Research Article

PATTERN OF FOOD CONSUMPTION AND FOOD AVAILABILITY IN MALDA DISTRICT (WEST BENGAL)

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ABSTRACT

Food is the basic needs for every living being in the World. But the pattern of food consumptions varies from region to region due to food habits and level of income. This paper tries to find out the pattern of food consumption and food availability in Malda District. More than 81.03 percent calories come from cereals and remaining percent available from fat, protein, fruits, meats, milks, fish etc. This has been related with the income source of the people.

Key Words: Food Consumption, Food Availability

INTRODUCTION

Food security as a global issue has been defined in a number of ways. It is to be interpreted as means for adequate availability of food items, particularly food grains. It also refers to the adequate purchasing power to meet the food requirement at household level (Sarkar, 2001). Hence, a strategy for food security would encompass the essential components of food availability, with focus on those who are living below poverty line. Food security generally implies the physical supply of a minimum level of food grains during all periods including those of harvest failures (Reultinger, 1977). Food and agriculture organization defined food security as "ensuring that all people at all times have both physical and economic access to basic food they need". According to world development report defined food security as access by all people at all time to enough food for active and healthy life.

However, even in states, where the poverty ratio has fallen unemployment has increased, suggesting that a significant proportion of the population is still threatened by a lack of access to a means of livelihood, and is potentially vulnerable to food insecurity. Falling per capita caloric intake has raised concerns over food security. The decline is particularly high in rural India, accounting 70 caloric per person per day between 1983 and 1999/2000 (Chakrabarty, 2005). Little number of populations is consuming more than 2400 Caloric per day. The poverty ratio is declining but increased Caloric deprivation. Swaminathan (2000) argues that on average 44 per cent of households are deficient in Caloric intake while malnutrition among women and Children is higher (Bhanderi and Dubey, 2001). Arrived at a similar conclusion and argued that the poverty line recalculated on the basis of Caloric requirements.

Objectives

To find out the pattern of food consumptions.

To find out the food availability.

