 6.1a: Employment Days and Food Insecurity in Netrokona
25
20
15
10
5
0
Days
Baishakh
Jaistha
Ashar
Shraban
Bhadra
Ashwin
Kartik
Agrahayan
Poush
Magh
Falgun
Chaitra
FIS
Emp

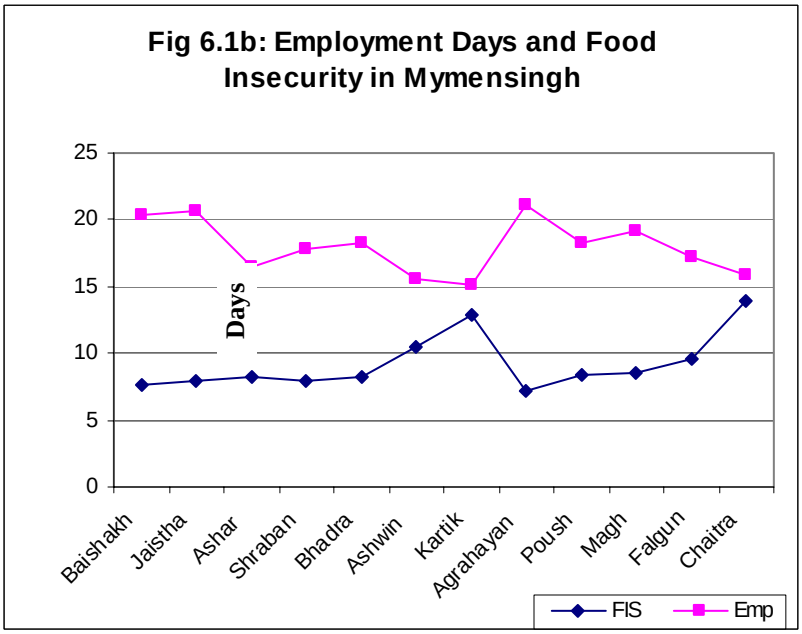
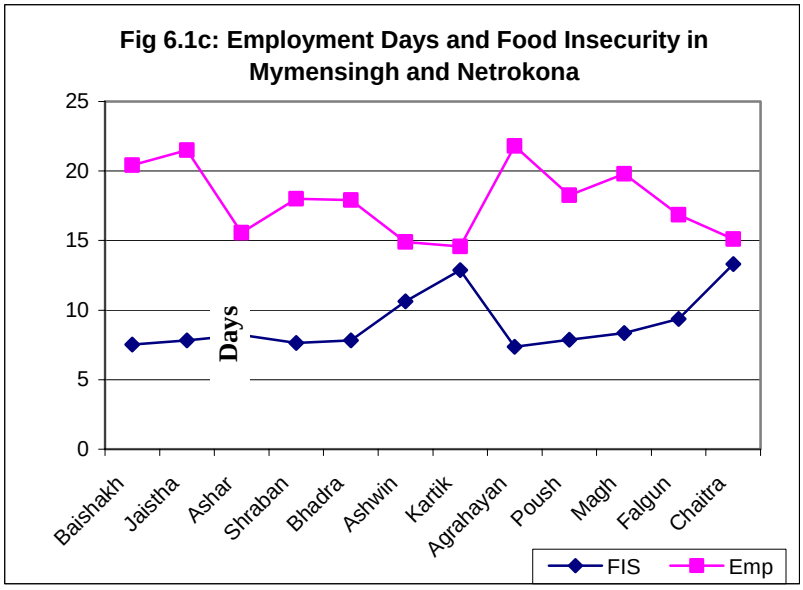
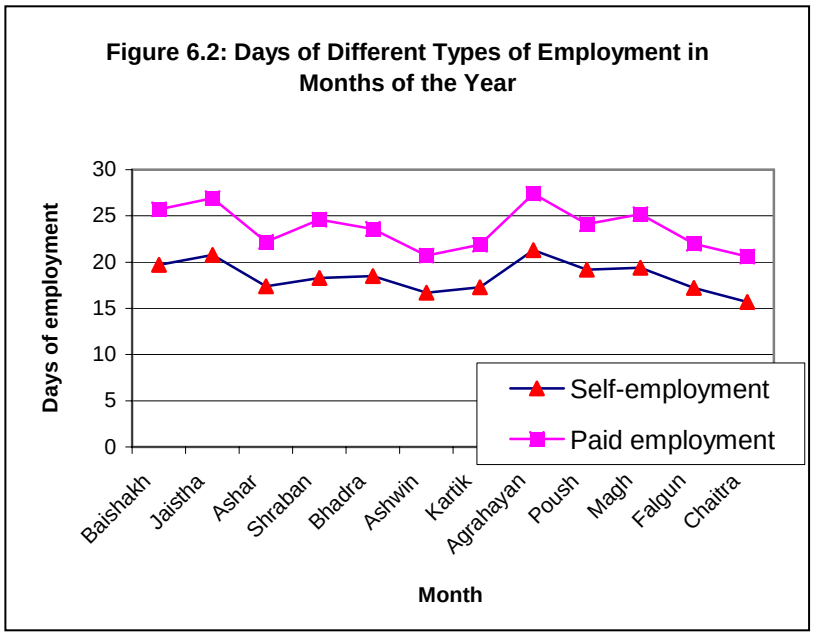


Fig 6.1b: Employment Days and Food Insecurity in Mymensingh
25
20
15
10
5
0
Days
Baishakh
Jaistha
Ashar
Shraban
Bhadra
Ashwin
Kartik
Agrahayan
Poush
Magh
Falgun
Chaitra
FIS
Emp

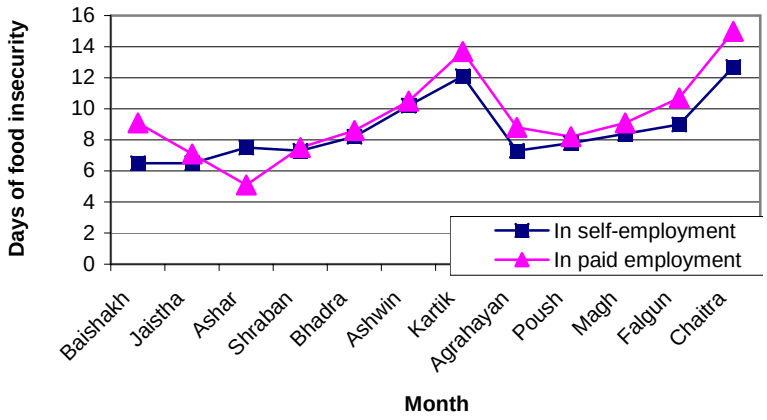


Source: BIDS-FISS 2008.



Source: BIDS-FISS 2008.

Figure 6.3
Days of Food Insecurity in Different Months of the Year by Type of Employment



Source: BIDS-FISS 2008.

TABLE A6.1
RETAIL PRICE OF MAJOR COMMODITIES IN THE STUDY AREAS, 2008 (MARCH-APRIL)

Food	Price per kg (Taka)
Rice (coarse)	31-32
Wheat	40-42
Lentil	100-108
Beef	180-200
Potato	14-16
Sugar	36-40
Fish	80-100
Vegetable	7-20
Banana (per dozen)	18-30
Milk (per litre)	30-32
Oil (per litre)	90-110

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

CHAPTER 7

HOUSEHOLDS' RESPONSES TO FOOD INSECURITY

The analysis of the previous chapters has demonstrated that food insecurity has been associated with inadequate income/production to meet a family's requirements. The response to the situation is, therefore, likely to operate through three routes: first, to generate income through working more hours, and second, to enhance access to cash/food through borrowing or sale of other assets. There will also be attempts to reduce consumption needs of the family through various means. Such responses often involve continuous processes and not the outcome of decisions abruptly made. A family or its head may not even be aware of the fact that it is giving in to the pressures of food insecurity through these processes. Therefore, large surveys cannot fully capture households' multi-pronged strategy to cope with food insecurity.

BIDS Food Insecurity Survey 2008 captures the responses to food insecurity through direct questions and through complementary questions based on our hypothesis about such responses. Sections 7.1 and 7.2 discuss the relevant findings.

An important response to mitigate food insecurity through augmentation of income may take place through migration to towns to seek employment. Therefore, questions have been asked on various aspects of migration. This mode of response has been discussed in Section 7.3. The responses to food insecurity are likely to be different for self-employed and wage employed households. In particular, the attempts to raise income

through more work will imply movement of wage labourers to explore opportunities of employment outside the confines of ones own village labour market. However, the scope of such movement may be less among the self-employed.

Safety net provisions by both private and public institutions involve responses to food insecurity in direct and indirect ways and is discussed in Section 7.4. Here again, data will be disaggregated for wage employed and self-employed to identify differential access of these two groups to safety net in these villages.

7.1 Households' Direct and Indirect Responses

Table 7.1.1 shows households' responses to food insecurity. An overwhelmingly large group resort to borrowing from private sources.[1] The next frequent answer is "Work more." "Going to the town to take up employment," has been noted as a separate response. About 4 per cent households engaged children in income earning work. A few (1.4 per cent) households sent children to better off relative's house. This may be considered as a form of the third type of response mentioned above. Fifteen per cent households reported others or nothing in particular.

The above responses reconfirm that the employment issues are integrally linked to food security issues. "Credit" or borrowing for consumption also deserves special attention. The same is true about short term migration for seeking employment. Although the incidence of adjustment through change of children's status is small, these cases indicate that such harmful process has been already manifested and may worsen if

[1] These responses are similar to those reported by Rahman and Hossain (1995).

food insecurity continues. Children's labour market participation has many adverse effects. Though this may have positive impact on family's earnings in the short run, children's human capital development is adversely affected in the long run. They are employed in unskilled jobs with low income and this can have adverse repercussions on their attitude and social values. Thus, food insecurity is likely to create a low income trap for these children. The fact that some people send children to relative's house may also have adverse effect on children's education and social values. Moreover, it may as well be a hidden form of child labour.

Distribution of responses by status of employment has been shown in Figure 7.1 and Table 7.1.2. A much larger share of wage employed persons has responded that they go outside the village to avail employment opportunities. The other response with much larger share among wage employed is "send children to work." Since food-insecure households engaged in wage employment do not have resources that can give them direct access to food, they have no option but to mobilise family's labour and such labour may be contributed by both adult persons and children.

