Food and nutrition security: A case study in Nagada Village Jajpur District of Odisha

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Abstract

Objectives: To study the Food and nutrition security in Odisha and Contribution of PDS and ICDS for food and nutrition security within the NAGADA village.
Methods/Statistical Analysis: The whole study is based upon descriptive and qualitative in nature. This analysis is based on the source of both primary and secondary data. The main tool for data collections are the interview schedule from the Nagada village (Odisha, India). The interview schedules contained mostly close ended questions, though some open ended and structure questions also administered.
Findings/Result: It is found that most of the people in that village depend on PDS. ICDS scheme is not functioning. For impact of socio-economic parameter on health status, we got education of households, female education, MPCE and casual labors show significant relation, whereas household size display negative and caste &land own do not show any relation with health status.
Application:
Food security is a multidimensional issue that encompasses agriculture, human nutrition, and public health as w ell as economics and governance.
Keywords: Food security, Nutrition, under nutrition, Calories intake, PDS and ICDS.

1. Introduction

Food security is an emerging issue in India in the last two decade because where more than one-third of the population is estimated to be absolutely poor and one-half of all children malnourished in one way or another. Food availability is the necessary condition for food security, likewise food security also necessary condition for nutrition security. Food security means when all people get adequate amount of nutritious food for an active and healthy life [1]. But nutrition security focus adds the aspects of caring practices and health services & healthy environment to this definition and concept. Obviously malnutrition problem is much broader then access to food. According to south enigma, level of malnutrition in Asia is higher than Africa. To curb this malnutrition India has to cover diet diversification, women empowerment, women education, healthy environment, sanitation and hygiene. India has government programmes such as TPDS including AAY, nutrition programmes like mid-day meals, and ICDS to improve food and nutrition security. NREGS and self-employment programmes can also increase right to use to food and nutrition.

Social protection programmes in India helped in improving incomes and providing protection from shocks for the population, particularly the poor. Nutrition is perhaps the most important factor, which affects the health of a person. The body needs a balanced amount of nutrients and energy for its survival and is essential for good health. A balanced diet is desired and it takes into account six different food apparatus which are proteins, fats, carbohydrates, vitamins, minerals, fibers and water. The needs may depend on your gender, your age, your life type, your health conditions and so on. Intakes of energy and nutrients below or in excess of needs for an extended period of time can unfavorably affect health. Malnutrition is a term which covers problems of both under nutrition and over nutrition. At the time of autonomy the country faced two chief nutritional problems – one was the danger of famine and acute hunger due to low agricultural production and lack of appropriate food distribution system, and the other was constant energy deficiency because of low dietary intake mainly due to poverty and low purchasing power. Poor environmental sanitation and lack of access to safe drinking water led to high prevalence of infections; nutrition toll of infections was high because of poor access to health care.

The country initiated multi-sectoral, multi-pronged programmes to combat poverty; simultaneously essential goods and services were provided to people below poverty line at a subsidized cost to improve their nutritional and health status [2].

1.1. Food security in India

Public distribution system in India has come since many decades. In Indian situation, there is frequent natural disasters happening and it results in famines and droughts that cause acute shortage conditions. Government of India took a variety of measures to help the fatalities in which the food security system was initiated. Such attempt was taken up for the first time in 1939 under the British regime when the Second World War started. The government thought of distributing the food grains to the poor of some chosen cities in which there was lack and also a condition where private, unsuccessful to provide commodities at a reasonably priced by the poor. In 1943, after the great Bengal food crisis, this allocation system was expanded to some more cities and towns. Sustained periods of economic stress and disturbance like wars and deprivations gave rise to a form of food security system. At first, it concerned itself mainly with management of scarce food supplies, and afterwards it was found necessary to use a more organized and institutionalized approach including measures suspending normal activities of markets and trade. Such type of food security service existed in India for many years, in the shape of constitutional rationing in particular urban areas and continues to be present even today in a few urban centers. Reports indicate that the development of Public Distribution System in India can be grouped into three time periods that contain; in the primary period, the Public Distribution System was basically visualized as rationing system to distribute the scarce commodities and later it was seen as a Fair price system in contrast with the private trade. Rice and wheat occupied an extremely high share in the food grains distribution. Government was conscious of extending the Public Distribution System to rural areas but it was not implemented. The process of Public Distribution System was unstable and dependent on imports of PL 480 food grains with little internal procurement. In operation, imports constituted main share in the supplies for Public Distribution System during this period. Procurement prices offered were not remunerative. In the middle period of 1960's it was decided to look much beyond management of limited supplies in critical situations. Stoppage of PL 480 imports enforced the government to obtain grains inside. In effect, India took a significant leap in the direction of providing a more sustainable institutional structure for providing food security. FCI and Agricultural Prices Commission (APC) were customary at that time which is now known as Bureau of Agricultural Costs and Prices (BACP) Commission in 1965 marked the commencement of this phase. On the basis of BACP's recommended prices, the FCI procures the food grains to share out through Public Distribution System and a part of the procured quantity is kept as "buffer stocks" to meet any surprising disaster situation. Major components of this system were traditional arrangements and procedures for procurement, stocking and distribution of food grains. The food security system during this period progressed as a very important part of a development strategy to bring about a well-known technological change in selected food crops, especially rice and wheat. It delivered effective price and market support for farmers and organized range of measures to create employment and income for the rural poor in order to improve their level of happiness including better physical and economic access to food grains. In the third phase, there was an increase in the food grains production in the country. The buffer stock buildup too increased greatly.