Administrative Setup

Malda was the Capital of Gour-Banga and now the gate way of North Bengal. It is located between latitudes 24^0 40' 20" N to 25^0 32' 8" N, and longitudes 87^0 45' 50" E to 88^0 28' 10" E, Malda District is bounded by Bangladesh and Dakshin Dinajpur district to its East and North East, by Uttar Dinajpur to the north, Bihar to the West, South-west part is bounded to Jharkhand and by Murshidabad district across the river Ganga. Malda is spreading over an area of 3733, Sq. Km and covering 4.2 per cent of the total landmass of the West Bengal and support with a large number of population of 32, 90468, about 4.1 per cent of the total states population with the density 881 persons per. Sq. Km.
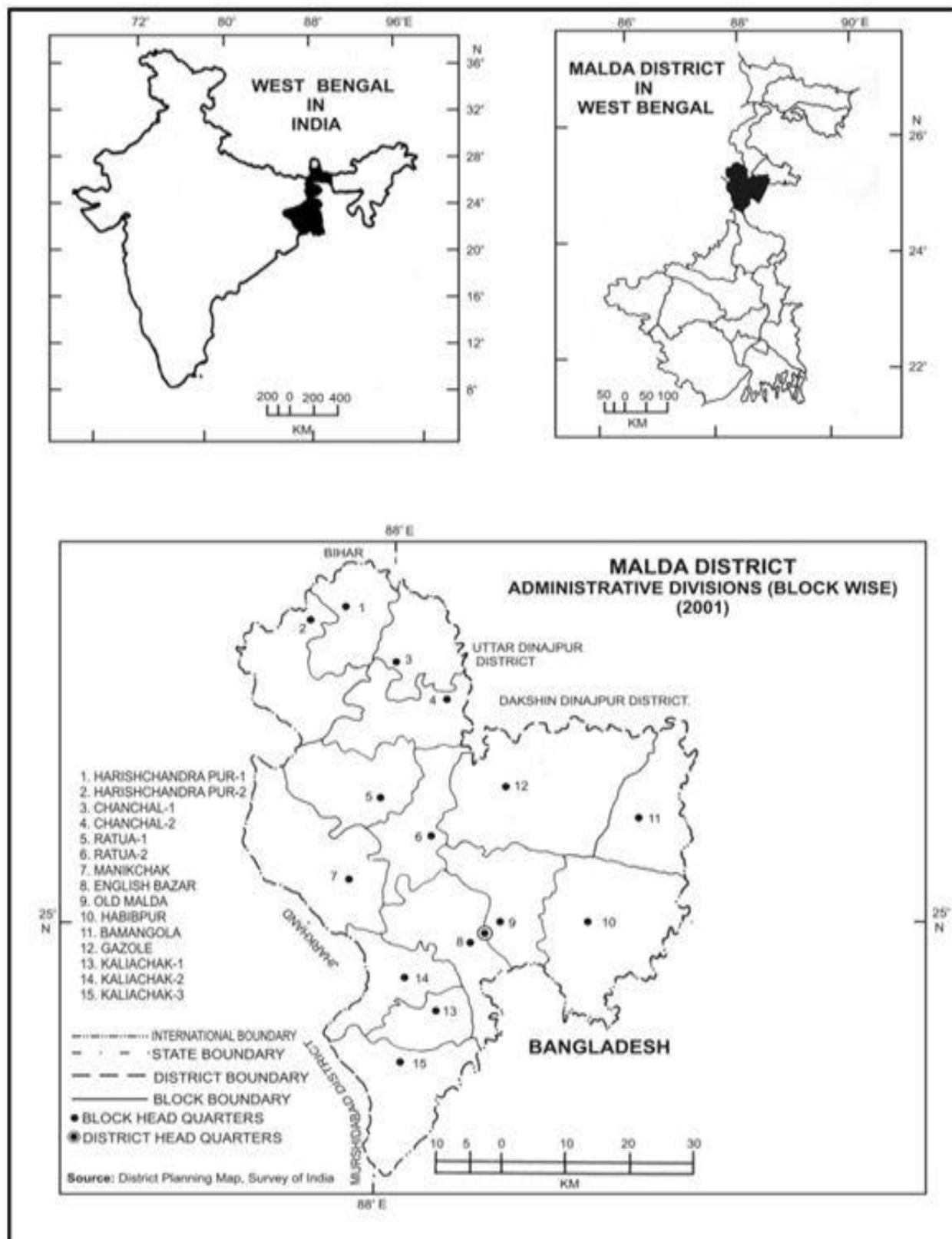
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Figure 1

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Data base and Methodology

The present study is based on a sample of 506 households drawn from the selected 15th villages of Malda district. The relevant data were collected through a primary survey, by visiting the households myself with a detailed questionnaire. The opportunities given by meeting the households in person provides a great scope for an in depth investigation. The village were selected on the following criteria (1) they had more than 100 households since a minimum of 10 per cent household per village was surveyed for the research (2) keeping these considerations in mind, I planned to select villages some of which are nearer to the road while others are farther from the road. Similarly some villages are inhabited by single community while others are inhabited by multiple communities. Some are connected by a good road while other is only linked by Katchha road. Similarly some are developed, semi-developed and other is remote villages selected. The villages were basically rural communities' because the focus in this study was on distribution of nutritional deficiency diseases in Malda district - a village level analysis

All the Food items including cereals (Wheat and rice), pulses (Black grain dhal, green gram, lentil, Red gram, Bengal Grain dhal etc), vegetables, Fish, milk and milk products, eggs, meat, fruits and other food has been taken into consideration to works out the food availability. According to their standard food values, all the foods have been converted into caloric value and added all the together. The total calories intakes are divided by total family members of each household, to get per head per day caloric consumption. The standard requirement of caloric intake per head per day is considered 2400 for active and healthy life on the basis of standard requirement. The simple statistical method applied for the calculation of food values.