7.2 Borrowing

Ability to enhance income in periods of food insecurity is actually constrained by lack of land and other productive assets and insufficient employment opportunities. Therefore, the responses of households include attempts to access other sources of funds for meeting consumption needs. Borrowing is an important route to access to cash and this section examines how far the food-insecure households have been successful in this endeavour.

In the two areas of Mymensingh and Netrokona, 87.22 per cent and 85.51 per cent of food-insecure households respectively reported to have taken loan from various sources. Many households borrowed from more than one sources.

It is pertinent to examine the sources of credit of these households. Table 7.2.1 provides the relevant information. As expected, an insignificant number of cases has access to Government programmes and formal banks. About 21 per cent households obtained loan from NGOs. A very large percentage of households borrowed from friends, neighbours and relatives (more than 61 per cent of total households). Data on sources of loans of food-insecure households make it clear that loans from formal credit institutions are not playing a role in ensuring food security.

Moreover, it is worth noting that "mahajan" (professional money lender) plays a more important role compared to institutional sources including NGOs. A comparison between the two areas shows that a larger percentage of households in Mymensingh obtained loans from mahajan and NGOs. This reflects the supply side to some extent. Mymensingh has a larger NGO intensity/coverage compared to Netrokona. This district is economically better off and therefore, non-institutional lenders, such as Mahajans, are more active here.

An assessment of the role of various sources of loan requires information on the amount of loan and the purpose for which loan was given. Amount of loan obtained from various sources has been shown in Table 7.2.2. It can be observed that the loan sizes from NGO and mahajan are larger than the loans from other sources. In Mymensingh district, the average amounts

disbursed by NGOs and by mahajans are quite close. The loan sizes from *mahajans* are substantially larger in Mymensingh compared to Netrokona (Tk. 7,293 and Tk. 5,375 respectively). This is possibly due to supply side forces—Mymensingh being economically more advanced, the lenders have larger funds to provide credit. In fact, even the private sources like friends and neighbours provide larger amount of loan in Mymensingh compared to Netrokona (Tk. 6,474 and Tk. 5,888 respectively). The difference between the sizes of loans from NGOs in the two districts is even larger (Tk. 7715 and Tk. 6,882 respectively). Thus higher economic opportunities and higher income of the district as a whole have positive impact on mobilisation of borrowed funds by food-insecure households in poorer villages within the district.

One may wonder whether these loans were actually used for bridging the food gap of food-insecure households. For each loan, purpose of borrowing has been asked and the responses are shown in Table 7.2.3 (first two loans have been discussed here since only 6 households reported three loans). In more than 60 per cent cases, the loans were taken for meeting the food requirements of the family. It has also been observed that wage employed persons are more dependent on "*mahajan*" and "friends and relatives" for loan than self-employed persons (Table 7.2.4). To establish the correspondence of source of loan and purpose of loan, results of relevant cross tabulation have been presented in Table 7.2.5. In larger percentage of cases, loans from friends and relatives were used for catering to families' food consumption needs.

7.3 Internal Migration among Food-insecure Households

Temporary migration from poorer regions to better off areas is a common response to food insecurity caused by inadequate employment opportunity. Such migration has been observed in both areas covered by the present study.

Table 7.3.1 presents data on the role of such migration in the two areas. Among the food-insecure households, about 42 per cent were engaged in temporary migration—45.3 per cent in Netrokona and 39.7 per cent in Mymensingh. On average, the duration of migration period was 104.2 days. Average duration of migration was longer in Netrokona compared to Mymensingh, 100.1 days and 77.4 days respectively (Table 7.3.2). Extent of migration among wage employed and self-employed and both disaggregated by food insecurity situation have been presented in Table 7.3.3. A much larger percentage of wage employed workers (58.9 per cent) have migrated compared to self-employed persons (24.7 per cent). The share of migrants is also larger among those facing food insecurity.

The other question asked to those who migrated is whether they left sufficient money/food for the family's essential expenses during their absence. Relevant data has been presented in Table 7.3.4. About 45 per cent cases reported that they did not leave anything or left only a meager amount. More than 37 per cent cases left some amount but not adequate for the period of absence.

Another interesting aspect of internal migration involves a comparison between food- insecure and food-secure households. As shown in Table 7.3.1, a much larger percentage of food-insecure household heads

resort to such migration. Twenty-five per cent of food-secure and 42 per cent of food-insecure households resorted to migration to other areas of the country.

An FGD session was held with migrant workers of Gondhokhola village of Mymensingh. They reported the following aspects of such migration:

- Wage was about 20 taka higher in the areas where they went (100 taka in the village and 120 taka outside). But they would prefer employment within village because the wage differences are, to a large extent, eroded by travel cost.
- Migration took place in groups of 10 to 20 persons. During their migration period they send back one person with money to be given to the families in the village. Thus lack of institutional arrangement for remitting money was not viewed as a cause of food insecurity.
- Cell phone was useful in getting information about employment in towns.

7.4 Safety Net for Food-insecure Households

Government has adopted various safety net programmes to help households facing food insecurity. Most safety net programmes are more or less directly involved in providing access to cash/food for households who do not have adequate income for meeting families' food requirement. Private sources and NGOs sometimes provide help to the food deprived households. The food-insecure households of the present sample were asked about the sources from which they received support. It is a matter of concern that about 55 per cent of the food-insecure households reported that they did not receive any support. The rest of the sample received support and they did obtain this mostly from government programmes. It should be noted that a significant percentage of households receives loan from NGOs which provide support to food-insecure households.

These loans are usually given for "productive activities" and are not considered as safety net. However, in times of food insecurity households' adjustment process may take place through the use of some of the borrowed fund for consumption purposes. Thus microcredit may also play a direct role as safety net. The largest percentage of safety net recipients (32.3) received money for children's education. A total of 11 per cent households received benefit from one of the following sources: VGD, VGF, GR, Test Relief, Widow Allowance or Old Age Allowance (Table 7.4.1), and these sources provide direct support for access to food. Average amount received over one year period by all food-insecure households is rather meagre, Tk. 529 and Tk. 904 in Netrokona and Mymensingh respectively (Table 7.4.2). Moreover, those who receive stipend for school going children have to spend a large part of it to maintain performance at school so that stipend is continued, leaving little for meeting food needs of the family.

TABLE 7.1.1
HOUSEHOLDS' RESPONSES TO THE PROBLEM OF FOOD INSECURITY

(Per cent of hh)

Response*	Mymensingh and Netrokona	Mymensingh	Netrokona
Work more	38.9	38.3	39.9
Give children to work	3.8	2.6	5.8
Loan	84.4	82.8	87.0
Go to town to work	21.9	21.1	23.2
Send children to relatives	1.4	0.4	2.9
Others**	13.2	9.7	18.8
Nothing	1.9	3.1	-

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.
Notes: * Multiple responses were allowed.
**Others include 'eating less', collecting grains and leafy vegetable, etc.

TABLE 7.1.2
RESPONSES TO FOOD INSECURITY AMONG HOUSEHOLDS IN SELF-EMPLOYMENT AND PAID EMPLOYMENT

Response*	Household Head in paid employment			Household Head in self-employment		
	Netrokona	Mymensingh	Total	Netrokona	Mymensingh	Total
Work more	40.3	41.2	40.8	43.1	38.5	40.3
Give children to work	10.4	2.0	5.3	0.0	3.3	2.0
Loan	94.0	86.3	89.3	82.8	79.1	80.5
Go to town to work	34.3	30.4	32.0	10.3	12.1	11.4
Send children to relatives	3.0	1.0	1.8	3.4	0.0	1.3
Others	13.4	6.9	9.5	22.4	6.6	12.8
Nothing	0.0	3.9	2.4	0.0	2.2	1.3
Total	39.6	60.4	100.0	38.9	61.1	100.0

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.
Note: * Multiple responses were allowed.

TABLE 7.2.1
FOOD-INSECURE HOUSEHOLDS' ACCESS TO CREDIT DURING LAST ONE YEAR

District	Source of credit	Per cent of food-insecure households*
Mymensingh	Government	0.44
	NGO	25.55
	Mahajan	31.72
	Relative	13.66
	Neighbour/Friend	37.44
	Other	1.32
Netrokona	Bank	2.17
	NGO	12.32
	Mahajan	18.84
	Relative	28.26
	Neighbour/Friend	47.12
	Other	1.45
Mymensingh & Netrokona	Government	0.72
	Bank	0.82
	NGO	20.55
	Mahajan	26.85
	Relative	19.18
	Neighbour/Friend	41.10
	Other	1.37

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.
Note: * Households borrow from more than one source.

TABLE 7.2.2
AMOUNT OF CREDIT OBTAINED FROM VARIOUS SOURCES

District	Source	Amount (in Tk.)
Netrokona	Bank	7,000.00
	NGO	6,882.35
	Mahajan	5,375.00
	Other group	3,275.00
	Relative	3,826.67
	Neighbour/friend	5,888.15
	Total	5,370.20
Mymensingh	Bank	3,000.00
	NGO	7,715.52
	Mahajan	7,293.06
	Other group	3,266.67
	Relative	5,027.42
	Neighbour/friend	6,474.18
	Total	6,766.22
Total	Bank	7,000.00
	Government	3,000.00
	NGO	7,526.67
	Mahajan	6,784.18
	Other group	3,270.00
	Relative	4,358.43
	Neighbour/friend	6,220.23
	Total	6,238.37

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 7.2.3
PURPOSE OF LOAN OBTAINED BY FOOD-INSECURE HOUSEHOLDS

(Per cent)

Loan No.	Purpose of loan			Total
	Food	Other emergency expenditure	Others	
1 loan	69.3	2.2	28.5	100.0
2 loan	60.0	2.5	37.5	100.0
3 loan	33.3	16.7	50.0	100.0
Total	66.9	2.5	30.6	100.0

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 7.2.4
SOURCE OF BORROWING OF HOUSEHOLDS BY EMPLOYMENT TYPE

Source	Head in Self-employment			Head in Wage employment		
	Netrokona	Mymensingh	Total	Netrokona	Mymensingh	Total
Bank	3.5	0.0	1.4	1.5	0.0	0.6
Govt. Programme	-	-	-	0.0	1.0	0.6
NGO	12.3	31.9	24.3	14.9	21.0	18.6
Mahajan	19.3	28.6	25.0	16.4	42.0	31.7
Relative	31.6	15.4	21.6	28.4	13.0	19.2
Neighbour/ Friend	40.4	38.5	39.2	55.2	38.0	44.9

