ABSTRACT

On

Food Security and the Role of Public Distribution System (PDS): A Case Study of Golaghat District

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By

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Introduction:

Food is one of the most important basic necessities of every individual. In the primitive community when man lived in jungles he did not have clothing or even shelter. But he needed food to survive. Animals live without clothing or shelter but also need food. Thus for all living beings food is the most essential component of life. Access to good quality food has been human being's incessant endeavour from the earliest days of existence. Good quality of food is needed by human being for their productivity as well as longitivity. So food production and food distribution have been key focus areas for a good number of policy makers.

Considering the importance of food for the improvement of capability as well as the existence of human being which indirectly signifies strong and prosperous world, ensuring sufficient and good quality of food for each and every human being is recognized globally from 1940s. Article 25(1) of Universal Declaration of Human Rights recognized that food security is a basic human right. Since then, the concept of food security has been defined differently by different scholars as well as policy makers. It is a flexible concept which is reflected by the development of different definitions in research and policy usage. Up to 90s of the last century almost 200 definitions of it are available in publications.(Maxwell and Smith,1992)

1.A. Statement of the Problem:

Food security as a concept originated only in the mid 1970s in the discussions of international food problems which originated from global food crisis (Clay 2002). In 1970s many definitions of food security were concentrated on the concern towards building up of national or global level food stocks i.e. the importance of the physical availability of food stocks (Maxwell and Frankenberger,1992). The World Food Summit defines food security as "availability at all times of adequate world food supplies of basic food stuffs ----, to sustain expansion of food consumption---, and to

offset fluctuations in production and prices" (UN 1975). This approach is a supply side approach.

Amartya Sen (1981) in his work "Poverty and famine: An Essay on Entitlement and Deprivation" has challenged the view of the World Summit. He argued that this is a case of people not having enough to eat but this is not necessary a result of there being enough food to go around. Food and Agricultural Organization (FAO) expanded the concept of food security by considering a third aspect i.e. securing access by vulnerable people to available supplies. It defines food security as " Ensuring all people at all times have both physical and economic access to the basic food that they have need" (FAO1983)

The World Food Summit in its Plan of Action gives a comprehensive and more complex definition of food security. It defines " Food security at the individual, household, national, regional and global levels is achieved when all people, at all times have physical and economic access to sufficient safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life." (FAO 1996) This definition is again redefined in The State of Food Insecurity 2001 report of FAO. This definition states, " Food security is a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences of an active and healthy life." (FAO2002). This definition points out the multidimensional nature of food security concept which encompasses food availability, food access, food utilization and food stability. Food availability is a function of production whereas access to food is a function of purchasing power or employment and earnings. Utilization of food means the absorption of food into the body while the stability dimension highlights the fact that a population, household or individual must have access to adequate food at all times. (FAO 2006) This definition is the most widely accepted definition of food security till now.

Although different approaches have been made to ensure food security for every human being, still poverty, hunger and malnutrition are the common features in different countries, basically in the developing and underdeveloped countries of the world. The past half century has witnessed growth in food production. Nevertheless,

more than one in seven people today still do not have access to sufficient protein and energy from diet and even more suffer from some form of micronutrient malnourishments. (Charles et.al 2010)

1.B. Food Security in India:

In India, food security as a national objective was placed on the policy agenda much earlier than in other developed and developing countries (Sinha, 2004). The 'grow more food' campaign of the pre-independence period and a food foundation sponsored report 'Indian Food Crisis and Steps to Meet It' in 1959 mark the beginning of India's concern over food security (Ghosh & Khasnobis,2006). The green revolution of 1960's was the foremost attempt to combat food security. By the end of 1980s India achieved self-sufficiency in the food production in the national level and no longer remained a food shortage country through dramatic investments in technology, institutions and infrastructure (Babu, 2008). Now India is not only self-sufficient in grain production, but also has a substantial reserve.

But despite these significant efforts and political commitment for ensuring food security of all the people of the Nation, India's food security scenario has remained precarious. India is the only Asian country other than Bangladesh and Yemen that are in the top 25 of 97 hunger affected countries in the world. The rest of the countries come from Africa (Babu 2008).

Like the national scenario, the situation in Assam is almost similar. BPL Census 2002 exerts that the percentage of poverty in Assam is also very high. Even the food grain production of the state is not self-sufficient. Rice is the main crops of Assam. But the productivity of Rice in Assam is among the lowest compared with the other producing states like Punjab, Haryana. Although different policies and programmes have been introduced both the Central as well as State Governments for ensuring food security, the situation is still not satisfactory in Assam. High Infant Mortality rate, Malnutrition etc. signify a gloomy picture of food security of Assam. Although the PDS system covers a huge population under its social safety nets, its performance is still to be questioned, specially the state of food security of the Below Poverty Line (BPL) families are still not satisfactory.

1.C. Importance of the Study:

Food security is not just involved with production. Rather it involves every individual gaining physical, economic, social and environmental access to a balanced diet that includes the necessary macro and micro nutrients, safe drinking water, sanitation, environmental hygiene, primary health care, and education so as to lead a healthy and productive life (Chronicle, 2011). Although different approaches as well as policies are implemented globally to ensure food security for each individuals, till now food insecurity and hunger is a common feature in most of the countries. These problems are very serious in the developing as well as underdeveloped countries.

As like the other countries of the world, the government of India also constantly makes it effort to ensure food security of each individual. By these systematic efforts, India has achieved food self-sufficiency in 1980s through dramatic investments in technology, institutions and infrastructure. Yet India's effort in achieving food security for all Indians remains unimpressive. Over 200 million of India's population is under fed and millions are undernourished. About 41 percent of the world's underweight children are belongs to India. In India 47 percent of children less than 5 years old are underweight 45% are stunted and 16 percent have severe malnutrition (Babu 2008). As a fast developing country, and positioning itself to be one of the world's most powerful nation's, India, cannot afford to have such a vast number of food and malnourished people. Without individual food security, a basic entitlement, India cannot make any progress in other aspects of human development.

Public Distribution System (PDS) is the flagship programme of the government of India to ensure food security to the individuals especially for the below Poverty Line (BPL) individuals. Further Government of India redefine the Universal PDS into Targeted Public Distribution System (TPDS) in the year 1997 to provide social safety nets to only the poor's. Although more than 10 crore BPL cards are distributed, till now poverty and hunger problems are not eliminated. Majority of needy poor individuals are still outside the purview of social safety nets

Like the all India average as well as other states, the situation of Assam is also similar. Ensuring food security to all the individuals is still a distant dream in Assam. In this regard the role of PDS is also under serious scrutiny. The BPL Census 2002

exerts that still 55.77 lakhs population of Assam are living below poverty line which is 22.30 percent of the total population of the state. This shows a gloomy picture of the state of food security in Assam

Although some macro level studies are conducted to assess the food security in Assam as well as the performance of PDS to ensure food security, micro level studies are not taken into consideration. In assessing the state food security of the BPL families of Assam and assessing the role of PDS to ensure their food security, it is very much essential to conduct a micro level study on the state of food security of the BPL households.

1.D. Area of the Study- Golaghat District:

Golaghat is one of the important rural economy based districts of Upper Assam. It covers the total area of 3502 Sq. km. and is located 100 meters above the sea level. It lies between $93^0 16'$ East to $94^0 10'$ East longitude and between $25^0 50'$ North to $26^0 47'$ North Latitude. The district is bounded by Brahmaputra River on the North, Jorhat and Nagaland on the East, Karbi Anglong and Nagaland State on the South and Naogaon, Karbi Anglong on the West.

1.E. Conceptual Framework of the Study:

In the present study household food security has been measured by both supply side as well as demand side. In the supply side i.e. food availability has been calculated by considering the all sources of income as well as the production of food item by the household itself. In the demand side it has been calculated by determining the expenditure in the food item as well as non food item and has been also calculated by using the contribution of all food available to the households' per capita calorie intake by considering the 7 days recall method.