With this, the initial pressure on buffer stock maintenance and price stabilization shifted to increase in Public Distribution System supplies. In the 4th plan 69-74, it states that "in so far as food grains are concerned the basic objective is to provide an effective Public Distribution System. The procured quantities were in glut as compared to the requirement of Public Distribution System needs and minimum reserve was maintained". In fifth five year plan, programmes such as Food for work and Antyodaya were started with a view to lessen poverty as well as to reduce the overstocking of FCI go downs. The imports slowly degenerated in this period and during the year 1975; there was a net export of food grains though it was a small quantity. Imports were continuous with relatively very less quantities to maintain level of buffer stocks. The government strengthened the Public Distribution System in this period, so that it remained a "stable and permanent feature of strategy to control prices, reduce fluctuations in them and achieve a fair distribution of essential consumer goods". In the end of seventies, the Public Distribution System was essentially confined to urban population and did not promise adequate food to the rural poor in crisis period.

During the late 1970's, and in the beginning of eighties, some state governments extended the coverage of Public Distribution System to rural areas and also introduced the target grouping approach. These states are Kerala, Gujarat, Tamil Nadu, and Andhra Pradesh. This was also because there was an obvious change in the food situation particularly in the later years, during 80's and early 90's. Thus the net availability of food grains which had increased from 74 million tons in 1968 to 99million tons in 1977, witnessed a rapid rise in later years reaching 158 million tons in 1991 [3]. Considering the diversion of food grains in term of difference between the off take that state procure from FCI to be distributed through the chain of fair price shops and the monthly purchase of rice and wheat as a part of consumer expenditure survey, [4] found that the diversion of food grain has increased enormously from 23.9% (1999-200) to almost double at 43.9(2007-08) at an all India level. Based on trend leakages and the amount of PDS purchases, [4] grouped all the state in the category of "functioning" where PDS purchases are relatively high and diversion of grain is not a concern; reviving, where there is marked increase of PDS purchases, starting from a low base, associated with decline in diversion; and languishing, where there is high diversion, low purchases and little improvement over time. Debating on food energy intake being a poor measure of nutritional achievement of a person, [5] argued that nutritional condition of a person depends on access to safe drinking water, health care and environmental hygiene. Anthropometric measure are suggested to assess the level of malnutrition among children and adults as they are substantial gender difference in energy intake as well as interstate difference which signify the intensified forms of malnutrition in certain regions and in specific communities and the biased intra household distribution of nutrients among the family members with the male receiving more nutrient food than female which therefore calls for targeted nutritional intervention programme that need to be formulated to deal with this problem. Radhakrishnan brings out the vicious circle(mother-child-mother) of malnutrition and elaborate that the risk of malnutrition is higher in those children whose mother suffer from chronic energy deficiency while the mother's present nutritional status depend on her own childhood nutritional intakes.

Thus showing that probability of the child falling prey to malnutrition reduces as there is improvement in mother's education, her nutritional status and her ante-natal care visits. Food-for-work programs and improvements in health and environment services are the measures suggested to eradicate malnutrition. In an attempt to measure the food insecurity [6] defined that a state of food insecurity exists when members of a family have an insufficient diet for part or all year round or face the possibility of an inadequate diet in the future. The deviation from the current status of food is based on the assessment of food insecurity risks (pre-harvest security, marketing problems and unemployment), food insecurity insurance (land reforms, improved production technologies, food aid and feeding program and household type (subsistence or marketable surplus).