Figure 2

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Food Consumption Pattern
The pattern of food consumption is another important indicator of food consumption. Food consumption depends upon per capita income. The patterns of food consumptions are given below;

Table-1: Pattern of Food Consumption in sample villages of Malda District-2009

| Village name	Cereal	Pulses	Veg.	Fish	Milk	Egg	Meat	Fruit	Other
Bhairabpur	89.09	0.43	4.63	1.48	0.32	0.18	0.44	0.03	3.41
Kauwamary	90.42	1.85	5.43	0.99	0.29	0.44	0.53	0.05	00
12gachhia	71.34	2.94	5.23	1.98	3.95	1.03	1.86	0.68	10.98
Jitarpur	88.11	2.43	4.29	1.26	0.85	0.75	0.19	0.01	2.11
Saharatola	81.40	2.82	4.43	1.70	1.44	0.43	1.62	0.20	5.96
Paranpur	72.79	3.53	6.85	2.86	3.42	1.29	1.99	0.03	7.24
Panchpara	90.28	1.28	4.81	0.74	0.69	0.64	0.31	0.14	1.09
Maruabadi	78.72	2.62	6.49	2.15	2.64	1.67	1.13	0.70	3,88
Dulalgaunj	80.18	4.03	5.10	1.85	1.79	0.93	0.60	0.54	4.18
Godhantola	83.81	3.27	4.90	1.80	1.07	0.89	1.10	0.32	2.84
Sheikhpura	74.74	3.00	5.91	2.46	2.15	1.22	2.73	0.20	7.59
Chandipur	75.19	3.85	5.80	2.58	3.96	1.92	2.06	0.19	4.45
Mahmmadpur	70.15	2.90	5.13	2.50	4.13	1.70	2.61	0.25	11.26
Bamungola	81.32	2.86	5.50	1.95	1.72	1.06	0.65	0.23	4.70
Paruipara	75.38	2.73	4.86	3.64	3.17	1.59	0.92	0.28	7.43
Total	**81.03**	**2.64**	**5.19**	**1.89**	**1.85**	**0.89**	**1.28**	**0.25**	**4.99**

Sources: Field Survey-2009
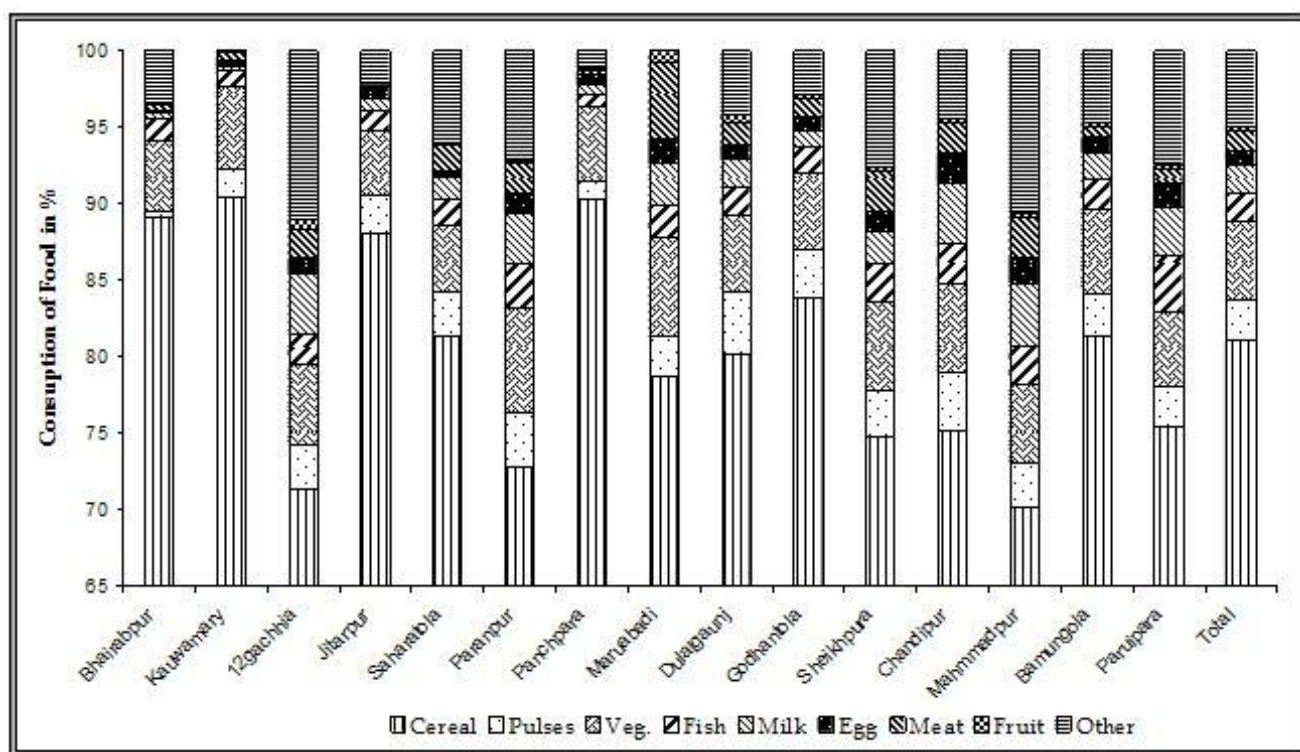
Figure 3: Village-wise Pattern of Food Consumption in sample villages of Malda District-2009