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 7.2.5
PURPOSE OF LOAN

(Per cent)

Loan No.	Source of loan	Purpose of loan			Total
		Food	Other emergency expenditure	Other	
First Loan	Bank	33.3	0.0	66.7	100.0
	Govt. programme	0.0	0.0	100.0	100.0
	NGO	46.5	4.2	49.3	100.0
	Mahajan	86.9	1.2	11.9	100.0
	Other group	100.0	0.0	0.0	100.0
	Relative	66.7	1.8	31.6	100.0
	Neighbour/friend	73.2	2.1	24.7	100.0
	Total	69.3	2.2	28.5	100.0
Second Loan	NGO	50.0	0.0	50.0	100.0
	Mahajan	64.3	7.1	28.6	100.0
	Other group	50.0	0.0	50.0	100.0
	Relative	66.7	0.0	33.3	100.0
	Neighbour/friend	58.3	2.1	39.6	100.0
	Total	60.0	2.5	37.5	100.0

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 7.3.1
HAS ANY MEMBER OF THE HOUSEHOLD TRAVELED 3 MILES OR MORE FOR EMPLOYMENT BY FOOD SECURITY STATUS

(Per cent)

District	Food insecure			Food secure			All		
	Traveled			Traveled			Traveled		
	Yes	No	Total	Yes	No	Total	Yes	No	Total
Netrokona	45.3	54.7	100.0	26.6	73.4	100.0	37.0	63.0	100.0
Mymensingh	39.7	60.3	100.0	23.8	76.2	100.0	32.6	67.4	100.0
Total	41.8	58.2	100.0	24.8	75.2	100.0	34.3	65.7	100.0

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 7.3.2
DURATION OF TEMPORARY DOMESTIC MIGRATION AMONG FOOD-INSECURE HOUSEHOLDS

Area	Duration of migration		Average duration of migration (days)
	Self-employment	Wage employment	
Mymensingh	100.1	70.9	77.4
Netrokona	115.9	73.9	100.1
Total	106.7	71.8	104.2

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 7.3.3
HAS ANY MEMBER OF THE HOUSEHOLD TRAVELED 3 MILES OR MORE FOR EMPLOYMENT BY STATUS OF EMPLOYMENT

(Per cent)

District	Among food-insecure households has any member traveled 3 miles or more for earning: self-employment			Among food-insecure households has any member traveled 3 miles or more for earning: wage employment		
	Yes	No	Total	Yes	No	Total
Netrokona	28.1	71.9	100.0	58.2	41.8	100.0
Mymensingh	22.5	77.5	100.0	59.4	40.6	100.0
Total	24.7	75.3	100.0	58.9	41.17	100.0

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 7.3.4
CASH SAVINGS OR STORAGE OF SUFFICIENT FOOD FOR THE FAMILY OF MIGRANT WORKER'S PERIOD OF ABSENCE

(Per cent)

District	No or very little	Somewhat less than sufficient	Sufficient	Others	Total
Mymensingh	41.3	41.3	16.1	1.4	100.0
Netrokona	49.4	31.2	17.2	2.2	100.0
Mymensingh & Netrokona	44.5	37.3	16.5	1.7	100.0

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 7.4.1
RECEIVED ANY BENEFIT FROM SAFETY NET PROGRAMMES

(Per cent of food insecure households)

Type of safety net programme	Netrokona	Mymensingh	Total
VGD	0.0	3.1	1.9
Test relief	0.7	-	0.5
VGF	0.7	0.8	1.4
GR	0.7	1.8	1.4
Cash incentive for education	29.0	34.4	32.3
Old age allowance	2.2	4.0	3.3
Relatives/Neighbour	2.9	1.8	2.2
NGO	0.0	1.8	1.1
Widow allowance	2.2	3.1	2.7
Other	0.7	2.6	1.9

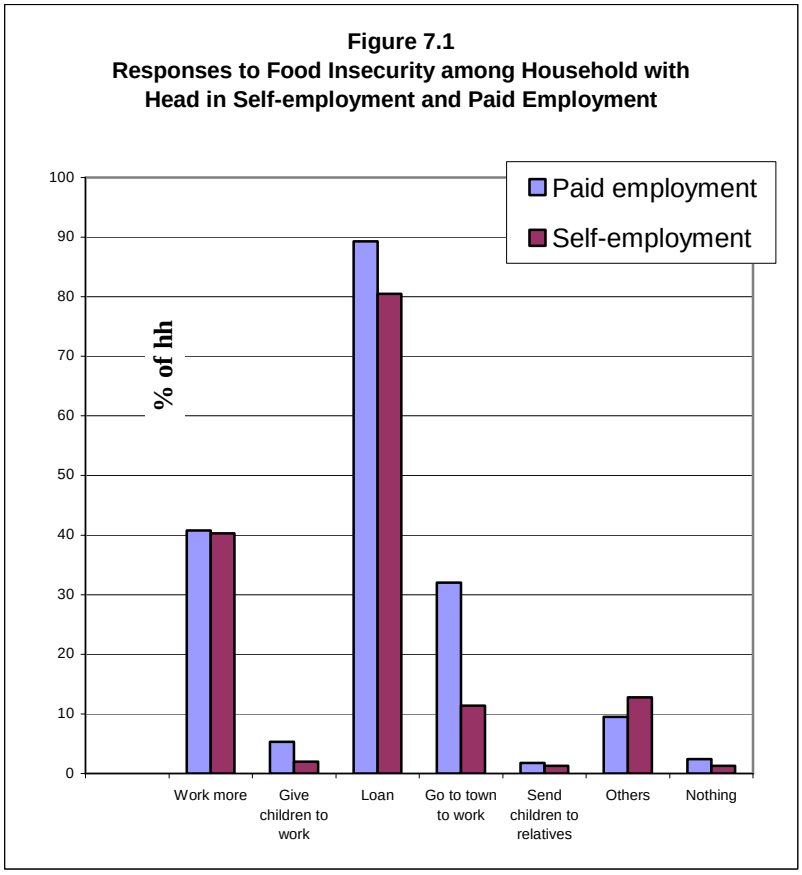
Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 7.4.2
AMOUNT RECEIVED BY HOUSEHOLD FROM SAFETY NET PROGRAMMES DURING LAST YEAR (2007-2008)

District	Average amount among		Average amount (Tk.) for All
	Self-employment	Wage employment	
Netrokona	548.79	585.89	528.88
Mymensingh	850.82	683.14	904.21
Total	733.26	644.58	762.30

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

Figure 7.1
Responses to Food Insecurity among Household with Head in Self-employment and Paid Employment



Source: BIDS-FISS 2008.

CHAPTER 8

GENDER DIMENSION OF FOOD INSECURITY AND ITS LINKS WITH TYPE OF EMPLOYMENT

8.1 Food Insecurity and Female Headed Households

Women's food insecurity experience in the rural societies of Bangladesh can provide insights into overall gender inequality. Difference in food insecurity experience of men and women can result from expected norms of social behaviour as well as from women's deprivation in various economic arenas. Gender difference in the labour market can result in difference in access to income which can, in turn, affect the extent of food insecurity among households depending on male or female head. Moreover, women in Bangladesh, especially in the rural areas, bear the entire burden of domestic chore. This includes care of children, cooking, cleaning, etc. This can also affect the vulnerability to food insecurity.

Concern about women's lower food intake than men's is not new although empirical data are often inadequate to substantiate such difference. Moreover, difference of food insecurity of male-headed and female-headed households and its links with employment opportunities of each did not receive much attention in the existing literature. Type of employment of female heads (vis-á-vis male) and the difference in their exposure to food insecurity receives attention in this chapter. The section also includes an analysis of food insecurity problem of special groups of women's. Focus group discussions (FGDs) will provide data on these issues. This will also

provide insights into some of the intra-household dimensions of food insecurity.

In this context, a differentiation between female heads in self and paid employment can throw light on deprivations of women who are poorer and accept paid employment. An aggregation of all women heads cannot adequately capture their deprivation because of heterogeneity within the group. Poverty analysis of World Bank (2008) did not show a significant difference among female-headed and male-headed households. This may be due to the aggregation of female-headed households who are heterogeneous in terms of their means of livelihoods.

Gender Difference of Food Insecurity: Difference among Male-headed and Female-headed Households

At this point it should be mentioned that special focus on poorer regions and food-insecure households can better capture the nutrition and food related deprivation of women. In contrast, if women from all categories of households are aggregated, the differences may get blurred. In fact, the recent Child and Mother Nutrition Survey (UNICEF and BBS 2005) shows that the extent of malnutrition is more or less same for men and women. Women are slightly better achievers than men in terms of some indicators and reverse for some other indicators, although the differences are small. Evidences are, however, mixed on gender difference in the extent of malnutrition. For example, Jahan and Hossain (1998) show that women in almost all ages have larger shortfalls of both calorie and protein compared to men in the same age bracket.

Table 8.2.1 shows that female-headed households of the present survey are more vulnerable to food insecurity. About 90 per cent of these households have

faced food insecurity during the study year. Among male-headed households, about 55 per cent experienced food insecurity. Distribution by number of days of food insecurity shows that the share of female-headed households in severe food insecurity (more than 36 days a year) is much higher (about 67 per cent) than male-headed households (about 35 per cent) in these areas. Incidence of food insecurity among female-headed and male-headed households was, on average, 65 days and 28 days respectively (Table 8.2.2). Also, not only the incidence (in terms of days of food insecurity) is much higher in Mymensingh (30.91 days) as compared to that in Netrokona (26.23 days) but the difference between male-headed and female-headed households is more pronounced in the former as compared to the latter.