Government of India set up a working group (1985) to evolve many indicators, to identify poor which include: household size, age, structure and sex rate, type of dwelling house and lighting, educational qualifications, number of earning numbers and employment and occupation (principal and secondary) of the household members, monthly household expenditure, possession of assets like land, livestock and durables, drinking water availability and awareness about sanitations. Apart from the above indicators like value of the assets possessed by the households, imputed cash value of the outputs and income, mortality rates and life expectancy, enrollment of the children in the school and adult literacy in the family, safe drinking water, distance to health center, schools, roads etc., government expenditure on social sector were used to measure the poverty in rural Ethiopia [7-8] suggested some strategies to achieve food security maintaining the existing growth in agricultural production to ensure sustainable availability of food, sustaining productivity and reserve base over the period but keeping the economic cost at minimum, ensuring adequacy of household income through promotion of mere social security measures and providing entitlement to food to vulnerable groups in the society through productive social security measures. While analyzing food security situation in India found that economic access to food could be achieved through a mix of employment and income policies for farm sector [9]. He reiterated that the strategy for reducing poverty and enhanced food security should be based on agricultural development. Based on the consumption pattern, he indicated that about half of the rural consumers and about two third of urban consumers had nutritionally inadequate food consumption levels. In an effort to narrate status of World Food Economy, Douglas Southgate and [10] said that the number of people who on an average do not consume enough dietary energy for normal activity and good health has fallen steadily since the late 1960s.

The two parts of the globe of greatest concern are South Asia and Sub Saharan Africa. After growing as rapidly as the rest of the population during the 1970s, the food security in India and neighboring countries has stabilized. However, progress toward food security continues in absolute and relative terms. In contrast, there is little positive news from south of the Sahara, where the number of food insecure people nearly doubled during the last decade of the twentieth century. Consequently, Sub - Saharan Africa will soon have not just the highest incidence of undernourishment, as it has had since the 1970s, but more food-insecure people than any part of the world, including south Asia, as well. Food and nutrition security in a different way [11]. He says while the challenges involved in ensuring food and nutrition security relate to both the production and distribution of food, inequitable distribution rather than inadequate production is the major factor underlying India's current problem of malnutrition. The inequality cannot be corrected through exercises in tokenism and public programmes but only through creation of assets and support to income generation skills among the poor.

Sen's notion of having the freedom to lead a life we have reason to value [12] can be applied to the right to food – having the freedom to produce, access and consume a nutritious diet. Food insecurity is not equally distributed across social groups or indeed nations, suggesting that not all people have such freedoms. Most modern societies are hierarchical, with economic, social and other health producing resources including food, distributed unequally. Pursuit of food security recognizes the need to redress the unequal distribution of these resources. This relates to empowerment of individuals, communities, and whole countries. Empowerment operates along three interconnected dimensions: material, psychosocial, and political. People need the basic material requisites for a decent life, they need to have control over their lives, and they need voice and participation in decision making processes. The concept of protein requirement for individual [13]. According to them safe level of protein requirement is average requirement plus twice the standard deviation. Individuals eat below this are not malnourished but going in risk of increasing protein deficiency and it will increases as intake fall below the safe level. They assumed that requirement remain constant for individuals… also states that intra-individual variability is nonrandom but represented by autoregressive stochastic process. They proposed at high or low intake the autoregressive regulation breakdown. At high protein, metabolism is altered, become more rapid than before which leads to increase body weight. He concluded that protein deficiency must be defined as failure in the process of statistical control not defined as the assumption requirement should be fixed level will be regarded as protein deficiency.

Intra individual variability is due to genotype individual and the environmental interaction. So it enhances the intra individual variability which stabilization of variance as increased the period of time over data is collected. This strength of this interaction can be measured in terms of the serial correlation coefficient satisfying the degree of auto regulated mechanism [14]. Very close to sukhatme model, seckler proposed a hypothesis that is "small but healthy" the major referent in the SBH hypothesis is to the 'pure chronic' case of mild to moderate EPM, which consists of people who are chronically but not acutely EPM. These are people with low height for age but normal weight for height. They are short but not thin people. Gopalan criticized this hypothesis, he contend that smallness is a form of functional impairment in itself because a small body has less muscle mass and, therefore, less strength and endurance. This argument implies that people who are 'normally' small or, indeed, anyone smaller than anyone else- are functionally impaired [15].

1.2. Objectives of the study
1. Food and nutrition security in Odisha.
2. Contribution of PDS and ICDS for food and nutrition security within the NAGADA village

2. Materials and Methods

The whole study is based upon descriptive and qualitative in nature. Our analysis is based on the source of both primary and secondary data. Data collection based on interview schedule and observation process. The main tool for data collections are the interview schedule from the villagers. The interview schedules contained mostly close ended questions, though some open ended and structured questions also administered. The secondary data include various NSSO round i.e. 55th, 61st, 6th, 68th, and data from Food Corporation of India, economics survey of India.

Model:

1. BMI (body mass index) are used for calculating the nutrition standard. Weight – for – age measurement index is an excellent overall indicator of a population's nutritional health status. Based on weight – for – age measurement index (Z – score) child nutrition status is classified into 3 groups.
2. Severely malnourished (< -3.0 Z-score) = zero
3. Moderately malnourished (-3.0 to -2.01 Z-score) and = one
4. Nourished (≥-2.00 Z-Score) = 2
5. Probit regression wants to show the relation between dependent and independent variable.