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Consumption of Cereals
The average cereals consumption in the sample villages of district is 1419 kcal per day/per head (411gm/day/head). It is low to recommended levels, around 81.03% of the energy comes from the cereals alone and better-off households consume less cereals as their income rise, with their consumption of other food items like fish, milk and milk products, Meat, Egg, fruits, vegetables etc increasing. The Chanchal sub-division about 83.99per cent energy comes from cereals and 78.50 per cent caloric (English Bazaar) comes from cereal in cases of two sub-divisions. The consumption of cereals is varying from village to village in the district. The highest percentage of cereal consuming village is kauwamary more than 90.42 per cent and Panchpara occupied 2nd position (90.28%). On the other hand Mahammadpur has been consumed less cereals as compared to other village in the study areas, about 70.15 per cent and followed by 12-Gachhia (71.34%) and Paranpur (72.79%).

Consumption of Vegetables
About 5.19 per cent of the total kcal comes from the vegetables in the selected villages of Malda district. The population is divided on the basis of occupation living as high income groups, middle income groups low income groups etc. The picture relating to vegetables consumption is more in high income groups and less in low income groups. The highest vegetables consumption villages are the Maruabadi and Paranpur because of connection of high income groups and when more than 60 per cent households depend upon non -agricultural activities. The low vegetables consumption villages are the Jitarpur (4.29%), Sharatola (4.43%) and Bhairabpur (4.63%).

Consumption of Pulses
Pulses are the most important sources of dietary protein for the people. But the consumption of pulse is very low. The average recommended dietary intake (RDI) for pulses is 40 gms/cu/per day. Analysis of consumption of pulses at households level reveals that households are in villages consuming more than 3 per cent pulses of the total food values (Dulalguanje 4.03 per cent, Godhantola 3.27 percent, Chandipur 3.85 per cent and Sheikhpura 3.00 per cent). The Bhairabpur and kauwamary (1.85%) and 0.43%), Panchpara (1.28%) are the three villages which is categorized very low pulses consuming villages.