To identify the various potential socio economic and demographic variables which influence the household food security status in the present study eight variables has been selected.

1.F. Objectives of the Study:

a) To assess the state of food security of the BPL families of the Golaghat District of Assam.

b) To compare the extent of food security of the BPL households with and without the BPL cards.

c) To identify the determinants of food security among the BPL households of the Golaghat District of Assam.

d) To assess the performance and role of PDS in providing assistance for household food security to the BPL families.

e) To suggest the strategy for policy measures both for the State as well as Central governments to improve the state of food security of each and every households of Assam in general and of the BPL households in particular

1.G. Research Questions:

a) What is the extent of food security of the BPL households with and without having the BPL cards?

b) What are the various factors which determine the food security status of the BPL households?

c) How much the PDS system ascertains the food security of the BPL families?

d) What policy measures can be suggested for the improvement in the state of food security status of the BPL households?

1.H.Methodology and Data Base:

As per the BPL Census 2002, there are 1683118 nos. of Below Poverty Line (BPL) households in Assam. Therefore it is quite difficult for an individual researcher to undertake an intensive study on the food security to all the BPL households of Assam. So keeping in mind the constraints of an individual researcher, the present study covers only one district of Assam, i.e. Golaghat District, selected purposively. There are altogether 27 districts in Assam, the rationale behind the selection of Golaghat district is due to higher

concentration of rural people among the districts of Upper Assam. In Golaghat district 90.84 percent (as per 2011 census) people are rural people, which is next to the Dhemaji district (with 92.96 percent) among the districts of Upper Assam.

As per the data provided by the www.pnrdassam.gov.in website of Government of India, in 2011, 73935 families are recognized as BPL families in Golaghat district of Assam. The target population of the present study has been the BPL households with or without having BPL cards. The multistage purposive and stratified random sampling technique has been used in the present study. The first stage of sampling starts with the selection of Golaghat district, selected purposively. In the next stage from all the 8 development blocks, 1 Gaon Panchayat has been selected randomly to collect samples from the rural BPL households. In addition to this to collect samples from the urban BPL households, one ward has been selected randomly each and every municipal board and town committees of the Golaghat district. In the final stage, the sample households were randomly drawn from the selected Gaon Panchayats and Town wards by using a random number table. The households which are having the BPL identification number are considered as BPL households and taken into consider to collection of samples.

For the sample size, altogether 500 BPL households are surveyed. As the rural urban composition of the Golaghat district is almost 90:10, here in the present study rural urban sample composition has been taken as 80:20 i.e. 400 sample BPL households are surveyed from the rural area of the Golaghat district and 100 sample BPL households are surveyed from the urban area of the Golaghat district.

1.H.(i) Data Base:

For the purpose of the study both primary data and secondary data are used. Primary data are collected from the selected sample rural as well as urban BPL households of the Golaghat district and also from the FPS dealer of the concerning surveyed area. The survey was conducted between the months June to December 2014. For collecting the primary data on the state of food security of the sample, BPL households which are cross sectional in nature, a pre tested interview schedule has been designed the interview schedule was framed up by using some key indicators

which would help in revealing the real food security status of the BPL households as well as role of PDS on their food security status.

To supplement the primary data, secondary data has been collected from various government departments, number of books, journals, thesis, articles as well as various internet sites, published data issued local, natural and international organisation.

1.H. (ii) Data Analysis:

In order to achieve the set objectives, techniques such as frequency distribution, various indices, regression analysis, descriptive statistics like mean, standard deviation, inferential statistics like 'Z' test, chi-square test are incorporated. In order to achieve the objective of measuring the status of household food security, food security index, shortfall index i.e. food insecurity gap, squared food insecurity gap, surplus index, head count ratio are constructed by following the Ometesho et.al (2006), Guja (2012) and Shumiye (2007). In addition to that the severity level of food insecurity has been determined by following Guja (2012).In addition to these food security of the sample household has been estimated by Household Dietary Diversity Score (HDDS) also. To compare the food security status of BPL households with and without having the BPL cards, frequency distribution, ratio, percentage, inferential statistics like 't' test has been used. To identify the significant socio economic as well as demographic factors which influence the food security status of the sample BPL households a Binary Logistic Regression model is applied. In addition to that a simple regression model is also applied to incorporate the magnitude of food insecurity of the sample households. To access the role of PDS in providing assistance, for the food security status of BPL households, descriptive statistics like, percentage, ratio, as well as inferential statistics 'Z' test has been used. In addition to that a Simple Regression model is also applied to identify the significant role of PDS on the food security status of sample BPL households. The results are estimate by using the data analysis and statistical software, SPSS 17 and STATA 11

2.A. Review of Literature :

Food security is one of the important social issues which have been recognized by almost every nation of the world. From years onward various studies have been

conducted to analyse the problem of food insecurity as well as to find out the various factors which influence the food security status of individuals. It is very much necessary to review these existing literatures of both national as well as international standard to find out the research gap for which the present study deals with. The reviews are arranged in following modules

(A) Food security status of households as well as individuals

(B) Determinants of Food Security status

(C) Role of Public Distribution System on Food Security

Gulliford et.al. (2003) in their study evaluate whether food insecurity and obesity are associated in the sample area. The findings of the study reveal that 25 percent sample population are food insecure. Food insecurity was associated with lower household incomes and physical disability. Food insecurity is associated with lower consumption of fruit and vegetables and underweight but not with present obesity.

Mwaniki (2005) in her study analysed the challenges and issues of achieving food security in Africa. The study reveals that food security situation in the continent of Africa is very poor. Out of the total food insecure population seventy percent population in Africa lives in the rural areas, It reveals that underdeveloped Agricultural sector, barriers to market access, effects of globalization, disease and infection and handicapping policies are the challenges of food security in Africa. It also argued that strategies like nutritional intervention, facilitating market access, capacity, building, gender sensitive development, building coping strategies, creating off farm opportunities and good governance can be considered as good means for substantially alleviating food security in Africa.

Kannan (2000) in his study examines the question of food security viz-a-viz food availability and self-sufficiency in the production in Kerala. The study finds that due to the existing cropping pattern in Kerala, food self-sufficiency is unrealistic in Kerala. However, through a pro-poor public policy regime, Kerala has been able to enhance food security considerably. The study reveals that as a result of implementing TPDS as a replacement of universal PDS by the Central Government of India, the food security situation of Kerala is being challenged, which raised a question mark

about the sustainability of Kerala's PDS as chief social safety nets for achieving universal food security.

Haile et.al, (2005) in their study examined the causes of seasonal food insecurity among members of Koredegaga Peasant Association in the Eastern Oromia region of Ethiopia. The study reveals that farmland size, per capita aggregate production, fertilizer application, household size and educational attainment level of farm household heads etc. have significant influence on food security. Results from the study also indicate that a unit change in farmer's access to fertilizer or educational level of households head or farmers access to land or farmers access to family planning improves the probability of food security in the study area and have the potential to increase the food secure households. So, the study recommends to introduce agricultural research and extension, family planning programmes, efficient use of land and opening up schools to achieve good results in achieving food security.

Rammohan et.al (2011) in their study analysed the determinants of food insecurity in rural India. The findings of the study reveal that 21 percent of the sample rural households are food insecure. It also reveals that poverty, income from agriculture, religion and district heterogeneity influence food insecurity. Food based safety nets such as public distribution system, NREGS appear to be implemented differently. The food security scenario is better where these foods based schemes implemented properly and vice-versa.

By investigating the effect of subsidies on food security and poverty in India, **Tritah (2003)** finds that PDS has a poor record on reaching the poor. The study pointed out the revaluation of the effect of PDS with respect to the food security is essential. The study reveals that new measurement of poverty line has the possibility of improving the performance of PDS to benefit the poor. The study also finds striking results that the benefit of food security accrued to the poor generate more food expenditure than the subsidy through a multiplier effect.