Dependent variable is health standard. Independent variables are Education of head of house hold, Female education, Monthly per capita consumption expenditure, Caste –SC or ST, Health care practices and Environment and sanitation. The rest of chapters are organized in following way. Chapter 2 materials and methods, chapter 3 presents results and discussion and chapter 4 discuss about conclusion and some policy implication.

3. Results and Discussion

Article 21 of the Constitution of India provides the right to life to all the citizens of India including the Right to Food. Further, Article 47 of the Constitution, inter alia, provides that the State shall regard raising the level of nutrition and the standard of living of its people and the improvement of public health as among its primary duties. The Universal Declaration of Human Rights and International Convenient on Economic, Social and Cultural Rights, to which India is a signatory, also cast responsibilities on all State parties to recognize the right of everyone to adequate food. Eradicating extreme poverty and hunger is one of the goals under the Millennium Development Goals of the United Nations.
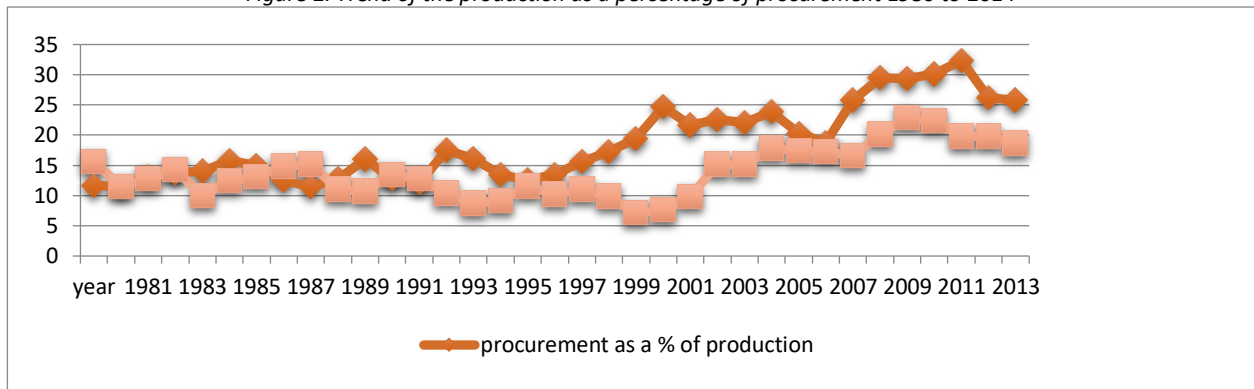
Figure 1. Procurement and public distribution of food grains
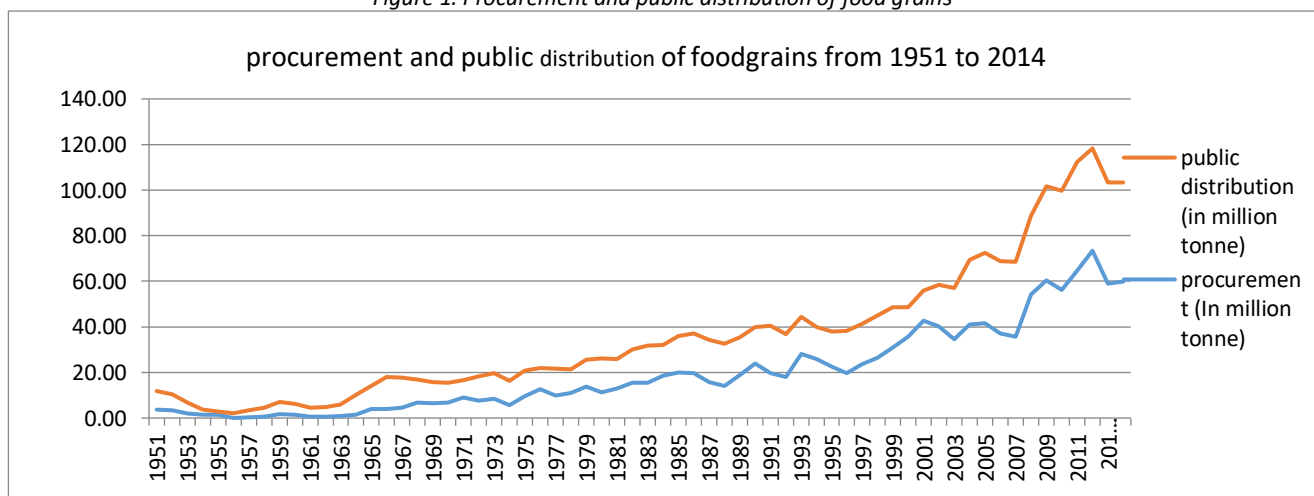
Source: Author's calculation