Type of Employment and Food Insecurity: Gender Differences

Previous chapters have shown that seasonal intensity of food insecurity varies. Two periods of more severe food insecurity have been identified. These are Falgun-Chaitra (February-March) and Ashwin-Kartik (September-October). Whether the seasonal pattern of food insecurity experience is similar among male-headed and female-headed households is worth investigation. Data (Table 8.3.2) show that in each month (except Ashwin, when female-headed households have fewer food insecure days) female-headed households have experienced a higher number of days of food insecurity compared to male-headed households. Seasonality of food insecurity is somewhat different for male-headed and female-headed households. In fact, larger number of food insecure days among female-headed households

means that in each month they suffer more days. Therefore, the seasonal fluctuation appears less, although it is due to larger duration of food insecurity. Employment in self and wage category among male and female heads of households has been shown in Table 8.3.1. Data show that rural women have less opportunity of self-employment and they have less employment than men. In the wage employment category, both male-headed and female-headed households are employed for higher number of days. In wage employment category, not only male-headed and female-headed households are employed for longer number of days, as compared to self-employment category the difference is much more pronounced in case of female-headed households, 17.40 days for female-headed households as compared to only 6.92 days for male-headed households (Table 8.3.1). Thus female-headed households suffer from much higher days of food insecurity despite their hard work.

Table 8.3.3. shows large difference in duration of food insecurity among self and paid female heads of households. Difference between groups with two types of employment is also observed for male-headed households. In this context, Netrokona has a different pattern where self-employed female heads show longer food insecurity period than those in wage employment, which may be due to lower productivity of self employment of women. Lack of self-employment opportunities for women in Netrokona, as well as other structural factors may be responsible for the longer period of food insecurity among the active self-employed female heads of Netrokona.

8.2 Women's Willingness for Employment and Food Insecurity

Difference among male-headed and female-headed households in terms of extent of food insecurity is likely to generate responses in terms of actual employment as well as willingness to take up more employment. In the survey we have examined women's willingness to take up more employment. Whether women in general are averse to taking up income generating activities as this is considered to be men's responsibility is worth investigation. Women may be unwilling or rather unable to take up more economic activities due to a variety of constraints arising from the social attitude or from burden of domestic work. The views of women from food-secure and food-insecure households are expected to be different. These questions have been addressed on the basis of survey data.

Table 8.4.1 presents data on women's willingness to engage in more work. Among food-secure households, more than half the women expressed willingness to do more work. The share of women showing such willingness is slightly higher among self-employed heads of households (56.3 per cent), as compared to those who are wage employed. Also among the wage employed group, about 56 per cent wanted more employment and about 46 per cent among them wanted to take up employment outside home.

In the food-insecure group, the share of women willing to take up more income earning work is much higher. Eighty per cent women responded positively to the question. Similar percentage of women responded that they wish to go for outside work. Slightly higher percentage of food-insecure women in Mymensingh

compared to Netrokona showed willingness to take up more employment.

The next section uses FGD results and highlight the reasons behind women's inability to take up more employment, especially the social constraints.

Findings from the Focus Group Discussions (FGDs)

The role of the female earning member has important implications for the well-being of the family and, inter alia, the food security of the family. Family cohesion and economic solvency primarily depend upon a balanced and sustained source of income and productive employment, which may emanate not merely from one, but several sources. Given this contextual background, employment opportunities, including the role of different classes of women and their contribution to family level income generating activity, were examined in four villages.

Female earning for "serious and moderate food insecure" families seems critical for maintaining household food security. Families have been categorised into: "serious food insecure" households i.e. those who suffer from food insecurity for more than 36 days every year; "moderate food insecure" that is, those who experience food insecurity for 1 to 36 days annually; and "food secure" who do not face food/hunger hardship. FGD sessions covered the experiences of both severe and moderate food-insecure households in Mymensingh and Netrokona.

Aggregate quantitative data have often pointed out that women, who constitute a half segment of the population, have become visible and mobile despite great

odds of gender-based inequality and discrimination. However, little evidence is available, which corroborates their disadvantages within the household and specifically with regard to food security. It is a fact that survey data, on account of its aggregated nature, often fail to identify particular and individual specific constraints. The alternative to this shortcoming is the incorporation of case studies, FGDs and Key Informant interviews. Thus this study had adopted such methodological tools to improve the quality of the findings and supplement a purely quantitative approach. This study aims to address the questions through documentation of grass-roots' level qualitative information through FGDs.

The themes for the FGDs were accessibility to food security and its links to empowerment of women through different types of employment and, accordingly, include issues of family welfare, responsibilities, social construction of gender roles, household environment related improvements, daily needs and support, routine chores and food insecurity. Allocation of food among different members, especially children, nutritional status and problems of access, status of women in the social milieu, mobility, migration, access to livelihoods and its implications received emphasis. In the FGD sessions women discussed these issues with enthusiasm. However, for this study, discussion has specially focused upon women and children's food insecurity and on intra-household gender dimensions of response to food insecurity.

A list of the FGD sessions is provided in Table 8.4.2. In addition to the FGDs, Village Transect Walk and

observation of household structure and natural resources were also conducted. The following discussion has been based on the information gathered from the FGD sessions (Table 8.4.2) and observation of village resources through Village Transect Walks.

Women's and Children's Food Insecurity

Women feed their children whatever they eat. Women often forgo their own meals to feed their children (Table 8.4.2, Groups 2, 3, 4, 5, 6, 8 and 9). Besides simple rice and leafy vegetables, their diet is meagre. Women and children eat the same food. The simple, sometimes sparse, meal is also not available. They do not get to eat any nutritious food besides their simple meals.

There are times, when there is no food in the house. They scavenge the fields and common resources to gather leafy vegetables, edible leaves, etc. They rarely get to eat fish. They buy the "Chaapa" dried fish and cook it. Two meals a day is the usual practice. Often, even two meals are hard to come by. They never eat meat. Maybe if they are lucky, they eat meat once or twice a year.

There is food scarcity (severe and latent) in the village during most of the months. However, Chaitra and Kartik are the acutely scarce periods. Men and women, both, actively seek for a means of sustenance for the family, but men play a more active role outside the home. When women see that there is shortage of food, they remain hungry and feed the meager food to their husbands and children. Poor nutrition in times of stress, especially among women who are pregnant and lactating, often results in ill-health. This appears to be true for women

from both wage- employed and self-employed male-headed households.

FGD among Pregnant and Lactating Mothers

Most of the women who participated in the FGD of pregnant and lactating mothers are aged between 22 and 56. Among them are wives of wage labourers and self-employed persons. For example, Nasima, aged 37, wife of Majid, is again in the family way. Majid is an agriculture wage labourer and finds it hard to make two ends meet. Morjena, wife of Sabuj, and Nilufa, wife of Alam, are both in their mid-twenties and are lactating mothers. Sabuj and Alam are self-employed in rickshaw-pulling and business respectively. These women claim that their lot is difficult. Women are victimised in greater degree because of deepening poverty. In particular, pregnant and lactating women, who get service from apathetic health workers, feel the extreme need for local/mobile health care centre and child health care centre. There is evidence of deteriorating health among women during times of crises. These women reported lack of enough food especially during Chaitra.

The FGDs conducted in these villages also involved teenagers. Both self-employed and wage-employed parents of these teenage girls claimed that there is insufficient scope of employment of young girls. Obviously, the reaction is predictable, as the box depicts. Food scarcity in the family leads to higher deprivation of young girls and often they are married off at low age which usually have a second round negative effect.

Adolescent Girls' FGD

Rojena and a few other girls from this focus group have been married off before they could finish their studies. Sabina, daughter of Milton who is an agricultural worker, is studying in class IX. She too has had to forgo her final school-leaving exam due to dearth of financial means to cover for books, tuition and examination fees. She has recently got married to a boy working as a carpenter. Her father claims that his wage as an agriculture worker is inadequate for the sustenance of the family. By getting her married off, there will be one less member in the family and better chances that the rest have enough food.

Popi, daughter of Ful Mia of Sattaty village, is suffering from physical ailments that has not been diagnosed yet due to their inability to afford good physicians. She has dropped out from school. She declared that being the eldest among siblings and being female, she gets the smaller portion of the family meals. Her younger sister refuted her but she explained calmly that because her sister is the youngest (despite being a girl) and her brother is a male off-spring, both are given preferential treatment with regard to the daily ration and apportioning of food during mealtimes.

Education of teenage girls and boys in these areas is constrained by impoverishment. Therefore, they seek remunerated employment. However, due to lack of experience on account of youthfulness, they are constrained. There are few wage employment opportunities for school leavers. Young girls and boys are forced to discontinue studies and engage themselves in foraging for food or remunerated work, if available. Food insecurity means that food gets priority over other needs.

Gender Dimensions of Intra-household Response to Food Insecurity

The whole family, especially the women of the household, have to resort to a combination of strategies during the lean periods. There is severe shortage of work

and their male members remain unemployed. They tackle this situation in various ways. For some, the number of meals per day usually decreases and they substitute food with maize (locally known as *sattu*) or some cheaper food grain and starch (as reported by Groups 2, 3, 4, 5, 6 and 8 Table 8.4.2). The frequency of taking loans, selling of movable property increases as also the accessing of common property resource for meager meals. Severe indebtedness, seasonality of employment and deepening vulnerability can be observed. Poor nutritional status of women and children and subjective preferences often militate against optimum utilisation of food that is accessible and available. Lack of choices because of cost considerations inhibiting purchase of more nutritious food, loss of nutrition (due to lack of awareness about cooking and intake of certain types of food), lack of hygiene in preparation of food for cooking, lack of knowledge of correct practices of cooking food, etc. often lower the optimum food value and resultant calorie intake.

These food scarce months often witness many families where young girls and boys are forced to discontinue studies and engage themselves in foraging for food or remunerated work, if available. Women often seek cash loans, rice, grains to cover the lean period and overcome abject hunger (Table 8.4.2, Groups 1, 2, 3, 4, 6 and 8 and Table 8.4.3). As men cannot procure employment or food, they try to sell labour in advance in lieu of money or rice to be doubly repaid at the end of the contract period. Failing to do this, the men and the children have to depend upon the ingenuity of the women in the household for their sustenance.

Home-based Income Generating Activity (IGA) for Subsidising Household Income

Women rarely do agricultural work with exceptions among vulnerable, helpless women who are heading families on their own (as in Groups 1 and 9). These

women even travel to distant locations to work in the industries. Older women engage themselves in sewing cotton quilts, bamboo and wicker work, based in their homes (Table 8.4.2, Groups 1,7 and 9). It has been revealed that in instances of need, adolescent girls are also getting involved in paid work after discontinuing their studies (Table 8.4.2, Groups 6 and 7).