Dutta and Ramaswami (2001) in their study analyse the targeting and efficiency in the Public Distribution System of India by comparing the case of Andhra Pradesh and Maharashtra. The finding of the study reveals that in regard to the institutionalisation of PDS in every way the poor in Andhra Pradesh are greater beneficiaries than their

counterparts in Maharashtra. In Andhra Pradesh the coverage of PDS is universal whereas in Maharashtra nearly 30 percent of the poor are excluded because of lack of coverage. Errors of exclusions are lower in Andhra Pradesh. The study recommends that self targeting of beneficiaries is one of the important measures of minimizing inclusion and exclusion error in the PDS system. It also suggests to improve the operational efficiency of PDS.

2.B. Research Gap:

From the review of literature, it is quite evident that there is hardly any study which intensively tries to access the state of food security of the BPL households of Assam and the role of PDS, as social safety nets to ensure food security to these BPL households. This leaves a big vacuum in the existing literature which is quite extensive in coverage but lacks the intensity.

3.A. Public Distribution System of India:

As like the other countries, Government of India also considered food security as a national objective and initiated the Public Distribution System (PDS) as a public policy to provide assistance for the people of the country, particularly for the peoples living below poverty line (BPL). As a flagship programme of the Government of India, PDS since its inception plays a vital role towards achieving the goal of food security

The history of the introduction of PDS in India rooted in famines and food scarcities during the entire period of British rule in India. The first one was the Bengal famine of 1770 where an estimated ten million people died in this famine. (Majumder 2009) between 1860 to 1910, twenty major famines were occurred in India. During the British rule the last famine was the Bengal famine of 1943 (Ghose 1999)

In 1939 the then British Government of India, first introduced rationing system in Bombay as a measure to ensure equitable distribution of food grains to the urban consumers in the situation of rising prices. The 6th Price Control Conference held in September 1942 laid down the basic principles of a PDS for India.

After independence, in 1947, the government of India was expected to do away controls on production, distribution and prices of food grain. The food grain policy 1947, recommended gradual decontrol in the food grains sector & rationing and necessity for imports to maintain central reserve to guard against crop failures (GOI 1976 Part I). The Commission also recommends the need to increase domestic food grain production by about 10 million tonnes per year till self sufficiency is achieved.

In 1950, the Food Grains Procurement Commission was set up. The Committee besides making other recommendations suggested rationing in all the towns with a more than 50000 population and informal rationing in other towns and some regulated supply of grains in rural areas (Singh, 2006).

The Green Revolution of India was able to achieve the goal of economic self sufficiency in the food grain production, which brought about a new dimension in the food grains management. After achieving the food self sufficiency the prime focus of the food grain policy management was on fair procurement price for farmers to provide safeguard them from market anomalies, buffer stocking and control of market prices and public distribution of essential commodities. The Concept of State trading was revived in January 1965, when by an Act of Parliament, the Government of India set up the Food Corporation of India (FCI). FCI performs as an autonomous organization, working on commercial lines to undertake purchase, storage, movement, transport, distribution and sale of food grains and other food stuff (Singh,2006).

In 1984, Government of India created the Ministry of Food and Civil Supplies with two departments namely, Department of Food and Department of Civil Supplies, the latter being in charge of PDS. During Seventh Five Year Plan, an Advisory Committee on PDS headed by the Union Minister for Food & Civil Supplies was constituted to review the working of PDS time to time. Consumer Advisory Committee at district, block/tehsil levels also.

The Public Distribution System of India evolved as a system of management of scarcity and for distribution of food grains at affordable prices. Over the years PDS has become an integral part of Governments policy for management of food economy in the country. PDS is supplement of the total food requirement of the people and it is not intended to make available the entire requirement of any of the commodities

distributed under PDS to a household or a section of the society. It is still considered as a principal instrument in the hands of the Government for providing safety nets to the poor and the vulnerable sections of the society. The PDS serves the triple objectives of protecting the poor, enhancing the nutritional status which ensure food security and generating a moderate influence on market prices (Singh,2006).

3.A. (i) Revamped Public Distribution System (RPDS):

During the year 1991, after sensitive analysis of hunger deaths in mostly tribal areas of Orissa and Madhya Pradesh on the one hand and adequate stocks of foodgrain with FCI on the other, Government of India feels that vulnerable areas and the people of vulnerable groups were not targeted properly to ensure food security due to their disadvantageous geographic location, weak PDS infrastructure and low purchasing power (Singh,2006). It was therefore decided to orient the PDS by adopting an area specific approach and as a result Revamped Public Distribution System (RPDS) was emerged. This was done in consultation with State Governments and Union Territory administration.

RPDS covered 1752 blocks which are fall in some area specific programmes as Desert Development Programme (143 Nos), Drought Prone Areas Programme(602), Integrated Tribal Development Projects (1073 Nos) and Designated Hill Areas (69 Nos) were identified as economically and socially backward (135 of them are overlapped). Essential commodities such as wheat, rice, sugar, edible oil kerosene and soft cake were supplied in the selected blocks at subsidized prices. Food grains at the rate of 20 kg per month per family (@ 5 kg per capita) were to be distributed through FPS's. The scheme also emphasised the creation of PDS infrastructure on 50 % subsidy and 50 % loan basis by constructing godowns for food grains and Mobile vans for doorstep delivery of PDS items to the FPS's and for final distribution of these items in geographically inaccessible areas. Vigilance Committees were also formulated at different levels to ensure proper distribution of items under RPDS (Singh,2006).

The Programme Evaluation Organization (PEO) of the Planning Commission evaluated the working of the RPDS on 1995 and indicated that though the scheme was generally beneficial to the vulnerable section of the population, cutting across the

regions and states , there were still gaps and constraints in the implementation of the scheme. The PEO (1995) identified four major weaknesses of the RPDS. These were (i) Proliferation of the bogus cards (ii) inadequate storage arrangements (iii) ineffective functioning of the vigilance committee and (iv) failure to issue ration cards to all eligible households. (Dev and Ranade 1997).

3.A.(ii)Targeted Public Distribution System (TPDS):

Following the recommendation of Chief Ministers Conference held in 1996, the Central Government was made an effort to further streamline the PDS. Thus the Targeted Public Distribution (TPDS) was launched in June 1997. The PDS as it was stood earlier has been widely criticised for its urban bias and its failure to serve effectively the poorer section of the population. It was also criticised for its negligible coverage in the states with the highest concentration of the rural poor and lack of transparent and accountable arrangement for delivery (Planning Commission, 2002-2007, Vol II). The vital problem of India was that a sizeable number of marginalized people in the absence of cash income that can be transformed into purchasing power are excluded from the planning process because they do not constitute effective demand. This is true irrespective of the Green Revolution after the mid 1960's in India. Thus the TPDS come to replace the erstwhile PDS from June 1997 (Majumder 2009). This system divided the potential beneficiaries into families Below Poverty Line (BPL) and Those Above Poverty Line (APL). TPDS envisaged that BPL population would be identified in every state and every BPL family would be entitled to a certain quantity of food grains at specially subsidized prices. The BPL population were offer foodgrains at half of the economic cost, on the other hand the APL, who were not have a certain amount of a fixed entitlement to food grains, were supplied grain at their economic cost. Thus TPDS intends to target the subsidised provision of food grains to 'poor in all areas' unlike the provision of RPDS which laid stress on 'all in poor areas' (Singh,2006).

The TPDS when introduced, was intended to benefit about 6 crore poor families for whom a quantity of about 72 lakh tonnes of food grains was allocated annually (Singh,2006). The quantum of foodgrains in excess of requirement of BPL families was provided to the states as 'transitory allocation' for which a quantum of 103 lakh

tonnes of foodgrains was allotted annually. The transitory allocation was intended for continuation of benefit subsidized foodgrains to the population living APL as any sudden withdrawal of benefits existing under PDS from them was not considered desirable.

3.A. (iii) Antyodaya Anna Yojana (AAY):

In order to make TPDS more focused and targated towards this category of population the Government of India launched a scheme called "Antyodaya Anna Yojana" with effect from 25-12-2000. (Mayilvaganan & Varadarajan , 2012). AAY is a step in the direction of reducing hunger among the poorest segment of the population.