The Figure 1 presents procurement and public distribution of food grains. From 1951 to 1966 there was a flatter shape of both procurement and public distribution system. Then after 1966 or green revolution both are increasing sharply due higher productivity and various government policies by different government , transparency and better distribution of food grains through PDS. Government is buyer of last resort and due to rising MSPs, government most of the time becomes preferred customers to farmers. In past few years government is buying about a third of total food grain production. New Food Security Act changes the situation dramatically. Previously, government had to distribute subsidized food grains only to below poverty line people and those covered under Antyodaya Anna Yojna (about 2.5 crore families). But now government is committed to provide food to 50% of urban and 75% of rural population at even higher subsidy. Act is expected to Increase procurement significantly. The procurement of food grains increased from 3.80 to 59.80 i.e. increased 93.64%, similarly public distribution system also increases 81.60%.

Figure 2. Trend of the production as a percentage of procurement 1980 to 2014

Source: Author's calculation

The Figure 2 shows that production fluctuating in trend of increasing and decreasing with a small range. According to data there is a sharp fall in production of food grains i.e. 30 million tons in 2003. From the data procurement as production increased from 11.67(1980) to 25.73(2014). This reflects the efficiency of govt. to build enough food grains stock to meet during unforeseen situation. Unfortunately, distribution does not increase in the same proportion as procurement of production. In 1980 distribution from total production was 15.63% but it increased to 18.72%. This shows the govt. role to boost the public distribution system, which could be reached to the needy or priority household.

Figure 3. Trend in the number of blocks covered by ICDS (1975-2009)
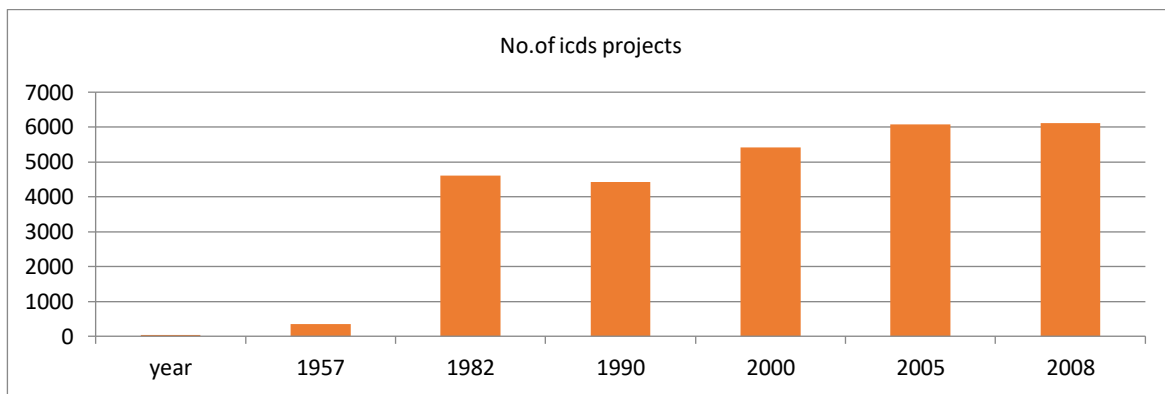
Source: Ministry of Women and Child Development

The ICDS programme has grown rapidly, especially in recent years. It started on an experimental basis in 33 development blocks in 1975. Today, 35 years later, it covers about 90 per cent of all blocks in the country. Between 1975 and 1997, ICDS, which was launched in 33 blocks (Projects) (each block covers a population of 1, 00,000 and has on an average 115 AWC), was expanded to 5,652 projects (4,533 rural, 759 tribal and 360 urban projects) till the end of the Ninth Plan. The implementation of the Scheme continued in the Tenth Plan period within the existing 5,652 projects, with no expansion activity due to resource constraint. The ICDS scheme has since been expanded twice— in 2005-06 and 2006-07. The ICDS scheme was expanded in 2005-06 as all states/UTs were required to furnish their requirements of additional projects and/or AWC within the existing population norms of the scheme (i.e. one AWC per 1,000 populations in rural/urban areas and 700 population in tribal areas) to comply with the directions of the Supreme Court and to implement the National Common Minimum programme (NCMP), 2004 (for the universalization of ICDS) of the government. Based on the requirements received from the states/UTs, in the first phase of expansion, 466 additional projects and 1.88 lakh AWC were sanctioned.