Both the categories of poor women from self-employed and wage-worker households find their involvement in remunerated work, although desirable, are subject to various constraints.

FGD on Poor Women from Self-employed and Wage-Worker Households and their Involvement in Remunerated Work

Many women like Rina (working mother) and Khodeja (housewife), wives of Amanullah and Rahman Ali respectively, declared that men do not allow them to work in psciculture in the nearby "ghers." They are given permission to rear duck, chicken, and involve themselves in handicrafts if financing is available. It is possible that they might be permitted to work in garments if those industries were situated nearby. Women, in their opinion, suffer more in poor families. Despite the hardships, they cannot voice their problems, they are not given importance, they have to take loans from relatives (without acknowledgement from their husbands) when in dire need, especially in shortage of food. They suffer health problems. They are insignificant within the "samaj" or village society, and therefore cannot take independent decisions about engaging in income earning activities. These women expressed strong desire to get involved in earning. They opined that opportunities of employment of women within or around the homestead are scanty. If more opportunities of better paid work were created, the social constraints may be eased. Lack of IGA among the Serious Food Insecure (SFI) groups has resulted in family food insecurity. Hence, the role of the female earning member (s) has important implications for the well-being of the household and, inter alia, the food security of the family.

In order to become self-reliant, women of all ages including pregnant, lactating mothers, young girls reported that (Table 8.4.2, Groups 3, 4 and 5) they are increasingly motivated towards self-employment in the form of rearing at least two to four ducks/hen. They are also engaging in homestead gardening in their own compounds or in collaboration with their neighbours, and would even have worked as wage labourer, for remuneration, if they were less constrained. Women, with the exception of female heads of households, do not own any land, either individually or collectively, in any of the villages that have been surveyed (Table 8.4.2, Groups 3, 4 and 5).

Economic activity among the respondents also involved journeying to adjoining areas where work was more plentiful (Table 8.4.2, Groups 1 and 9). The constraints to working outside their village mainly lay in linkage and ability to access information (Table 8.4.2, Groups 1, 3 and 9). Women, presented with the option of work in distant places, reacted positively, albeit with some conditions which are presently not available. Female heads of households are responding to demand for labour in a more proactive manner primarily because of their pecuniary financial state (Table 8.4.2, Group 1).

Table 8.4.3 shows that a quarter among the serious food insecure families of Netrokona said that old age (27.3 per cent) and husband/family's restriction (20.8 per cent) are the main reasons for not being keen to work outside the village. This is followed by household chores (15.4 per cent), lack of education, lack of experience of outside work, religious barriers and illness (1 per cent each). Among the moderate food-insecure families, household chores (26.9 per cent), old age (22.7 per cent), child rearing (50.0 per cent), religious barriers (33.3 per cent) and illness (33.3 per cent) feature as the

main reasons. Among the food-secure families, husband/family's restriction (79.2 per cent), household chores (57.7 per cent), old age (50.0 per cent), no need to work (7.5 per cent), illiterate (83.3 per cent) and child rearing (50.0 per cent) are the main reasons for not being willing to work outside the village in Netrokona.

Table 8.4.3 reveals the information for the selected villages of Mymensingh district. Illness (50 per cent) and old age (40.8 per cent) feature as the main deterrent to women's productive involvement, especially among the serious food-insecure groups. This is followed by child rearing and household chores. Among the moderate food-insecure families, women feel constrained due to societal norms (22.2 per cent), child rearing (28.6 per cent) along with lack of husbands' consent (14.3 per cent). Women from food-secure families cite economic solvency, old age and household chores as the main reasons for not entering the labour force.

Link between Food Security and Equality of the Sexes at the Household Level

Food insecurity increases with lack of adequate income and increases in dependent family members. Most of the FGD members felt that inclusion of women in productive employment and fewer children would contribute positively to family's food security. However, their opinion was often disregarded as male domination within the households prevails. Women were asked about their role in decision-making, income and expenditure, and they expressed that inequality existed between men and women at the household level (Table 8.4.2, Groups 1, 2, 3, 5, 6 and 9).

Some women claimed that they were never consulted in decisions of family planning. In two cases, women

with 4 and 5 daughters were once again in the family way despite their reported ages being close to 29 and 37. The lady who claimed to be 37 (with 5 daughters, the youngest being about 6 months of age), surprisingly enough, also had a son who was her second issue. She seemed helpless, embarrassed and aged, so there seemed to be a general air of sympathy for her in the community. The women ultimately voiced that small families are needed for rising out of food insecurity and for improvement of general well-being but they were in the grip of societal norms, especially men's construction of ideal families where male children were indispensable. It seemed that some women, who had had male off springs themselves, endorsed this view as well.

Women were divided in their opinion regarding the environmental influence of their homes. Some felt that they were often sad and depressed because of the economic constraints, food shortage and limitations experienced in their daily lives, sickness and debilitating health, etc. Fetching water for daily chores, especially drinking water from a distance of half-kilometre, was a daily tiresome chore, for nearly 50 to 60 families. They would have benefited from tubewells near the main road. Men usually do not assist in the housework in most cases but there were a few exceptions. Majority said that they had to do the household chores in addition to fetching water, cow rearing, drying straw, etc. There was consensus on the need to strengthen women's contribution with greater remunerated participation in economic activity.

TABLE 8.2.1

DISTRIBUTION OF FOOD INSECURITY DAYS AMONG FEMALE-HEADED AND MALE-HEADED HOUSEHOLDS

(Per cent)

District	Days of food insecurity	Sex of head		Total
		Male	Female	
Netrokona	0	46.2	8.3	44.4
	1-36	25.4	25.0	25.4
	37+	28.4	66.7	30.2
	Total	100.0	100.0	100.0
Mymensingh	0	45.3	11.1	44.5
	1-36	16.0	22.2	16.1
	37+	38.8	66.7	39.4
	Total	100.0	100.0	100.0
Netrokona & Mymensingh	0	45.6	9.5	44.4
	1-36	19.5	23.8	19.6
	37+	34.9	66.7	35.9
	Total	100.0	100.0	100.0

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 8.2.2

AVERAGE DAYS OF FOOD INSECURITY AMONG FEMALE-HEADED AND MALE-HEADED HOUSEHOLDS

District	Gender of head	Average days of food insecurity
Netrokona	Male	24.50
	Female	60.17
	Total	26.23
Mymensingh	Male	30.05
	Female	71.89
	Total	30.97
Total	Male	27.99
	Female	65.19
	Total	29.18

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 8.3.1

DAYS OF SELF-EMPLOYMENT AND WAGE EMPLOYMENT AMONG MALE-HEADED AND FEMALE-HEADED HOUSEHOLDS

	Head	Self-employment days	Wage employment days
	Female	10.58	-
Total (average over 12 months)	Male	18.07	24.99
	Female	10.74	28.14

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 8.3.2

MONTHLY FOOD SHORTAGE FOR MALE-HEADED AND FEMALE-HEADED HOUSEHOLDS

Month	Sex of head	Average days of food shortage
Baishakh	Male	6.92
	Female	11.80
Jaistha	Male	7.56
	Female	13.50
Ashar	Male	8.06
	Female	10.25
Shraban	Male	7.49
	Female	10.33
Bhadra	Male	7.66
	Female	11.75
Ashwin	Male	10.64
	Female	10.50
Kartik	Male	12.76
	Female	14.71
Agrahayan	Male	7.17
	Female	9.00
Poush	Male	7.69
	Female	10.50
Magh	Male	8.08
	Female	12.33
Falgun	Male	9.18
	Female	12.54
Chaitra	Male	13.19
	Female	15.17
Total (average over 12 months)	Male	10.23
	Female	12.33

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 8.3.3
AVERAGE DAYS OF FOOD INSECURITY AMONG MALE-HEADED AND FEMALE-HEADED HOUSEHOLDS WITH SELF-EMPLOYMENT AND PAID EMPLOYMENT

District	Sex of head	Employment of head	Average days of food insecurity
Netrokona	Male	Self	16.34
		Wage/Paid	36.92
	Female	Self	74.40
		Wage/Paid	62.50
	Total	Self	18.53
		Wage/Paid	37.43
Mymensingh	Male	Self	20.60
		Wage/Paid	38.59
	Female	Self	64.00
		Wage/Paid	161.00
	Total	Self	20.81
		Wage/Paid	39.33
Total	Male	Self	18.99
		Wage/Paid	37.97
	Female	Self	72.67
		Wage/Paid	95.33
	Total	Self	19.92
		Wage/Paid	38.62

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 8.4.1
WOMEN'S DESIRE TO DO MORE WORK BY EMPLOYMENT STATUS

(Per cent)

Employment status of head and FIS status	District code	Do they want to do more work? (FIS group)		Total	Do they want to take up work outside their home? (FIS group)		Total
		Yes	No		Yes	No	
Self-employment, & FIS=No	Netrokona	51.5	48.5	100.0	34.2	65.8	100.0
	Mymensingh	59.3	40.7	100.0	44.5	55.5	100.0
	All	56.3	43.7	100.0	40.6	59.4	100.0
Wage & other paid, & FIS=No	Netrokona	50.0	50.0	100.0	36.4	63.6	100.0
	Mymensingh	58.9	41.1	100.0	50.8	49.2	100.0
	All	55.8	44.2	100.0	45.8	54.2	100.0
Self-employment, & FIS=Yes	Netrokona	75.0	25.0	100.0	66.7	33.3	100.0
	Mymensingh	82.1	17.9	100.0	77.8	22.2	100.0
	All	79.2	20.8	100.0	73.5	26.5	100.0
Wage & other paid, & FIS=Yes	Netrokona	79.5	20.5	100.0	74.7	25.3	100.0
	Mymensingh	80.4	19.6	100.0	80.0	20.0	100.0
	All	80.0	20.0	100.0	78.0	22.0	100.0

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 8.4.2
FGD SESSIONS ON FOOD SECURITY AND THE ROLE OF WOMEN

Sl. No.	Type of group	Village (s)	Number of FGDs
1	Female heads of families	Binna, Gondokhola	2
2	Working mothers	Binna, Gondokhola	2
3	Housewives	Binna, Sattati, Gondokhola, Lalpur	4
4	Lactating mothers	Sattati, Gondokhola, Lalpur	3
5	Pregnant women	Binna, Gondokhola	2
6	Young married women and teenage girls	Binna, Lalpur,	2
7	Aged women	Gondokhola, Lalpur	2
8	Women from migrant families	Sattati	1
9	Female day labourers	Binna, Lalpur	2
		Total	20