Consumption of fish
Nearly 1.89 per cent calorie comes from the consumption of fish and fish is the important source of protein in the district. The distribution of fish consumption is depending upon the income, employment structure and socio-economic Conditions of the people. Economically developed villages are consumed more fish as compared to the less developed village. Also villages near the road consumed more fish as compared to remote village. The low per capita fish consumption villages are the Bhairapur (0.99%), kauwamary (1.48%), Panchpara (0.74%) and Jitarpur (1.26%) of the total food values. The highest per capita per day fish consumption village are the Paruipara (4.86%), Mahammadpur (2.50%), Paranpur (2.86%), Chandipur (2.58%), Skeikhpura (2.46%) and Middle fish consuming village are the 12- Gachhia (1.98%) Maruabadi(2.15%), Bamungola(1.95%),Godhantola (1.80%),Dulalgaunje(1.85%) and Saharatola(1.70%).The fish consumption gap between English Bazaar and Chanchal sub-division is very wide, 2.20 per cent for English Bazaar where only 1.53 per cent for Chanchal of the total calorie.

Consumption of Meat
The availability of meat has been a steadily decreasing day by day. This decreased availability is due to increasing prices and decline in per capita availability of meat. According to my primary survey, Malda District is the very low meat consuming district. Only 1.28 per cent of the kcal comes from meat. The levels of income are greatly affects the consumption of meats. English Bazaar consumes 1.53 per cent and Chanchal consumes only 0.99 per cent, because the level of income is very low. The high per capita meat consuming villages are the Mahammadpur (2.61%), Sheikhpura (2.73%) Chandipur, (2.06%) and Paranpur, (1.99%) and Medium meat consumption villages are 12-Gachhia (1.86%) Saharatola (1.10%), Maruabadi (1.13%) and Godhantola (110 %). The lowest meat consumption areas are the Bhairabpur and kauwamary (0.44% and 0.53%), Jitarpur (0.19%), Panchpara (0.31%) Dulalgaunje (0.92%) Bunungola (0.65%) and Paruipara (0.92%).
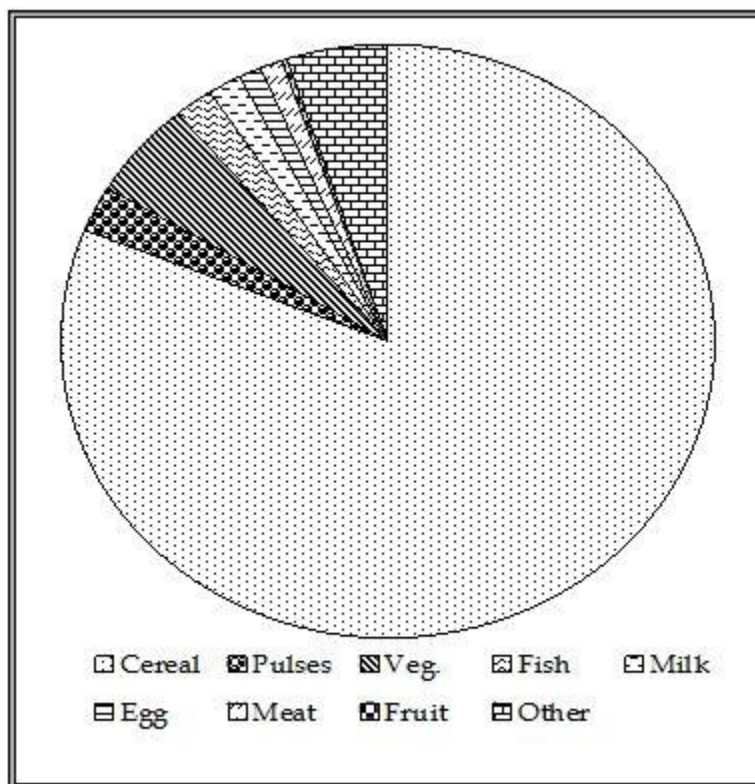
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Figure 4: Pattern of Food Consumption in some selected villages of Malda District-2009