AAY identifies one crore of poorest of the poor families from amongst the number of BPL families covered under TPDS and providing them foodgrains at a highly subsidized rate of Rs. 2/- per kg for wheat and Rs. 3/- per kg for rice. The scale of issue was initially fixed at 25 kg per family per month. It has been increased to 35 kg per family per month with effect from April 1, 2002.

3.A. (iv) National Food Security Act – 2013:

As passed by the Parliament, The Government of India has notified the National Food Security Act -2013(NFSA) on 10th September, 2013 with the objective to provide for food and nutrition security in human life cycle approach by ensuring access to adequate quantity of quality food at affordable prices to people to live a life with dignity (ww.dfpd.nic.in). The act relies largely on the existing TPDS to deliver food grains as legal entitlements to poor households. This marks a shift by making the right to food a justifiable right (Balani, 2013). The act provides the coverage of upto 75 % of the rural population and up to 50% of the urban population for receiving subsidized food grains under TPDS, thus it covers two thirds of the total population of India. The eligible persons are entitled to receive 5 kg of food grains per person per month at subsidized prices of Rs. 3/2/1 per kg for rice/wheat/coarse grains. The existing Antyodaya Anna Yojana (AAY) households, which constitute the poorest of the poor, will continue to receive 35 kg of food grains per household per month.

3.B. Public Distribution System in Assam:

In Assam also, PDS is a major instrument of the Governments poverty eradication programmes which is regulated under the provisions of "Assam Public Distribution of Articles Order, 1982." The Food and Civil Supplies Department looks after the allocation and distribution of food grains, identification of families below poverty line, issue of ration cards and supervision and monitoring of stock position and distribution of food articles etc. by the fair price shops.

In Assam, PDS commodities are being distributed to 63 lakh households (43.94 lakh APL, 12.02 lakh BPL and 7.04 lakh AAY households) in 33 districts (earlier 27 districts) through 34536 Fair Price Shops (FPS) (Urban 4030, Rural 30506)as on 31.3.2011 (Economic Survey , Assam 2011-12). In respect of Superior Kerosene Oil (SKO), distribution to beneficiaries is made through 12438 hawkers and 3307 retailers in addition to the FPS's after procurement from 385 depots and 95 sub depots (CAG, 2010-2011).

3.B.(i) Targeted Public Distribution System:

As like all the States of India, Government of Assam also introduced the Targeted Public Distribution system in Assam from 1997. State Government took the responsibility to identify the poor families and to distribute food grains through the Fair Price Shops in a transparent and accountable manner.

3.B. (ii) The PDS Schemes Implemented in Assam:

(i). The Above Poverty Line (APL) Schemes:

At present 40.87 Lakh APL families are provided with APL rice, SK Oil, Sugar and Iodized Salt as per quantum of allocation in each month. During the year 2012-2013, out of the total allocation under Targeted Public Distribution System (TPDS) up to February 2013, the share of wheat was 3.61 lakh tonnes and rice was 6.62 lakh tonnes for APL families of the State.

(ii). The Below Poverty Line (BPL) Schemes:

The Government of Assam has achieved the target of selecting 19.06 lakh beneficiaries from BPL families and provided distinct ration cards for assurance of

PDS items at subsidized rates. Out of the19.06 lakh selected beneficiaries 12.02 lakh have FIC cards and take benefits as BPL families and the rest 7.04 lakh of beneficiaries are brought under AAY category families as per the direction and guidelines of the Central Government.

(iii). The Antyodaya Anna Yojana (AAY):

The AAY scheme is implemented by the State government in Assam since November 2001, as per guidelines of the Government of India. At present there are 7.04 lakh families are identified under AAY category. Under this scheme the selected beneficiaries are provided 35 kg of rice per family per month at a highly subsidized rate of 3 per kg.

(iv). Mukhya Mantir Anna Suraksha Yojana (MMASY):

Under TPDS, a total of 19.06 lakh families are covered in Assam as per target fixed by the Planning Commission of Government of India based on th population aswell as family status of 1993-94 and no extra target for inclusion of more deserved families is taken into consideration by the Central Government. Hence to bring the deserved poor families i.e lowest strata of APL families under the ambit of food security, Government of Assam launched an unique scheme named as, The Mukhya Mantir Anna Suraksha Yojana (MMASY) .Up to 2013-14, 20 lakh families were being benefitted under the scheme.

(v) The National Food Security Scheme:

As per the provision of the National Food Security Act 2013, food security scheme has been implemented in the state of Assam since December 2015. Under NFSA 2013, 84.17% of rural population and 60.35 % of urban population (as per census 2011) of the state are covered to distribute rice at highly subsidized rate of Rs. 3.00 per kg. The total population benefitted under NFSA 2013 in the state is 2.52 Crore.

3.C. Village Grains Banks (VGB) Scheme:

To provide food security to the BPL families, Government of Assam has implemented the village Grain Banks Scheme by setting up 100 nos of Grain Banks in Chronically

flood and natural calamities affected areas for every 40 poor families. Every VGB were allotted 40 quintals of Grade A rice at Rs 1150 per quintal.

3.D. Randhan Jyoti Scheme:

Randhan Jyoti Scheme is implemented in Assam since August 2003. The state has already implemented 1st , 2nd , 3rd and 4th phase of the scheme by providing LPG connection at free of cost to 168222 number of person selected from BPL families in order of preferences of widow, women members of Self-Help groups and any other female members of the BPL families of lower income groups.

3.E. Aamar Dukan:

The Scheme Aamar Dukan was launched by the then Honourable Minister of Food and Civil Suppliers & Consumer Affairs on 24th December, 2010. Aamar Dukan is an Assamese term meaning our shop to denote a notified Fair Price Shop in Assam, which besides providing the regular subsidized item under the PDS in India to the ration card holders, also sells some other essential commodities at reasonable rates fixed by the State Food, Civil Suppliers & Consumer Affairs Department to the general consumers under an initiative of the State Government to strengthen the PDS. Presently 3812 number of selected Aamar Dukan are functioning in Assam. During the financial year 2014-15 a total of Rs 600 lakh has been provided to 755 numbers of Aamar Dukan @ Rs. 66225 per Aamar Dukan with two fold objectives of enhancing infrastructure and for providing better services. Financial assistance of a total find of Rs 500 lakh has been provided for financial assistance to another 755 numbers of 'Aamar Dukan' during 2015-16 (www.fcs.assam.gov.nic.in)

Although various schemes are implemented by the state governments for effective implementation of PDS in Assam as well as to ascertain the Food Security of the poor and marginalized sections of the society, still the performance of PDS in Assam is not satisfactory. Studies reveal that when Assam has been facing acute shortage of food grain owing to poor agricultural practices and low productivity, huge quantum of food grains allotted to Assam under the PDS continued to be siphoned off to the black market (Talukdar 2013).

4. General Observation of Socio Economic and Demographic Profile of the Sample Households:

(i) It has been found that majority of the households are Hindu (89.8 percent) followed by Christian (8.2 percent). Again highest number belong to other backward class (OBC) (54.4 percent) followed by the general category (22.6 percent).

(ii) The total size of the sample population is 2386, of which male and female are 1236 (51.8 percent) and 1150 (48.2percent) respectively. The sex ratio which is also an important demographic feature of any society of the sample population is 930.

(iii) Out of the total sample BPL households, 83.6 percent (418 numbers) families are nuclear and remaining 16.4 percent (82 numbers) constitute joint family. Percentage of nuclear family is higher in urban area which is 91 percent compared to the rural area which is 81.75 percent in the present study area.

(iv) Of the total sample BPL households, 431 (86.2 percent) households' heads are male and remaining 69 households (13.8 percent) are female headed households. In rural area 87.75 percent households are male headed whereas, 80 percent of sample urban BPL households are male headed households.

(v) Majority of the sample households (53 percent) monthly income lies between income levels Rs. 3001 to 5000 which is followed by 33.2 percent in the income level upto Rs 3000. Only 13 percent and 0.8 percent households belong to the income level Rs. 5000-10000 and above Rs. 10000 respectively.