1. PDS, ICDS and the Nagada village

This chapter shows the demographic profile of study area which indicates issue on around access to resources and utilization and sufficiency in allocating food and nutritional security the main focus of this study is to know the functioning of public distribution system and integrated child development service in study village, how they are benefited from these two schemes. Primary data collected from NAGADA village which is situated in Jajpur district of Odisha. Which is constituted of 82 households. Jajpur is a district of Odisha. It was the capital of Odisha (during Kalinga kingdom). Now it is became archeological spot like place of Goddess biraja,Yajnavaraha(incarnation of lord Vishnu as white boar), saptamutruka(group of mother Goddess) and other holy figure are located along the river like Baitarani, Ashokajhar, chandikhola, gokarnika, krushnamangala, Udayagiri, Ratnagiri these are some visitor destination. There are some places affluent in natural recourses and minerals. In Jajpur financial system based on manufacturing outcome. Currently six big steel plant operating like Jindal stainless limited, neelanchalispatnigam limited, VISA steel, TATA steel and others(on their way to start production). According to 2011 census it has population of 1,826,75 which is almost equal to the US state of "NABRASKA" and population density of 630/sq. km. literacy rate is 80.49 higher than the state average. Jajpur has a sex ratio of 972 female for every 1000 male.

2. Demographic and socio-economic profile of study village

The study was held in Nagada village in chingudiapal Panchayat of kaliapani block in Jajpur district of Odisha. The village is dominated by juanga tribe. The following section focusing on the demographic details of study area in terms of sex, religion, marital status, education and family. This is a population study of Nagada village.

Table 1. Socio- economic profile

No. of household	82
No.of people in the village	476
Male	226
Female	250
Sex ratio	1106
Average family size	5.8
People in the working age group	160
Child population in the age group of 0-6 years	127
Literacy rate	2.10%
Religion	Hindu
Ration card holding	
Priority card	74
AAY	6
Total	80
Occupational details	
Agriculture	30
Causal	70
Self employed	40
private	20
Total	160
Marital status	
Married	294
Unmarried	179
widow	3
Social group	
ST	71
OBC	3
SC	8
total	82

Source: Author's calculation

Table 1 presents the socio-economic profile of the village. For the distribution of ration cards it is observed that 2 out of 82 household did not have ration card and they are belonged to ST category as they are entitled to get. Among 82 households 6 households had priority card and most of house hold s are coming under the AAYcategoryi.e.74 households. But in term of food security act all households are eligible for AAY scheme. Due to faulty inspection some households are deprived and some are transfer to other schemes (priority).

Table 2. Category wise commodity possesses

1	Category	Quantity
	AAY	35 kg / per card
	PS	5 kg/ per member
2	AAY	0
	PS	5 kg/ per member

Source: Author's calculation

The Table 2 discusses about Antodaya Anna Yojana(AAY)and Priority sector(PS). In some states there are two types of priority holder are there i.e priority with sugar and without sugar. But in Odisha it only priority holder are there. It is very astonished that the households are completely unaware about their entitlement of food grains they have to get from ration shop. They also don't know about the timing of distribution of grains in ration shop, opening and closing of ration shop. The ration shop is far from the village, it is near about 5-6 km .sometimes villagers return home with empty handed because of unavailable of food grains. Due to unaware of opening of shop some card holder are deprived of getting grains for some month. Some households pointed out that ration shop dealers opened shop as per his convenience. So card holder is not get sufficient time to get their right. As per the monthly per capita consumption expenditure among social group is study to display the condition and disperse of social group households. It is observed from the table around 87% of population in St Category has expenditure level 1100 or less per month. Similarly same condition of SC category, majority households are not crossing the rupees 1300 per month. Somehow OBC category relatively better position than other social group.

Table 3. Social group wise MPCE classes

MPCE CLASSES	ST	SC	OBC	TOTAL
300-500	2	1	0	3
500-700	22	1	0	23
700-900	14	3	1	18
900-1100	24	2	0	26
1100-1300	9		1	10
Above 1300		1	1	2
Total	71	8	3	82

Source: Author's calculation

Table 4. Contribution of PDS to total consumption

MPCE CLASSE	frequency	Kgs of rice and wheat to total consumption (%)	Per individual rice and wheat (in kgs)
300-500	3	79.56	19.22
500-700	23	75.32	25.25
700-900	18	78.66	24.66
900-1100	26	72	19.78
1100-1300	10	67.12	15.82
Above 1300	2	65.5	14.59
Total	82	73.02	19.88

Source: Authors calculation

The Table 3 indicate that access of public distribution system, quantity of food grains (rice and wheat) purchase from ration shop and its contribution to the total consumption. As we know the biggest scheme for assuring food security to the vulnerable/marginalized section of the society or maintain equality in terms of food security is public distribution system. The table displays how PDS contributes to total consumption as per MPCE class wise. Table 4 presents PDS contribute 73.02% of consumption of rice and wheat from total consumption and average consumption of rice and wheat is 19.88.