Consumption of Milk and Milk Products

The Indian council of Medical research (ICMR) expert Groups Recommended Dietary Intake (RDI) for milk is 150gm /cu/day. In rural areas, only the highest per capita income groups has average consumption of milk higher than RDI (230gms/cu/day) Consumption of milk of medium income group is 121 gms/cu/day, whereas the lower groups have intakes between 42.86 gms/cu/day. Milk consumption in the study area is very low. According to survey, only 38.59 kcal (20.97 gm/Cu/day) energy comes from milk and milk products which contribute only 1.85 per cent. Mahammadpur is higher milk consuming village followed by (4.13%), 12- Gachhia (3.95%), Chandipur (3.96%), Paranpur (3.42%) and Paruipara (3.17%), medium milk availability village are the Sheikhpura (2.15%), Maruabadi (2.64%), Dulalgauje (1.79%) Bamungola (1.72%), Saharatola (1.44%), Godhantola (1.07%) and lowest milk consuming village are the kauwamary and Bhairabpur (0.32% and 0.29%), Jitarpur (0.85%) and Panchpara (0.69%) in the district.

Consumption of Egg

Egg is an important source of balanced diet. It provides only 0.89 per cent of the total energy in selected villages of Malda District. The high consumption of egg in the district are the Mahammadpur (1.70%), followed by Chandipur (1.92%), Maruabadi (1.67%) Paruipara (1.59%), Paranpur (1.29%) and Sheikhpura (1.22%) and Kauwamary (0.18%) Bhairabpur and (0.44%) Bamungola (1.03%) and Godhantola (0.89%) and Dulalgaunje consumed just district average.

Consumption of Fruits

Only 0.25 per cent daily per capita net availability of energy comes (Kcal) from different fruits. All the 15 villages in the district consume less than 1 per cent of the total caloric intake. The main fruits are the mangoes, Banana, Grape, Jack fruits, lichis, orange, papaya ripe, tomato ripe, pine apple, apple deshi, dates Indian, guava country, Cherries red etc.

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Other Food
Other food consist different types of cereals and non-cereals. The consumption of other food is very high. The developed village consumed more other food than the less developed village. Even it varies from high income households to low income households. About 4.49 per cent calories comes from other food.

Spatial Patterns of Food Availability
The spatial distribution of food availability in the sampled village household of the District has been divided into three types, i.e., high (above+0.020, z-scores), medium (+0.020 to -0.080) and low (below -0.080).

Table 2: Spatial Pattern of Food Availability in Malda District-2009

Village Name	z-scores
Bhairabpur	-0.066
Kauwamary	0.079
12gachhia	-0.119
Jitarpur	-0.066
Saharatola	-0.179
Paranpur	0.115
Panchpara	0.078
Maruabadi	0.115
Dulalgaunj	0.056
Godhantola	0.031
Sheikhpura	-0.135
Chandipur	0.028
Mahmmadpur	0.127
Bamungola	0.007
Paruipara	-0.07

Sources: Calculated from primary data-2009

According to Z-scores test high food available household are found in Kauwamary (+0.790), Paranpur (0.115), Panchpara (0.078), Maruabadi (0.115), Dulalgaunje (0.056), Godhantola (0.031), Chandipur (0.028) and Mahammadpur (0.127).Four villages namely, Bhairabpur (-0.066), Jitarpur (-0.066), Bamungola (0.007) and Paruipara (-0.070) fall under the range of medium availability. Remaining three villages 12-Gachhia (-0.119), Saharatola (-0.179) and Sheikhpura (-0.135) fall under the category of low food availability.

CONCLUSION
The majority of the household's family members consume below the recommended level (2400caloric) of calorie in the study area. On the other hand, food security status varies according to socio-economic characteristics of the households. More than 81 percent calorie obtained from cereals due to low level of income. Nearly 85 per cent household not get balanced diet due to economic conditions and lack of education. So food consumption is one of the most important indicators of socio- economic development. Patterns show that, in general, grain crops dominate the diets of the low income categories. As income increases the consumption of non-grain crops and animal products increase. Food being the foremost basic need gets the priority in the pattern of expenditure of people, especially for low and middle income groups. Out of the current research some suggestion can be given such as the level of income can be increased by providing employment opportunities; supplementary balanced food diet should be given to the economically backward family and to increase the level of education among these people.