(vi) It has been found that out of the total sample population of 2386, 736 nos. (30.85%) are engaged in various occupation. 797 nos are student and 492 nos. are housewife and 12.45 percent (296) are unemployed. Largest number (37.09 percent) of employed person belong to daily wage earner. Out of the total household heads, largest percentage of household heads occupation is daily wage labour (37.6 percent) followed by cultivation (35.6 percent).

(vii) It has been found that 88.83 percent sample population are literate. This signifies a higher level of literacy rate than the state (73.18 percent) and national average (74 percent)(census of India , 2011). 83.60 percent (413 nos) household head is literate. It also reveals that the percentage of illiterate female household head is 24.64percent which is higher than the male household head (16.24 percent).

(viii) Out of the total sample households, 93.80 percent (469 nos) households have their own land and remaining 6.20 percent (31 nos) households have no land. Maximum households have (38.6 percent) size of land holding less than one bigha whereas 38 percent (190Nos) households have the size of land holding between 1 to 5 bigha in size. In rural area 7 percent (28 Nos) households have no land of their own whereas in urban area 3 percent sample households have no land of their own.

(ix) Out of the total sample households, 372 Nos households (74.4 percent) are having livestock and remaining 25.6 percent households having no livestock. In rural area, households having livestock ownership is higher in comparison to sample urban households.

(x) Out of 500 sample households, 81.2 percent (406 nos) households have katcha houses whereas only 2.40 percent (12 nos) and 20.50 percent (82 nos) have pucca and semi pucca houses respectively.

(xi) Highest numbers of households have katcha bathrooms, which is 76.2 percent (361 nos) of the total sample households. It also reveals that 7 percent (35 nos) households have no bathrooms and 14.4 percent (72 nos) households have open bathrooms. In rural area this situation is more picarious than their urban counterparts.

(xii) It has been found that 4.6 percent sample households have no latrine in their house. Majority of (53.4 percent) households have katcha latrine followed by semi pucca latrine (37 percent) and only 5 percent households have pucca latrine in their house. Maximum number (63.8 percent) of the sample

households' hygienic condition is poor. 30.8 percent sample households hygienic condition is average.

(xiii) Out of the total sample households 84.40 percent households have used electricity and kerosene oil both as a source of lighting, whereas 13 percent and 2.6 percent respectively use kerosene and electricity only as a source of lighting. Majority portion of (85.4 percent) households use firewood as a source of fuel followed by gas (14.20 percent).

(xiv) Out of the total sample households 85.8 percent households have tube wells as a source of drinking water followed by 10 percent households use government planted water supply as a source of drinking water. Only 43.60 percent households are using filtered drinking water.

(xv) Out of the total sample households, 10.8 percent households have the experience of still birth. It also reveals that out of the total sample households, 10.8 percent households have experience with infant mortality. In the rural area 11.50 percent sample households have experienced infant mortality where as in the urban area, 8 percent sample households have experienced infant mortality.

(xvi) 202 persons died during 2009 to 2014 in the sample area. Out of this 53.47 percent (108 nos) were male and 46.53 percent (94 nos) were female

(xvii) 361 persons were found to be sick out of which 168 persons (46.54 percent) were male and remaining 193 persons (53.46 percent) were female. So it signifies that female persons suffered more from disease than its male counterparts.

(xviii) Out of the 2386 nos sample population 361 nos (15.13percent) people are suffering from various diseases like fever, malaria, cough, stomach pain, body pain, heart disease etc.

(xix) It has been found that 63.6 percent sample households are aware about immunization. It also reveals that 81.8 percent sample households have the

knowledge about polio and polio eradication dose whereas only 22.8 percent (114 nos) households have the knowledge about AIDS disease.

(xx) Out of the total sample households, 73.4 percent (367 nos) households have received benefit from the government, whereas remaining 26.6 percent (133 nos) have not received any benefit from the government.

5.A. Food Security Status in terms of Per Capita Calorie Intake:

(i) In terms of food security index constructed on the basis of per capita calorie intake, 28 percent (140 nos) sample BPL households have been found food secure across the study area and remaining 72 percent (360 nos) sample BPL households have been found to be food insecure. It has also been found that in the rural areas 25.25 percent (101 nos) BPL households are food secure whereas in the sample urban area 39 percent (39 nos) sample BPL households are food secure.

(ii) The Block wise variation of the food security status also witnessed in the present study. It depicts that highest incidence of food security (40 percent) has been found among sample BPL households of Kakodunga development block followed by Golaghat East development block (35.71 percent). Household food security is lowest in the Gomariguri development block where only 14 percent sample BPL households are food secure

(iii) As per the classification of sample BPL households in terms of having BPL card or not. It has been found that out of the 297 sample BPL households having BPL cards only 73 nos (24.58 percent) are food secure. On the other hand out of the remaining 203 sample BPL households which have no BPL card, 67 nos (33.01 percent) are food secure. It signifies that the food security status of BPL households not having BPL card is better in percentage than the households having BPL card.

(iv) The total food insecurity gap (TFIG) which indicates the depth of food insecurity among the food insecure sample BPL households has been found as 18.71 percent in the present study. It signifies that the food insecure

households have consumed 18.71 percent less per capita calorie on average than the threshold level.

It has been also found that squared food insecurity gap (SFIG), indicates severity of food insecurity among the food insecure household as 4.50 percent.

(v) To represent the extent of food surplus among the food secure sample BPL households, the surplus index has been constructed in the present study and the value of the surplus index has been found as 4.86 percent here. This signifies that on average 4.86 percent above per capita calorie have been consumed than the threshold level by the sample food secure BPL household

(vi) The Head Count ratio has been found as 0.72 signifies that 72 percent sample BPL households are food insecure in the present study.

(vii) The severity level of food insecurity analysis of the present study depicts that out of the 500 sample BPL households, 140 households (28 percent) have been food secure, 253 households (50.60 percent) have been marginally food insecure, 96 households (19.20 percent) has been moderately food insecure and 11 households (2.20 percent) has been severely food insecure.

In this regard block wise variation has been seen where it is found that the percentage of marginally food insecure households is maximum (70 percent) in Morangi development block and minimum (32.22 percent) in Golaghat south development block. On the other hand moderately food insecure households is maximum (41.11 percent) in Golaghat south development block and minimum (2 percent) in Morangi and Kakodunga development block.

5.B. Food Security Status Based on Household Dietary Diversity Score (HDDS):

(i) Food security status of the sample household based on HDDS reveals that out of the 500 BPL households only 71 sample households have the HDDS score above or equal to the threshold level of 4. Maximum households (282 nos) HDDS have been 3 which is 56.4 percent of the total sample BPL household. It also reveals that the HDDS score fluctuates from 1 to 5 among the sample BPL households.

(ii) Block wise HDDS score of the sample area witnessed that in Morangi development block maximum (26 percent) sample households HDDS score lies above or equal to the threshold level of 4. On the other hand it has been minimum in Kakodunga and Gomariguri development block where only 4 percent households have the HDDS score above or equal to 4

(iii) The mean, standard deviation and mode value of the HDDS of the sample BPL households has been found that the mean value is 2.856, the standard deviation is 0.70729 and the mode value is 3. It signifies the higher concentration of food insecure households in terms of HDDS score in the study area.

(iv) So far as rural urban wise HDDS score is concern, it has been found that out of 400 sample rural BPL households only 17 percent households HDDS score is above or equal to the threshold level of 4. Whereas out of the 100 sample urban BPL households it has been found that only 3 percent households HDDS score is above or equal to the threshold level of 4.

(v) The mean, standard deviation and mode of HDDS score of the sample rural households has been 2.85, 0.7593 and 3 respectively, whereas for the sample urban BPL households, these values are 2.86, 0.4223 and 3 respectively.