Table 5. Calorie consumption by MPCE classes

MPCE CLASSE	frequency	Calories consumption
300-500	3	525
500-700	23	678
700-900	18	752
900-1100	26	964
1100-1300	10	1312
Above 1300	2	1389
Total	82	936

Source: Author's calculation

The Table 5 shows the calorie consumption by MPCE classes. It displays as monthly per capita consumption of house hold increases calorie level also increases smoothly. This is validating the argument made i.e. increase calorie consumption as the per capita income increases. The calorie shows a particular trend as MPCE increases. There are very few households are coming under highest calories consumption basket in the village i.e. 1389. So most of the households have calorie intake levels much below the specified norms i.e. 2200 calorie per day per capita in rural areas. As per calorie intake if a person meet the specified norms will be considered as above poverty line. So in Nagada village all households are poorest of poor.

Table 6. Social group wise calories consumption

Caste	frequency	Calories consumption
ST	71	859
SC	8	912
OBC	3	990

Source: Author's calculation

The Table 6 calculates social group wise calories consumption. It is observed that intake of calories is higher in OBC categories i.e 990 followed by SC which intake was 912 and least one was ST category i.e 859 calories in an average. We can states that lower calorie consumption by ST group households due to higher portion of households are coming under lower MPCE class [16] also argue same.

Table 7. Average purchase of food grains by card holder from PDS and market

Type of card	Only from PDS	From market	Total
Priority	18.56	38.78	57.34
AAY	32	25	57
No card		65	65
total	38.52	42.92	81.44

Source: Author's calculation

The Table 7 shows that average purchase of food grains by different type of card holder from PDS and market. This shows that priority was getting 18.56 of grains in an average which is lower than allotment norms. So they are not getting their full quota. Some house hold claimed that due to less quantity of grains available in the ration shop, dealer cut their full quota. But in case of AAY card holder are getting comparatively more grains than priority household i.e. 32. So contribution of PDS for AAY card holder is greater than any other card holder. Due to insufficient of food grains for priority household to meet their day to day consumption, they buy relatively more amount of grains from market than AAY card holder.

Table 8. Social group wise purchase of grains from PDS and market

Caste	Only from PDS	Only from market	Total
ST	22.58	37.25	59.8
SC	19.18	35.45	54.6
OBC	14.35	42.89	57.2

Source: Author's calculation

Table 8 calculates the purchase of food grains from market and PDS as per social group wise. It is observed that ST household purchase more amount of grains from PDS i.e. 22.58 and 37.25 kg from open market .OBC households in an average purchase least from PDS i.e. 14.35 but more amounts of grains 42.89kg from open market which is higher than other two social groups. For SC household share of food grains to total consumption from PDS was 19.18 and 35.45 from open market. This clearly shows that the dependency of village population on the public distribution system without regard of social category.

Table 9. Sufficiency of food grains among social group

Sl. no	Caste	Sufficiency of grains		Total
		Yes	No	
1	ST	8	61	69
2	SC	2	6	8
3	OBC		3	3
4	Total	10	70	80

Source: Author's calculation

From the Table 9 it can be concluded that households in the ST category 61 out of 67 households said food grains that are allotted in PDS is not sufficient for meeting their family needs. Similarly, 6 out of 8 households in the SC category pointed out the same problem. The main problem as experienced was, due to large family size and concentration of rice only for their consumption.

Table 10. Cash transfer by social group

Sl. No.	Caste	Cash transfer by social group		Total
		Yes	No	
1	ST	10	59	69
2	SC	5	3	8
3	OBC	1	2	3
4	Total	16	64	80

Source: Author's calculation

Table 11. Amount of cash required by households

Sl no	Amount of cash (Rs)	Percentage	Cumulative percentage
1	300 to 500	4	4
2	500 o above	96	100
	Total	100	

Source: Author's calculation

In the Table 10 and 11, 59 out of 69 households from the ST category were inclination of cash transfer instead of food grains. Similar case also happens for SC and OBC category for denied of cash transfer. Around 4% household felt that they required 300-500 of cash for extra food requirement for their family members. And 96% felt, they need 500 or above money for their betterment of their family in terms of food and nutrition security.

Table 12. Benefit from PDS and ICDS by social group wise

| Sl no | Caste | Benefit from PDS and ICDS scheme | | Total |
		Yes	No	
1	SC	45	24	69
2	ST	4	4	8
3	OBC	1	2	3
4	Total	50	30	80

Source: Author's calculation

Table 12 presents the benefit received from PDS and ICDS by social group wise. It is observed that 45 households are benefited out of 69 households and 24 felt that their condition not changed by ICDS and PDS in ST category. Some household claimed that the chhatua (baby food) provided in Anganwadi center was not good for health. In terms of benefit received from PDS and ICDS, they thought only rice and wheat will not increase the health condition. They expect more nutritious food should be provided by the Govt.