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 8.4.3
FOOD SECURITY STATUS OF RESPONDENTS BY REASONS FOR UNWILLINGNESS TO DO MORE WORK

District	Food security status	Ill-mental	Working at present no free time	No time	Religious/ societal forces	Household chores	No experience of recommended work	Old	Lacking Family-husband's consent	Child rearing	Solvent	Illiterate	No experience of working outside	Not willing	No earning members	Others
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Netrakona	Serious	16.7	0.0	-	16.7	15.4	0.0	27.3	20.8	0.0	0.0	16.7	100.0	0.0	100.0	18.9
	Food Insecure	(1)	(0)		(1)	(4)	(0)	(6)	(5)	(0)	(0)	(1)	(1)	(0)	(1)	(20)
	Moderate	33.3	0.0	-	33.3	26.9	0.0	22.7	0.0	50.0	0.0	0.0	0.0	0.0	0.0	17.9
	Food Insecure	(2)	(0)		(2)	(7)	(0)	(5)	(0)	(3)	(0)	(0)	(0)	(0)	(0)	(19)
	Food	50.0	100.0	-	50.0	57.7	100.0	50.0	79.2	50.0	100.0	83.3	0.0	100.0	0.0	63.2
	Secure	(3)	(1)		(3)	(15)	(1)	(11)	(19)	(3)	(1)	(5)	(0)	(5)	(0)	(67)
Total		100.0	100.0	-	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
		(6)	(1)		(6)	(26)	(1)	(22)	(24)	(6)	(1)	(6)	(1)	(5)	(1)	(106)
Mymensingh	Serious	50.0	0.0	0.0	0.0	20.7	0.0	40.8	0.0	42.9	0.0	-	0.0	16.7	-	23.8
	Food Insecure	(3)	(0)	(0)	(0)	(6)	(0)	(20)	(0)	(3)	(0)		(0)	(2)		(34)
	Moderate	16.7	20.0	0.0	22.2	6.9	0.0	4.1	14.3	28.6	0.0	-	0.0	8.3	-	9.1
	Food Insecure	(1)	(1)	(0)	(2)	(2)	(0)	(2)	(2)	(2)	(0)		(0)	(1)		(13)
	Food	33.3	80.0	100.0	77.8	72.4	100.0	55.1	85.7	28.6	100.0	-	100.0	75.0	-	67.1
	Secure	(2)	(4)	(5)	(7)	(21)	(1)	(27)	(12)	(2)	(5)		(1)	(9)		(96)
Total		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	-	100.0	100.0	-	100.0
		(6)	(5)	(5)	(9)	(29)	(1)	(49)	(14)	(7)	(5)		(1)	(12)		(143)

Source: BIDS-FISS, 2008.
Note: Figures in parentheses are actual numbers of respondents and those without are percentages.

CHAPTER 9

HEALTH PROBLEM AND FOOD INSECURITY

9.1 Workdays Lost due to Health Problem and Type of Employment

Poorer households usually depend on household heads' earnings and employment for their livelihood. In such cases if the household head faces illness for a substantial duration that would be a threat for employment status as well as food security of household. The survey collected information about the loss of their employment that was caused by illness. Tables 9.1.1 and 9.1.2 examine loss of workdays due to such problems and whether the type of employment has any systematic relationship with health problems. Percentage of wage employed heads who suffered illness was observed to be slightly higher than the share of such households among self-employed. Table 9.1.1 shows that 66.2 per cent wage employed household heads in Mymensingh area and 68.7 per cent wage employed household heads in Netrokona went through some form of illness, which are 2.9 percentage points higher than that of self- employed in Mymensingh and 7 percentage points higher in Netrokona district. The difference is much higher in case of days lost. About 22 and 16 workdays were lost during the last year by wage employed and self-employed labour force respectively (Table 9.1.2). Difference between the two areas is relatively small.

The reason behind larger workdays lost by wage employed may be due to the less flexibility of place and

time of employment for this group. This is likely to have contributed to the greater vulnerability to food insecurity which was observed in this group (discussed in Chapter 5). In Netrokona and Mymensingh districts almost all respondents (Table 9.1.3), who were engaged in wage employment and faced more than 12 days food insecurity last year, agreed that they lost working days due to illness. Eighty per cent self-employed households in Netrokona and 50 per cent in Mymensingh faced the problem. Table 9.1.4 shows that about 68 per cent household heads in Netrokona and 58 per cent in Mymensingh lost 1 to 30 working days during the last one year due to health problem. In both areas household heads are the main earning members of the family. So, his or her illness has a direct impact on family income. Food-insecure days are related with the loss of workdays of household head due to illness. In both (Netrokona and Mymensingh) districts, wage employed households, who suffered more than 12 days food insecurity, lost about 15 more working days due to illness compared to those who suffered less than 12 days food insecurity (Table 9.1.5). Even the self-employed households, who suffered more than 12 days food insecurity, lost about 8 more working days than those households who faced less than 12 days food insecurity last year. This result reveals the direct relationship between food insecurity and illness of household head. However, the impact of higher days lost due to health problem can affect food insecurity through another route: expenditure on health service is higher due to longer period of illness and this will affect the residual income for meeting consumption needs. This would be demonstrated in the case studies presented in the following section.

9.2 Case Studies of Food Insecurity, Employment Status and Health Hazards

To supplement data from the survey, case studies in three villages of Mymensingh and Netrokona districts have been done to examine the relationships among health hazards, employment status (wage and self-employment) and food security of relatively poorer households of those areas. Health problems play a vital role at the time of work and income. Two case studies were conducted for wage employed head of household, while one was conducted for self-employed head of household.

9.2.1 Mahela's Struggle as a Female-headed Wage Employed Household

Mahela (28 years old) is head of a female-headed household. Mahela and her sons Tariqul (12) and Emdadul (8) live in Binna of Netrokona District.

From April to May 2008 indepth interviews of Mahela have been taken using life history approach. At the same time, the research team constructed a livelihood strategy related picture for Mahela's family and received information from other villagers of the area. This household's experience was particularly interesting for understanding link between food insecurity and health hazards.

Her husband was a day labour who worked in the village, nearby villages and sometimes went to Feni and other distant districts for work as wage labour. He had enough income to manage his family. Their first son Tariqul was born after two years of their marriage. Their second son Emdadul was born after four years of their first son.

Rashid sometimes felt pain in his abdomen and was cured with medicine from local 'bazar'/ (market). At the time of returning home from Comilla in 2003, he became seriously ill and got senseless. His three brothers were with him at that time. Rest of the passengers advised his brothers to take him to the nearby hospital. He had to spend Tk. 1,600 for treatment in Kishoregonj Hospital. Rashid failed to buy any food for his family for next few days and passed without two daily meals on those days. So, again he started working as wage labour for earning livelihood of the family. Rashid did not face any health problems for the most seven months. But he was admitted to Netrokona hospital after seven months, where he stayed few days for treatment. After three days' treatment in Netrokona hospital Rashid was transferred to Mymensingh hospital for better treatment. At this stage Rashid and his relatives faced financial crisis and were unable to bear treatment cost. So, they collected extra money from school and college students and neighbours to pay half of the medical cost (total cost was Tk. 7,000). In 2004, Rashid died of blood cancer at Mymensingh hospital after five days treatment.

After the death of Rashid, Mahela and her family members faced serious problem of lack of income and inadequate food. Just 11 months before the interview, she recieved a Vulnerable Group Development (VGD) card entitling her to 30 kg rice each month, but she gets 25 kg rice each month. This is one of the main sources of family's food. The other two coping strategies adopted were borrowing and part time work as agriculture labour in the harvesting season.

Distinguishing between charity and loan is not always easy in her case. During the year Mahela arranged several loans from relatives and neighbours that she was not able to repay. These were described

as loans but appeared to be gradually converting into gifts. By May 2008 she had borrowed Tk. 1,200 from neighbours and relatives. It was unclear how this could be paid back. Thus, Mahela and her sons earned their livelihood from a variety of sources—casual work, borrowing, begging and receiving charity. They survived, but they were not able to acquire or accumulate any significant financial, physical or human capital. They have to depend on social networks and social relations for their daily employment and getting charity from relatives and neighbours.

To understand the role of various institutions in this case, Hulme's structure of analysis provides an excellent framework which has been used (in slightly modified form) in Tables 9.2.1, 9.2.2 and 9.2.3. From Table 9.2.1 it is clear that the state or market failed to provide health facilities (such as free treatment or health insurance coverage) for the earning member of Mahela's family, which ultimately turned out to be the main cause of their poverty and food insecurity. Her husband had no savings as day labour at the time of death, so they had to depend again on wage employment. But it was difficult for Mahela and her sons to get job as unskilled day labour in Chitra, Ashar, Shraban, Bhadra, Aswhin and Kartik months. Government or state acts as the providers of their partial meals through VGD, which did not cover the entire slack season. So, they had to pass for more than sixty days last year without two meals per day.

9.2.2 Sydul Faces Food Shortage due to Health Problem

Sydul (35) was only son of his father's family and he has a sister. His father was a day labourer. Sydul with his three sons Emdadul (8), Wahidul (6) and Ratul (4)

lives in Gondokhola, about 27 kilometers from the district town of Mymensingh and 5 kilometers from the Upazila town Trishal. He works as a day labour in agriculture.

In April, May and September 2008 indepth interview of Sydul was taken using life history approach. At the same time, the research team received information from other villagers of the area. Within the sample of 256 households, this household was particularly interesting in terms of understanding food security and health hazard status of only earning member of a landless family in the study area, who failed to work as day labour due to his health problem.

At the beginning his father was a small businessman in the village. Due to lack of proper business skill and knowledge, he soon became a day labourer. They had only 10 decimals homestead land and 17 decimals cultivable land. Sydul became night-blind/lyctalopic at his childhood due to malnutrition. At the age of 12 years he was forced to start his carrier as day labour. Sydul got married with Kamala Khatun when he was 25 years. Their first son Emdadul was born after two years of their marriage. Second son Wahidul and third son Ratul was born within next four years.