(vi) The food security status based on HDDS score reveals that out of the 500 sample BPL households only 14.2 percent (71 nos) have been found as food secure. The rural and urban food secure households based on HDDS score have been found as 17 percent (68 nos) and 3 percent (3 nos) respectively.

(vii) Block wise household food security based on HDDS score reveals that in the Morangi development block maximum (26 percent) sample households are food secure. Whereas it has been minimum in Kakodunga and Gomariguri development block with only 4 percent sample food secure households.

5.C. Comparison of the Extent of Food Security of BPL Households with and without BPL Card:

(i) In the present study it has been found that although all the sample households are BPL identified household, out of the 500 sample BPL households only 297 nos (59.40 percent) have BPL card (i.e either BPL or AAY card) and remaining 203 families have APL card (either APL or MMASY card).

(ii) It has been found that out of 140 food secured BPL households as per the per capita calorie intake norms, 73 households have BPL card while 67 households not have BPL card.

(iii) The head count ratio signifies that out of the 297 BPL card having households 75.42 households are food insecure, whereas out of the 203 BPL households which have no BPL card, 66.99 percent households have been food insecure.

(iv) The shortfall index or food insecurity gap is high in the sample households which have no BPL card (18.94 percent) than the sample households having BPL card.

(v) The surplus index, which shows the better food security status, is higher in the sample households having BPL card (5.45 percent) than the households not having the BPL card (4.19 percent).

(vi) The findings of the study also reveals that squared food insecurity gap is higher in the households having the BPL card (4.87 percent) than its counterparts

(vii) So far as the severity level of food security is concern, no significant difference has been found between the households having the BPL card and not having the BPL card, it reveals that out of the total sample BPL households having BPL card 50.84 percent households have been marginally food insecure. Whereas it is 50.24 percent for the households not having BPL cards. Out of the total 96 sample BPL households those moderately food insecure, 67 nos belongs to the category of sample BPL households having the

BPL card and remaining 29 nos belongs to the category of sample BPL households not having BPL card.

(viii) The result of the independent samples 't' test, which is drawn to test whether there is a significance difference in the per capita calorie intake between the households having the BPL and not having BPL cards, finds that the average per capita calorie intake of the households having the BPL card is lower than the households not having the BPL card. The mean value difference is negative (-40.93). The't' value is insignificant (-1.463‹1.96) at 5 % level of significance, which explains no significant difference in the per capita calorie intake of households having BPL card and not having the BPL card.

5.D. Comparison between Rural and Urban Households Food Security Status:

(i) The present study reveals that out of the 400 sample rural household, 101 nos (25.25 percent) are food secured, while on the other hand out of the 100 sample urban households 39 nos (39.00 percent) are food secured.

(ii) The head count ratio also inform that in the rural area 74.75 percent sample households are food insecure whereas in the urban area it was 61 percent only

(iii) In the sample rural area, the food insecurity gap has been found as 19.56 percent, whereas it is 14.54 percent only in the sample urban area.

(iv) The squared food insecurity gap also signifies the poor situation of the sample rural area than its urban counterparts. The present study finds the squared food insecurity gap has been 4.71 percent in the rural area whereas it is 3.49 percent only the urban area.

(v) The surplus index is found as 5.14 percent in the sample rural households, on the other hand this has been marginally low in the urban areas where it is 4.13 percent only.

(vi) The per capita calorie consumption data reveals that although it was high in the sample rural households but it was less in percentage of daily requirement. The average per capita calorie consumption in the sample rural households has been 2080.51 kcal which was 86.69 percent of the per capita calorie

requirement for food security, whereas on the other hand in the urban households the average per capita calorie consumption has been 1947.88 kcal which was 92.76 percent of the per capita calorie requirement for food security.

(vii) In the rural area, the rate of marginally food insecure is very high where 56.25 percent (225 nos) sample households has been marginally food insecure whereas 28 percent (28 nos) sample urban households have been found as marginally food insecure. 16 percent (64 nos) rural sample households are moderately food insecure, whereas in the urban area it is 32 percent (32 nos). The present study also witnessed that 10 nos (2.5 percent) sample rural households are severely food insecure whereas only 1 percent (1 nos) urban sample households is severely food insecure.

5.E. Comparison between Rural and Urban Households Food Security Status:

(i) The present study reveals that out of the 400 sample rural household, 101 nos (25.25 percent) are food secured, while on the other hand out of the 100 sample urban households 39 nos (39.00 percent) are food secured.

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The average per capita calorie consumption in the sample rural households has been 2080.51 kcal which was 86.69 percent of the per capita calorie requirement for food security, whereas on the other hand in the urban households the average per capita calorie consumption has been 1947.88 kcal which was 92.76 percent of the per capita calorie requirement for food security.

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5.F. Determinants of Food Security Status of Sample BPL Households:

5.F.(i) Descriptive Statistics:

(i) The inferential statistics shows that the age of the food secured households head ranges from 20 to 76 years having the mean age value of 39.957 years, whereas the age of food insecure household heads ranges from 25 up to 84 years with the mean age value of 49.086 years. The probability value of Z test is 9.923 which is significant at less than 5% probability level

(ii) The size of the household of the food secured households ranges from 1 upto 8 nos having the average size of the family is 3.843, whereas the size of the household of the food insecure household ranges from 2 up to 13 nos, having the average size of the household is 5.133 nos. The probability value of the z test is 9.04 which is significant at 5% level of significance

(iii) The per capita income of the food secured household s ranges from Rs. 333.33 upto Rs. 2750 having the mean per capita income is Rs. 947.54. Whereas the per capita income of the food insecure households ranges from Rs. 285.71 upto Rs. 2400 having the mean per capita income is Rs. 739.82. The

probability value of the z test is 5.69 which are significant at 5% level of significance. It implies that per capita income affecting the household food security status significantly.

(iv) The TLU values of the food secured households ranges from 0 to 4.69 where the mean TLU is 1.013. On the other hand the TLU value of the food insecure households is ranged from 0 to 8.81 having the mean TLU value is1.472 units. The P value of the Z test is 3.29 which is also significant at less than 5% probability level.

(v) The study reveals that out of the 500 sample households the numbers of female headed and male headed households are found to be 69 and 431 in numbers and covers 13.8 percent and 86.2 percent respectively. Out of the 69 female headed households , only 17.39 percent (12 nos) female headed households are food secure, whereas among the 431 male headed households only 29.70 percent (128 nos) households are found to be food secure. The chi-square result 4.31 shows that it is significant at less than 5% probability level.

(vi) The findings of the study reveals that that out of the 500 sample household head 87 nos are illiterate which accounts 17.4 percent of the total sample household head. Out of this 87 nos heads, 19 nos (21.84 percent) and 68 (78.16 percent) are found food secure and food insecure respectively. Only 9.6 percent (48 nos) of the total sample household heads educational qualification is class 12 and above. Out of this 23 nos (47.92 percent) and 25 nos (52.08 percent) are food insecure respectively. The majority of households from both food secure (70 nos) and food insecure (161 nos) household fall under education level from class 6 to class 10. About 20 percent of food secure household and 29.44 percent of food insecure households have an educational level which ranges from class 1 to class 5. The probability value of chi- square test is 17.794 which is significant at 5 % level.

(vii) The study also find that out of the total 500 sample household heads, 182 nos (36.4 percent) household heads occupation is agriculture and remaining 318 nos (63.6 percent) household heads occupation is others. Out of the 182 nos households where head's occupation is agriculture, 42 nos (23.08 percent) and

140 nos (76.92 percent) are food secure and insecure respectively. On the contrary, out of the 318 nos households whom heads occupation is non farm, 98 nos (30.82 percent) and 220 nos (69.18 percent) are food secure and food insecure respectively. The chi- square result, which p value is 3.47 is significant at less than 10 % probability level.