Table 13. Nutritional status of children between 0-6 years

Sl. No.	Nutritional status(z score)	Number of children 0-6 years
1	Nourished(>= -2sd)	22
2	Moderately undernourished(-3 to -2sd)	45
3	Severely undernourished(<-3 sd)	60

Source: Author's calculation

Different methods are used for dietary condition of children flanked by 0-6 years of age group such as (I) biochemical measurement, (ii) anthropometric and (iii) clinical nutritional. However anthropometric dimensions, for example, body aspect, composition and arrangements are rarely utilized as apparatus for determining the degree along with harshness of undernourishment. The anthropometric measure of the weight-for-age is an outstanding pointer for the status of malnutrition of population. Despite the fact that weight-for-age is the composition of height-for age as well as weight –for height, the present study has only taken weight-for age rather than height-for age. Again weight –for –height has to measure the child undernourishment condition. Child nourishment status is classified in 3 groups in weight-for-age index of anthropometric (i.e. Z- score) such as: severely undernourished (< -3.0 Z-score) = 0• moderately undernourished (-3.0 to -2.01 Z-score) and= 1• Nourished (≥-2.00 Z-Score) = 2. I found that 47.24% (60 out of 127) of children are severely undernourished. Very few are nourished i.e 22 children as shown in Table 13 and 14.

Table 14. Result of probit model

Explanatory variable	Coefficient	Standard error	Z value	P value
Constant	0.028	0.397	0.07	0.017
Education of household head	0.071	0.018	3.94	0.026
Female education	0.089	0.054	1.64	0.034
MPCE	0.336	0.123	2.73	0.048
Household size	-0.006	0.034	-0.17	0
Caste	0	0	0	0
Health care practices	0.052	0.019	2.73	0.033
Land own	0	0	0	0
Casual labor	0.031	0.009	3.44	0.049
Number of observation 476		pro>chi^2 0.000		
LR chi^2 168.45				
Psedo R^2 0.095				
At 5% level of significance				
Dependent variable is health status (1=increase 0-decrease				

Source: Author's calculation

Health status: This is the binary response variable predicted by the model.

Coefficient: These are the coefficient of regression, the predicted probability of increase or decrease of health status can be calculated by using this coefficient.

Education of household: The coefficient of EDU of HH is 0.071. This means that an increase in education of households increase the predicted health status.

Female education: This also plays an important role an increase the health status. The coefficient of female education is 0.089 which is significant.

MPCE: Monthly per capita consumption expenditure is significant for the increase of health status. It coefficient is 0.336.

HH size: The coefficient value of this variable is negative means as family size increases it affect the health status of member of the family negatively.

Caste and land own: These two variables do not show any significant for the increase or decrease of health status of individual. This means house hold have more land capacity also lack in health improvement.

Casual labor: The coefficient of casual labor is 0.031 whish display significant relation with the health standard of house hold.

4   Conclusion and policy implication

Analyzing secondary data we can conclude that in terms of access and utilization of rice and wheat under public distribution system, shows rice consuming states are better position than the wheat consuming states [4] argue same. Primary data has been collected with the help of structured questionnaire which is primarily designed to look out the role of public distribution system and integrated child development service functioning in the Nagada village. How it is contribute to the improvement of nutrition status of children. A total of 82 household surveyed in the Nagada village. Most of the households have ration card. Only 2 households don't have, due to faulty inspection of govt. official. People in the village are unaware about the different type of govt. scheme and there benefit. Monthly per capita expenditure of household is very low. Even though a significant casual labour is there, they are mostly temporary nature. So no govt. security and their income are too low for the expenses of household Public distribution system plays an important role for assuring food security to the households. Which contribute 73%of total consumption? As monthly percapita increase calories intake also increase smoothly. Calorie intake is higher in OBC category than other two categories. SC and ST social groups depends more on PDS for food grains than OBC category. Majority of the household claimed that food grains provided by PDS are not sufficient to meet their family need. Most of households want food grains instead of cash. ICDS service is totally unavailable in that village. 47% of children between the age group of 0-6 years are severely malnourished Implementation of all the development projects under Tribal Sub-plan scheme and Juang Development sub-plan scheme and food security programme, ICDS scheme and various activities under Agricultural and Horticultural scheme will no doubt enhance their livelihood and capacity to survive and grow more to compete with modern world. Responsibility must be fixed on the officials responsible for implementation and monitoring of development projects and food security programme in this Gram Panchayat. Priority must be given for ensuring road connectivity to the village. Due to lack of road facility, the Govt. Facilities/schemes/programs could not reach to the beneficiaries in the village.

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