Sydul cultivated their family land and worked as a day labourer to maintain at least two meals a day for his family. He felt pain in his right abdomen in October 2006 and was brought to Mymensingh Hospital by his father and relatives. His father sold 17 decimals of cultivable land at Tk. 3,500 to cover the cost of pathological test of Sydul. Doctor found stone in his kidney and advised them to do operation that would cost Tk. 8,000. Sydul and his family members were unable to

manage the cost. So, they failed to continue his treatment.

Day by day Sydul was so weak that he could not work as a day labourer and had taken loan from relatives and neighbours to maintain their daily meals. Sydul and his family members faced serious problem of lack of income and food shortage. His wife got a VGD card entitling her to 30 kg rice in each month, which was one of the main sources of their food (basically rice) consumption. The other two coping strategies were borrowing and part time working of Kamala Khatun in the harvesting season, from where she could earn 3 or 4 kg rice per day. She was able to manage work 38 to 40 days in last year. Sydul and Kamala managed several loans from relatives and neighbours. It was unclear (at the time of interview) how these loans could be paid back. His elder son gets yearly Tk. 1,200 as education stipend from his school, which is also used to maintain their daily meals. Thus, Sydul and his family members patched together their livelihood from a variety of sources—casual work, state safety net programme, borrowing, begging and receiving charity and stipend. They survived sometimes with two full meals, but often with only one meal or no meal.

From Table 9.2.2 it can be said that there was no state or market policy to bear the cost of health services for poor households. Without any treatment Sydul was out of employment and lost his regular income, which ultimately turned out to be the main cause of their food insecurity. During the last twelve months they faced food inadequacy for more than 60 days. They received support through VGD and stipend from the state and help from social networks in the form of loan or gift or charity. But all these sources could only meet their food

requirement partially. They identified Sydul's illness as the main cause of their food insecurity.

9.2.3 Transformation of a Self-employed Well Off Family into Food Insecure Status: Kulsum Faces Unknown Health Problem

Kafiluddin used to earn a handsome amount from his small business to manage at least two meals daily for five daughters and one wife's family. Kafiluddin (40), his wife Julekha Begum (36) and their five daughters namely Kulsum Akter (18), Aysa (10), Johora (8), Kohinoor (3) and Shahinoor (1) live in Gondokhola village, 27 kilometers from the district town of Mymensingh and 5 kilometers from the Upazila town Trishal. Son preference for future social security encouraged Julekha and Kafiluddin to give birth of five daughters.

In April, May and September 2008 indepth interviews of Kulsum had been conducted. At the same time, the research team has constructed a life history for Kulsum's family by receiving information from other villagers of the area. The role of family ties and social networks at the time of crisis period can be understood from this case study. At the same time, it allows us to explain how the health problem of any family member (though she was not main earning person) hampers the employment opportunity in Bangladeshi village, which has greater impact on food security of particular family.

Kafiluddin regularly went to nearby place of Trishal Thana Headquarter to run his business, where he sold cucumber, watermelon, etc. From this small business he could manage a handsome amount to maintain his family expenses. Kulsum is his eldest daughter. In 2006 she was in class eight at local high school, where her performance was quite good. At the end of 2006 she

suffered serious pain at her left lower abdomen and blood came through her mouth. On the next morning her father took her to the homeopathic doctor at Trishal and then to another allopath doctor at Trishal. Both the doctors failed to diagnose the problem.

Then her father took her to Mymensingh, where she received treatment in a private clinic and after that in Mymensingh Medical College Hospital. Finally, her father decided to go to Dhaka for better treatment. Kafiluddin's younger brother Shafiqul Islam is a bus driver, who lives in Mirpur, Dhaka. Kulsum went to Bangladesh Medical College Hospital in Dhaka with her uncle. The doctor of Bangladesh Medical did several tests but finally failed to diagnose correctly. During this period Kafiluddin had to take loan Tk. 33,000 from his brother-and sister- in-laws, and Tk. 5,000 from moneylender at 20 per cent interest rate to bear the cost of treatment of his daughter. Kulsum's mother has the membership of BRAC (NGO) for last five years. She borrowed Tk. 15,000 from BRAC as loan for small business, and has to pay Tk. 400 as weekly installment of that loan. But she had to use this loan for Kulsums' treatment purpose without using it in business. So, Kulsum's father failed to continue his small business for several days, which was the main earning source of their family.

Still Kulsum's family members do not know correctly what her health problem is. They already borrowed huge amount of money for Kulsm's treatment. Her father could not run his business for many days due to Kulsum's illness. Now they are facing serious financial crisis to maintain the regular food expenses of their family. During the last year they had went without full meal twice a day for almost 60 days. Last 14 days before

the interview date they ate only leafy vegetables with rice and failed to manage fish, eggs or milk for them.

They already borrowed money from their relatives, moneylender and NGOs, where relatives contributed the largest share. Kulsum's father does not know how he would be able to pay back these loans. Other school going members of this family dropped out from school due to their financial condition. Kulsum and her family members manage their livelihood from a variety of sources such as borrowing, part time small business and receiving charity from relatives.

Findings of the Table 9.2.3 show that Kulsum or her family did not receive support from the state provided health system, which caused their financial crisis. On the other hand, society, NGOs and family act as the main providers of their meal once/twice daily through loan, gift, charity, etc. Her father was incapable of concentrating and giving time to his own small business due to Kulsum's illness. This irregularity in business caused the financial crisis of their family. Though Kulsum is not main earning member of their family, her long term illness hampered the earning process of rest of the family members. As a result of this process they are facing financial crisis as well as food insecurity. If they had received proper treatment facilities from state or any other institutions, their story could be different.

TABLE 9.1.1
EMPLOYMENT STATUS AND ILLNESS OF HOUSEHOLD HEAD

(Per cent)

Employment status	Mymensingh		Netrokona		Both areas	
	Illness of household head (last year)		Illness of household head (last year)		Illness of household head (last year)	
	Yes	No	Yes	No	Yes	No
Self-employed	63.3	36.7	61.7	38.3	62.7	37.3
Wage-employed	66.2	33.8	68.7	31.3	67.1	32.9

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 9.1.2
EMPLOYMENT STATUS AND AVERAGE LOSS OF WORKING DAYS DUE TO ILLNESS (LAST YEAR)

(Average Days/Year)

Employment status	Mymensingh		Netrokona		Both areas	
	House-hold head	All members	House-hold head	All members	House-hold head	All members
Self-employed	14.53	14.17	19.54	18.22	16.44	15.71
Wage-employed	20.24	20.45	24.39	22.85	21.87	21.44

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 9.1.3
ILLNESS OF THE HOUSEHOLD HEAD AND FOOD SECURITY BY EMPLOYMENT STATUS (LAST YEAR)

(Per cent)

Employment status	Whether lost working days due to Illness (Less than 12 days FIS)						Whether lost working days due to Illness (Greater than 12 days FIS)					
	Netrokona		Mymensingh		Both areas		Netrokona		Mymensingh		Both areas	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Self-employed	69.2	30.8	71.9	28.1	70.5	29.4	80.0	20.0	50.0	50.0	65.0	35.0
Wage-employed	77.4	22.6	72.0	28.0	74.6	25.4	100.0	00.0	100.0	100.0	100.0	00.0

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 9.1.4
TOTAL LOSS OF WORKING DAYS DUE TO ILLNESS (LAST YEAR)

(Per cent)

Number of days lost	Household head			All members		
	Netrokona	Mymensingh	Total	Netrokona	Mymensingh	Total
0	17.5	29.4	24.9	55.7	68.9	64.0
1-30	67.5	58.0	61.5	36.6	25.3	29.5
31-60	8.1	10.7	9.7	5.0	4.7	4.8
61-90	5.6	1.1	2.8	2.3	0.8	1.4
90+	1.3	0.8	0.9	0.4	0.2	0.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 9.1.5
LOSS OF HOUSEHOLD HEAD'S WORKDAYS DUE TO ILLNESS AND FOOD SECURITY BY EMPLOYMENT STATUS (LAST YEAR)

(Days)

Employment status	Loss of workdays of household head due to illness (Less than12 days of FIS)			Loss of workdays of household head due to illness (Greater than12 days of FIS)		
	Netrokona	Mymensingh	Both areas	Netrokona	Mymensingh	Both areas
Self-employed	17.22	14.98	15.86	25.00	20.00	23.33
Wage-employed	26.22	20.61	22.76	36.75	38.00	37.17

Source: BIDS Food Insecurity Survey (BIDS-FISS) 2008.

TABLE 9.2.1

SOCIAL CAPITAL, HEALTH ISSUES AND FOOD SECURITY OF MAHELA AND HER FAMILY AS WAGE EMPLOYED HOUSEHOLD

Providers	Instrument	Supportive role in terms of food security
State	VGD card	It is the basic source of their staple food for last 11 months.
	Education	Youngest son goes to school at entry class who gets stipend from school.
	Health services	Poor quality and has failed to provide Rashid free treatment.
Labour market	Employment	Mahela has received poorly paid casual work from labour market.
Other Markets	Product	They have nothing to sell in product market.
	Insurance	Health or life insurance did not provide coverage of Mhela's husband Abdur Rashid's treatment costs.
Private health service provider	Health services	Rashid and his family members had lack of financial capability for this type of health services.
Society/ community	Charity	Neighbours and school's students gave money for the treatment of her husband. Now her neighbours help her by providing food.
	Informal loans	Relatives provide loans in the form of money and grain which are not paid back.
NGOs	Microcredit	Mahela is not a suitable client for NGOs.
Family: Brother- and sister-in-laws	Loans & moral support	Brother-in-laws helped her at the time of her husband's treatment.
Family: Father & brothers	Loans & moral support	Father is no longer alive and brothers are unable to help her due to their own poverty.

Source: BIDS Food Insecurity Survey (BIDS-FISS), Qualitative Data, 2008.

*Hulme's (2004) framework has been used in this table after necessary modification to explain case study related to food insecurity and illness at household level.