5.F.(ii) Binary Logistic Regression Analysis:

(i) The Binary logistic regression analysis result reveals that out of the 7 predictor variables, five variables are significant determinant of household food security status of the sample BPL household. These are log of per capita income of the household, log of age of the household head, sex of the household head , education level of household head and log of family size

(ii) The log of per capita monthly income of the household has positive impacts on household food security status and is significant at 10 % level of significance. The odd ratio (1.8725) of log of per capita monthly income indicates that keeping other variable constant, when the log of per capita monthly income increases by one unit, the probability of a household to be become food secure increases by the factor of 1.8725.

(iii) The log of age of the household head has the negative impacts on food security status and was significant at 1% level of significance. The coefficient (-3.1492) of the log of age of the household head implies that holding other variable constant, if the age of the household head increases, it decreases the log of odd of household food security status by 3.1492 units.

(iv) The sex of the household head was significant at 1% level and positively related with food security status of the household. The coefficient (1.6013) of sex of the household head indicates that holding other variables constant, if the sex of the household head is male, it increases the log of odd of household food security status by 1.6013 units.

(v) The education level of the household head has positive impacts on household food security status and was significant at 10 % level of significance. . The odd ratio (1.0635) of educational level of the household head indicates that

keeping other variable constant, when the educational level of the household head increases by one unit, the probability of a household to be become food secure increases by the factor of 1.0635.

(vi) The log of the family Size has negative impacts on household's food security status and was significant at 1 % level of significance. The odd ratio (-3.0021) implies that as family size increases by one person, the likely probability to become food secure decreases by a factor 3.0021.

(vii) The influence of other variables on household food security status such as occupation of the household head and livestock ownership are not found to have significant impact

5.(F)(iii) Simple Regression Model:

(i) The simple regression model witnessed that out of the seven independent variables, six variables are significant. These are per capita monthly income, age of the household head, sex of the household head, occupation of the household head, family size, and livestock ownership. Out of this per capita monthly income, sex of the household head, occupation of the household head, dependency ratio and livestock ownership are positively related to per capita calorie intake and age of the household head and family size are negatively related with per capita calorie intake.

(ii) The log of per capita monthly income of the household was significant at 1% level with a positive coefficient 0.126 which implies that other variables being constant a unit increase in per capita monthly income of the households increases the per capita kcal consumption of the household by a factor of 0.126.

(iii) The log of the age of household head was significant at 1% level with a negative coefficient of -0.257 which implies that other variables being constant a unit increase in the age of the household head decreases the per capita kcal consumption of sample household by a factor of 0.257.

(iv) Sex of the household head was significant at 1% level with a positive coefficient of 0.151 which implies that other variables being constant a unit increase of male headed household increases the per capita kcal consumption by a factor of 0.151.

(v) Occupation of the household head was significant at 1% level with a positive coefficient of 0.135 which implies that other variable being constant a unit increase of the household head's occupation as agriculture increases the per capita kcal consumption by a factor of 0.135.

(vi) The log of family size was also a significant determinant of per capita calorie consumption in the present model. It was significant at 1% level with a negative coefficient of -0.305 which implies that other variables being constant a unit increase in the family size decreases the per capita kcal consumption of the sample household by a factor of 0.305 units.

(vii) Livestock ownership measured in terms of TLU was also a significant determinant of per capita kcal consumption which was found significant at 10% level with a positive coefficient of 0.128 which implies that other variables being constant a unit increase in TLU increases the per capita kcal consumption of the sample household by a factor of 0.128 unit.

6.A. Performance of Public Distribution System (PDS) :

(i) Although all the sample households have been BPL identified families, but in reality out of the 500 sample households only 297 nos (59.40 percent) households have BPL card (i.e. either BPL or AAY card) and remaining 203 nos (40.60 percent) households have APL card (either APL or MMASY card). Among the households having BPL cards, 215 nos households have BPL card and 82 nos households have AAY card. On the other hand among the APL card having households, 73 nos have APL card and 130 nos have MMASY card.

(ii) Of the total 400 sample rural BPL households, 233 nos (58.25 percent) households BPL card and remaining 167 nos (41.75 percent) have APL card.

Whereas, of the total 100 sample urban BPL households 64 nos (64 percent) have BPL card and remaining 36 nos (36 percent) households have APL card.

(iii) Of the total 500 sample households 59.8 percent (299 nos) gets the fair price shop (FPS) located within the village or within 1 km and for remaining 40.2 percent (201 nos) of households the FPS is located in a distance of more than 1 km but less than 2 km distance.

(iv) It has been found that for rice, for BPL households having BPL cards the percentage of gap between requirement and the supplied by the FPS's per household per month has been 43.01 percent. This signifies that only 56.99 percent of the total requirements of rice for the sample BPL card holder households have been covered by FPS's. On the other hand for rice for BPL households having APL card the percentage gap between requirement and that supplied by the FPS's per household per month has been 69.63 percent.

(v) The present study also depicts that for wheat for BPL households having BPL cards, only 47.4 percent of requirement per period per household have been covered by FPSs, The gap thus being 52.6 percent between quantity required and quantity distributed through FPS's. Whereas for wheat for BPL households having APL card, the percentage gap between requirement and that of quantity distributed through PDS's has been 64.63 percent.

(vi) For sugar for BPL households having BPL cards the percentage gap between requirement and that supplied by the FPSs per household per month has been 56.37 percent, whereas for BPL households having APL card this gap has been 63.74 percent.

(vii) So far as the gap between requirement and that supplied by FPS's for kerosene is concern, it has been found as 32.26 percent for BPL households having BPL card. Whereas for BPL households having APL card this gap has been witnessed as 36.49 percent.

(viii) It has been found that for all the sample BPL households monthly on average 45.4 kg rice has been required whereas only 21.6 kg rice has been distributed through FPS's. The quantity of wheat and sugar is required very minimum, on

average requirement of wheat and sugar per household per month have been 1.62 and 1.95 kg respectively whereas, the distribution of wheat and sugar through FPS on average only 0.70 and 0.80 kg respectively.

(ix) For all the sample BPL households, the gap between market price and FPS price is maximum for rice with 201.37 percent (Rs 14.7) followed by sugar (98.75 percent). The gap between the market price and FPS price have been 84.66 percent (Rs. 10.4) and 44.53 percent (Rs 8.62) for wheat and kerosene respectively.

(x) It is found that the average per month per household requirement of rice of sample rural BPL household has been 47.46 kg of which 20.81 kg (43.85 percent) has been distributed through PDS, whereas the average household requirement of rice of sample urban BPL household has been 37.2 kg of which 22.58 kg (60.70 percent) has been distributed through PDS.

(xi) It has been found that for rice, the gap in price per unit between open market and FPS for all the sample BPL households both having BPL and APL card is Rs. 14.7 which is 207.37 percent of FPS price (Rs 7.3 on average). For wheat the absolute gap is Rs. 10.40 which is 89.66 percent of FPS price (Rs.11.60 on average). For Sugar the gap is Rs. 18.87 which is 98.75 percent of FPS price (Rs. 19.12 on average). For kerosene, the gap is Rs. 8.62 which is 44.53 percent of FPS price (Rs. 19.36 on average).

(xii) The FPS prices were also fluctuating in the sample rural urban region. For rice the average FPS price is Rs. 7.22 in the sample rural area whereas it is Rs. 7.64 in the sample urban area. For wheat, the average FPS price is Rs. 11.52 in the sample rural area, whereas it is Rs.11.79 in the sample urban area. In the sample rural area it is Rs 18.98 on average whereas it is Rs. 19.51 in the urban area. This fluctuation of PDS price also emerged in the price for kerosene also.

(xiii) While considering the sample households visiting FPS it is found that out of the 500 sample BPL households, 484 nos (96.8 percent) regularly visit the nearest FPS for consuming items allotted for them under PDS and remaining

16 nos (3.2 percent) do not visit FPS regularly. Reasons for not buying the PDS item from FPS are non-availability of money at the time of distribution, lack of information etc.

(xiv) Of the total 500 sample households 73 nos (14.6 percent) households do not buy rice regularly from FPS. Non regular purchase of rice covers 35.96 percent (73 nos) of all the sample BPL households having APL card. All the sample BPL households having BPL card regularly buy rice from FPS's. In case of wheat overall 271 nos (54.2 percent) households do not buy wheat regularly from FPS.