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RFERENCES
Alaimo K, Olson CM, Frongillo EA & Briefel RR (2001). Food insufficiency, family income, and health in US preschool and school-aged children. *American Journal of Public Health* **91** 781-786.
Hamelin A, Habicht J and Beaudry M (1999). Food insecurity: Consequences for the household and broader social implications. *Journal of Nutrition* **129** 525S-528S.
Monroe PA, O'Neill C, Tiller VV and Smith J (2002). The challenge of compliance: Food security in rural households affected by welfare reform. Food assistance needs of the South's vulnerable population. Retrieved December 20, 2007, from Mississippi State University, Southern Rural Development Center Web site: http://srdc.msstate.edu/focusareas/health/fa/fa_5_monroe.pdf
Nord M, Andrews M and Carlson S (2005). Household food security in the United States, 2005. (Economic Research Report No. 29). United States Department of Agriculture, Economic Research Service. Retrieved December 20, 2007, from http://www.ers.usda.gov/Publications/ERR29/
Radimer KL, Olson CM and Campbell C (1990). Development of indicators to assess hunger. *Journal of Nutrition* **120** 1544-1548.
Ribar DC and Hamrick KS (2003). Dynamics of poverty and food sufficiency. (Food Assistance and Nutrition Research Report No. 36). Economic Research Service, U.S. Department of Agriculture. Retrieved December 20, 2007, from http://www.ers.usda.gov/Publications/FANRR36/
Tarasuk V (2001). Household food insecurity with hunger is associated with women's food intakes, health and household circumstances. *Journal of Nutrition* **131** 2670-2676.
Townsend MS, Peerson J, Love B, Achterberg C and Murphy SP (2001). Food insecurity is positively related to overweight in women. *Journal of Nutrition* **131** 1738-1745.
Suwen P and Helen H Jensen (2008). Does the Food Stamp Program Affect Food Security Status and the Composition of Food Expenditures? Southern Agriculture Economics Associations. *Journal of Agriculture & Applied Economies* **40.1** 21-35.
Sen and Amartya (1981). Poverty & Famines: An Essay on Entitlement and Deprivation. Clarendon Press, Oxford.
Ann Helwege and Melissa BL Birch (2007). Declining Poverty in Latin America? A Critical Analysis of New Estimates by International Institutions, Global Development And Environment Institute Working Paper No. 07-02 (http://ase.tufts.edu/gdae)
Banerjee A and E Duflo (2007). The Economic Lives of the Poor. *Journal of Economic Perspectives* **21**(1) 141-167.
World Bank (2007). Poverty and Social Indicator Monitoring (MECOVI). Retrieved February 9, 2007, from
http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/LACEXT/EXTLACREGTOPPOVANA
PS Amaza, JC Umeh, J Helsen and AO Adejobi. Determinants and Measurement of Food Insecurity in Nigeria: Some Empirical Policy Guide.
Hassan RM and Babu SC (1991). Measurement and determinants of rural poverty: household consumption patterns and food poverty in Rural Sudan. *Food Policy* **16**(6).
Food and Agricultural Organization (1982). Food Consumption Tables for the Near East, Food and Nutrition Paper 20, FAO, Rome (www.fao.org).
Keshav Lall Maharjan and Arun Khatri-Chhetri. Household Food Security in Rural Areas of Nepal: Relationship between Socio-economic Characteristics and Food Security Status.
Christian Romer Løvendal Marco Knowles (2004). Understanding Vulnerability to Food insecurityLessons from Vulnerable Group Profiling, ESA Working Paper No. 04-18 www.fao.org/es/esa
Jha and Shikha (2002). Domestic trade restrictions and food security, Chapter 4 in: K. Parikh and R. Radhakrishna (eds.), India Development Report, Oxford University Press.
Jha, Shikha and PV Srinivasan (2003b). on improving the effectiveness of PDS in achieving food security in: S.M. Dev, K.P. Kannan and N. Ramachandran (eds.), Food Security in India: Emerging Issues and Policy Options, CESS Hyderabad, forthcoming.