TABLE 9.2.2
HEALTH ISSUES AND FOOD SECURITY OF SYDUL AND HIS FAMILY MEMBERS

Providers	Instrument related to support	Supportive role in terms of food security
State	VGD card	It is the basic source of their staple food.
	Education	Eldest son goes to school and gets stipend from school. This stipend is a source of their food consumption.
	Health services	Failed to provide free and quality services to Sydul.
Labour market	Employment	Physical condition allowed Sydul to get poorly paid part-time work.
Other markets	Product	They sold their only cultivable land to do pathological tests.
	Insurance	Sydul and his family had no insurance to cover the expenses of his kidney diseases.
Private health service provider	Health services	Sydul and his family are unable to pay for this kind of health service.
Society/ community	Charity	Neighbours help his family by providing foods.
	Informal loans	Neighbours provide loans which may not be possible to pay back.
NGOs	Microcredit	Sydul and his wife Kamala are not suitable clients for NGOs.
Family: Brother-and-sister-in-laws	Loan & moral support	Brother-in-laws financial condition is also too poor to help them.
Family: Father & mother	Loan & moral support	Father and mother are too old to maintain their own livelihood.

Source: BIDS Food Insecurity Survey (BIDS-FISS), Qualitative Data, 2008.

Note: * Hulme's (2004) framework has been used in this table after necessary modification to explain case study related to food insecurity and health illness at household level.

TABLE 9.2.3
SELF-EMPLOYMENT, HEALTH ISSUES AND FOOD SECURITY OF KULSUM AND HER FAMILY MEMBERS

Providers	Instrument related to support	Supportive role in terms of food security
State	VGD card	They have no VGD card.
	Education	Due to current poverty situation no member of the family goes to school.
	Health services	Failed to diagnosis Kulsum's disease.
Labour market	Employment	They are unable to go to labour market for work.
Other markets	Product	They had nothing to sell.
	Insurance	There is no health insurance to cover Kulsum's treatment costs.
Private health service provider	Health services	Kulsum's family paid lot for health services without getting any result.
Society/ community	Charity	Neighbours help his family by providing foods.
	Informal loans	Relatives and neighbours provide loans in cash and kind that may turn into gifts.
NGOs	Microcredit	Kulsum's family received support from NGOs.
Family: Brother-and-sister-in-laws	Loan & moral support	Kulsum's maternal uncle and aunt helped them by giving Tk. 33,000 as loan.

Source: BIDS Food Insecurity Survey (BIDS-FISS), Qualitative Data, 2008.

Note: *Hulme's (2004) framework has been used in this table after necessary modification to explain case study related to food insecurity and health illness at household level.

CHAPTER 10

CONCLUDING OBSERVATIONS, POLICY RECOMMENDATIONS AND AGENDA FOR FUTURE RESEARCH

10.1 Concluding Observations and Policy Recommendations

The study has arrived at a number of important findings on the extent of food insecurity at household level and the determinants of food insecurity. This section highlights the required policy interventions following from these findings.[1]

Present study shows that the extent of food insecurity is high and therefore reduction of extreme form of food insecurity should be a policy priority. In particular, those experiencing more than 60 days of food insecurity may be considered as chronically food insecure and this group constitutes 15 per cent of households in the areas covered by the survey. National level data (HIES 2005) shows that at least 11 per cent households are in extreme food insecurity. For such households, either Employment Guarantee Scheme or direct food support and social safety net is necessary.

Underemployment rate is high among the food-insecure households. The labour force from such food-insecure households are desperate to take up more employment and they travel to distant towns in search of employment. Therefore, more employment generation in food deficit areas may be considered as one of the most effective means of ensuring food security.

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[1] For a comprehensive summary of findings, one may see Executive Summary.

HIES data show that in addition to inadequate calorie intake, a large share of households' intake of protein food is inadequate. Awareness must be created about the need for balanced food intake. This is especially important because even among the non-poor, a large share of households experienced deficiency of protein food consumption. However, without improvement of income and employment, mere awareness may not be effective among the low income households.

Analysis of the determinants of food insecurity and calorie inadequacy shows that the likelihood of food insecurity is significantly higher among wage employed, especially in the rural areas. This impact takes place through low wage, low employment and greater income poverty among those who are in wage employment in agriculture. Data from both HIES and the BIDS "food insecurity survey" demonstrated that those in wage employment face more food insecurity compared to the self-employed. This reconfirms the problems associated with "vulnerable employment." However, the usual indicator used to monitor vulnerable employment consists of own-account and unpaid family workers which is contrasting with the observed reality in Bangladesh. This points towards the need for expansion of better quality paid jobs. ILO's concern about "decent work" should also take into account the interface between food intake type/status of work and energy spent at work.

Policy implications of these findings are:

(a) Wage employed in agriculture require supplementary employment in the slack season which can be generated through public schemes for employment generation.

(b) However, even in months of peak employment, a large share of both self-employed and wage labourers suffer from food insecurity. Therefore, there is need for raising labour force participation in such households, especially among women. This requires policy adoption for encouraging self-employment of women, especially through provision of training, finance and marketing facilities. Raising wage through enhancing productivity of agriculture should get priority. In this context, agriculture sector policies should aim at raising productivity of crops which have higher intensity of wage labour use.

(c) An important finding of the present study is that food insecurity shows large seasonal fluctuation and this problem is linked with seasonal underemployment. Therefore, employment creation during slack periods should be a policy priority.

Present study shows that September–October and February are the months of food insecurity and lack of employment, and employment generation programmes should target this period. Such data on the seasonal dimensions of employment and food insecurity will help successful implementation of safety net and employment programmes undertaken by government through choice of appropriate period of interventions. Therefore, such data base should be developed for all regions and this can help choose correct geographical targeting and timing of the government's seasonal safety net and EGS programmes. Results of the present study show that even within a less poor district (Mymensingh) there can be some upazilas/villages with widespread food insecurity. Therefore, employment schemes should carefully choose the geographical location of

programmes. Of course, resource constraints of government may limit the scope of such programmes. A number of studies have highlighted the problems related to financing and implementing employment guarantee schemes (Islam, Mujeri and Ali 2009).

The report discussed various strategies adopted by households to mitigate food insecurity. Internal migration is one such strategy. Labour force members of food-insecure households migrate to areas with better employment and income earning opportunities. Women who are left behind along with dependent members bear the brunt of the worst days. In fact, it has been observed that female members bear a greater burden of food insecurity. Safety net employment opportunities should therefore give priority to women. Creation of opportunities of both self-employment and wage employment of woman can enable them to overcome the seasonal crisis of food deficit, especially in periods of outmigration of male earning members.

An important response for coping with food insecurity observed in the two areas is borrowing from various sources. Therefore, availability of credit at low rate of interest can help overcome severe food shortage periods.

Health problem and large expenditure for health care services can make a household perpetually food insecure. Provision of safety net to such households can act as an interim solution. But in the long term, health services for chronically ill and for those with serious health problems must be provided to bring back such families to normal consumption, and human development tracks. Appropriate health services can work as a mechanism for preventing households from slipping into food insecure situation.

The analysis of gender dimension of food insecurity has demonstrated that a larger share of female-headed households face food insecurity. Such food insecurity is even worse for female heads who are engaged in wage employment. This occurs because women are in a disadvantageous situation in the labour market and usually receive lower wage compared to men. The policy implications of these observations are quite obvious:

- Female heads of households need more opportunities of employment.
- They need access to better paid employment.
- Safety net schemes should target female headed wage employed households.

It should, however, be borne in mind that increase of women's employment cannot take place at the cost of male employment. So an overall employment growth strategy must be devised.

Much of the disadvantage of women is due to their lower wage compared to men. However, wages are market determined and cannot be changed overnight. Therefore, supplementary policies of self-employment generation for women is required. In this context, policies should also focus on employment generation for young unmarried girls from food-insecure families. These school dropout girls may be provided with training and seed capital for new economic activities (e.g. vegetable gardening, nursery, fish culture, etc.). This will not only improve the food security situation of households, but the marriage process can be delayed for them, resulting in multiple social gains.

Adolescent girls face greater disadvantage. Food insecurity not only imposes hardship in the current

period, but also impairs their school performance and may adversely affect health which can have lasting impact. School feeding programmes can play an important role in this respect.

This study shows that simple indicators of food availability can help identify food-insecure households and their experience of food shortage. This can act as a substitute for the efforts of data generation on weekly/fortnightly consumption of each and every type of food and their conversion to calorie or the collection of data on 10 to 20 indicators of food insecurity and scoring of the responses to define an index of food insecurity. Such detailed survey cannot be repeated within short intervals and will be difficult for use of monitoring changes of household's situation. The approach used in this study can lead to a shift towards a more realistic approach in food insecurity related research. This approach can be used for formulation of policies and for continuous monitoring of the impact of programmes and policies.

10.2 Agenda for Future Research

In the process of the preparation of the report, it was felt that a number of related research should be carried out for formulating policies for ensuring food security and proper nutrition of the low income households. Some important research agenda have been listed below:

Food Intake Norm

- The currently available set of food intake norm is quite old. A new set should be prepared on the basis of both nutrition requirement and social norm. This should be done separately for rural and urban areas.

- Special groups (e.g. indigenous population, pregnant and lactating mothers, etc.) should receive specific attention.

Determinants of Food Insecurity in Urban Areas

The difference in average calorie consumption and the nature of relationship between food insecurity and status of employment is found to be different in urban areas compared to rural areas. More research on these relationships are required.

In urban areas the likelihood of food insecurity (based on calorie/income & calorie) of self and paid workers are not significantly different and therefore, more research is needed on this subject.

Wage Monitoring

Understanding the link between food insecurity and the operation of the labour market/employment requires an indepth investigation of wage rates. Specifically, the following aspects deserve attention:

- Nominal and real wage data for both agriculture and non-farm sectors should be collected for each month and each upazila.
- Forms of wage payments and its links with the type of employment deserve attention.
- Regional difference in wage and forms of wage payment should be studied. Impact of forms of wage (food vs cash) on food intake merit further investigation.

Seasonality of Employment in Various Regions

Identification of seasonality of employment and food insecurity in different ecological regions is required for

proper planning of safety net programmes. In this context, the role of disaster or sudden price rise should be considered together with normal pattern of seasonality.

Reasons behind the Lack of Awareness about Nutrition Value of Types of Food

The present study highlighted that people are not conscious about the nutrition value of various types of food. The reasons behind such lack of awareness should be investigated so that appropriate policies can be adopted for improved nutrition.

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