(xv) The present study also reveals that not a single sample household regularly buys sugar from the FPS. This is due to irregular allotment of sugar from the FPS's. It also depicts that out of the 500 sample households, 23 households (4.3 percent) household do not buy kerosene regularly from the FPS's.

(xvi) It has been found that for the APL card holders, supply of rice was only 5 to 10 kg and also these were not been regularly allotted, so all the general APL card holders are dissatisfied with the supply of rice through PDS. The amount of kerosene supplied through FPSs is also not sufficient for consumption for a large number of sample BPL households (54.6 percent) and hence dissatisfied with the supply of kerosene through FPS.

(xvii) It has been found that out of the 500 sample BPL households, 174 nos (34.8 percent) household reported non availability of price chart in the FPS's. It has been found that not a single household has received money receipt from the FPS dealer. So far as the sample household's satisfaction towards FPS dealer is concerned, of the total sample household 29.2 percent (146 nos) household reported that they were not satisfied with the FPS dealer.

(xviii) The sample households are dissatisfied with FPS dealer mainly due to lack of dissemination of time when the PDS item were distributed as well as non availability of item when it is demanded and also supplied less than the allotted amount through PDS.

(xix) It has been found that out of the 500 sample household, 51 nos (10.2 nos) household lodged complaints regarding poor functioning of FPS's for the supply of PDS allotted item. . It has been found that not a single complain has been looked into till date. Because of that sample households are reluctant to lodge further complaints against the malfunctioning of PDS.

(xx) The study reveals that out of the total sample BPL households only 4.80 percent (24 nos) households are aware about the rules and regulations of PDS and remaining 95.20 percent are unaware about it. Of all the households surveyed in the Golaghat district, only 4 sample households (0.8 percent) reported that they are aware about the inspection of PDS that of the total sample BPL households, only 37 percent (185nos) households are aware of the RTI and remaining 63 percent (315 nos) households are not aware of the RTI. Of all the sample BPL households only 6 percent (30 nos) sample households reported that they are aware about the precautions on PDS item. Of all the sample BPL households only 30.6 percent sample households are aware of their responsibility to be perform as a citizen of India.

(xxi) Of all the sample households as high as 56.60 percent (283 nos) households revealed their ignorance about the actual and possible role of PRIs in PDS whereas 10.40 percent sample households reported that PRI's has played the positive role in PDS allotment whereas 33 percent sample households are not satisfied with the role of PRI's in PDS allotment.

6.B. Contribution of PDS on Household Food Security Status:

6.B. (i) Descriptive Statistics:

(i) The present study finds that the PDS contribution in per capita calorie intake of the total sample household ranged from 0 to 3971.44 kcal and overall mean amount has been 746.89 kcal. The PDS contribution to the food secure households ranged from 115.30 kcal to 3971.44 kcal per capita having mean value of 971.15 kcal. While on the other hand the PDS contribution to the food insecure households ranged from 0 to 2985.93 kcal per capita having mean value of 659.68 kcal per capita.

(ii) The probability value of the 'Z' test has been 6.57 which are significant at 5% level. This implies that PDS contribution on per capita calorie intake plays a significant role on the household food security status.

6.B.(ii) Regression Analysis:

(i) The findings of the model reveal that the 'F' value has been 10.373 indicating that the model was significant at 5% level. The adjusted R^2 value is 21.8%.

(ii) The independent variable percentage of PDS contribution on per capita calorie intake is significant at 1% level with a positive coefficient of 0.343 which implies that other variables being constant one unit increase in the percentage of PDS contribution on per capita calorie intake increases the household per capita calorie intake by a factor of 0.343 unit.

7. Policy Recommendation:

The present study recommends some suggestions to improve the household food security status of the people of Assam in general and BPL households in particular. These are;

(i) The family size significantly affects the household food security status and it shows the negative relation between food security and family size. The study recommends to give serious attention to control the population growth in the study area. This can be achieved by creating sufficient awareness on effective voluntary family planning in the study area.

(ii) The study also finds that the age of the household head has the negative relation with the household food security status. Therefore the study recommends to the concerned State Governments as well as Local Self Governments to augment some deliberate measures like training, adult education, special grants to the older households heads for their capacity building.

(iii) The study also reveals that income of the household has positive connection with the household food security status. The study recommends providing wider employment opportunities to the BPL households and also providing

some special assistance to the rural as well as urban BPL marginal farmers, artisans etc. so that their income level increases which will ultimately improve their food security status.

(iv) It is also found that female headed BPL households are more vulnerable so far as the household food security is concerned. So various food supplementing schemes as well as special self employment schemes should be launched by the government for women, especially for female headed household heads of the BPL households.

(v) Education has the significant role on the household food security status. More the household head is educated, the higher will be the probability of family member becoming familiar with the importance of balance diet. So the study recommends to strengthen both formal and informal education, and providing vocational and skill training to the BPL households for increasing income level which ultimately improves food security status in the study area.

(vi) There is lack of occupational diversification among the sample BPL households in the study area. So, the study recommends a strong implementation of wage employment generation schemes as well as Food for Work programmes in the study area to improve the household food security status.

(vii) The present study finds that although the entire sample household are under BPL category, still 40.6 percent (203 nos) households don't have BPL card. This shows an error of inclusion as well as exclusion in regard to the distribution of BPL card. So, the present study recommends relooking at the identification process of BPL households so that the deserved beneficiaries can get the BPL card by which they can improve their food security status.

(viii) It has been also found that the items distributed under PDS system are not sufficient for the sample BPL households in the study area as well as not regularly distributed. So the study suggests that special measures have to be taken by the Food and Civil Suppliers Department so that these PDS items are

regularly received by the beneficiaries especially by the BPL households in the study area.

(ix) It has been also found that the food security status based on HDDS is very low in the present study. So it signifies that maximum calorie requirements have been fulfilled by cereals and pulses which ultimately cause nutritional insecurity of the people. So the present study recommends to widen the PDS net by covering some other nutritional foods such as fruits, milk products etc. for the beneficiaries, especially for the BPL households so that they can achieve the nutritional security along with food security. In this regard, it is very much necessary to organize some awareness programmes about the importance of balance diet in the remote areas.

(x) It is also found that most of the sample BPL households are unaware of the provision of PDS system, due to which often lower amount of items have been distributed than the actual allotment. So the study recommends that PDS items should be delivered directly to the beneficiaries so that the leakage of these items can be eliminate.

(xi) The role of Panchayati Raj Institutions (PRIs) is very important in the identification of beneficiaries as well as distribution of PDS items. Here it has been found that the role of PRIs is not satisfactory. So the study recommends ensuring an active and effective role of PRIs in monitoring and functioning of the FPS.

(xii) It has been also found that most of the sample BPL households are not satisfied with the performance of the FPS dealers as well as the functioning of the PDS. Although some complains were launched by the sample beneficiaries, not a single complains have been met up. So the present study recommends a strong grievance redressal mechanism as well as enactment of strong laws to tackle these malfunctioning of PDS.

8. Conclusion:

The present study wants to conclude that there has been acute food insecurity among the sample BPL households of the study area both in terms of quantity as well as quality. More than two third of the sample BPL households are food insecure in the study area. This situation has been further deteriorated off in regard to dietary diversity vis-à-vis nutritional security. In this regard, the performance of Public Distribution System (PDS), as a flagship programme of the Government of India towards ensuring food security is not satisfactory as there is no significant difference of food security status of BPL households with and without having BPL card. Solution to the problem of household food security of the BPL households depends on the policies taken outside the household level. So the researcher realised that the concerned Government authorities has to seriously relook its social safety measures such as PDS for ensuring food security and has to follow a 'twin track approach' to tackle the problem of food insecurity by following policies to provide food assistance to reduce hunger on the one hand, and promote income generating avenues for the poor and marginalized sections of the society on the other simultaneously. Only then the goal of achieving food security for all can be attained.

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