



ROLE AND PERFORMANCE OF PUBLIC DISTRIBUTION SYSTEM ON HOUSEHOLD FOOD CONSUMPTION IN ODISHA, INDIA

Kishore Kumar Takri^{1*}, Manesh Choubey²

¹Doctoral Fellow, ²Professor, Department of Economics, Sikkim University, Gangtok, 737102(Sikkim)

*Corresponding Author

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ABSTRACT

The Public Distribution System (PDS) in India is the largest distribution network in the world. Odisha is one of the most backward states in India where the food security status of most of the households are appalling. The present study attempted to examine the association between household quantity consumption of food items from PDS and Non-PDS sources by using the data of National Sample Survey Organization (NSSO). It has been shown that there is a significant difference in quantity consumption between PDS and non-PDS sources of food items, while the household consumption of food grains from non-PDS sources is higher than the PDS sources. On the other side the PDS systems have a positive impact on household food consumption. But still, complete food security has not been provided to the beneficiary's families as they were more dependent on non-PDS sources. In this study the rural households were found to have a major share in PDS consumption of rice which was about 54.4% where as urban sectors share which was about 17.9% only. On the other hand, lower Monthly Per Capita Consumption expenditure (MPCE) households have the highest average quantity consumption of PDS sources and the quantity of consumption has been declining with the increase of the households MPCE.

KEYWORDS: PDS, Non-PDS, Household Food Consumption, Odisha.

1. INTRODUCTION

The Public Distribution System (PDS) in India is the largest distribution network in the world. The PDS was introduced during the Second World War as a measure of public rationing in wartime. Before the 1960s, distribution through the PDS was generally dependent on food imports. The system was expanded in the 1960s due to the current food shortages. Subsequently, the Indian government established the Agricultural Price Commission and the Food Corporation of India to improve the domestic food supply and to maintain the buffer stock for PDS. The PDS had become a universal subsidized food distribution system in 19970s. In the 1990s, the program was revised to improve access to food for people in hilly, remote, and inaccessible areas where a significant portion of the poor lived. A restructured Targeted Public Distribution System (TPDS) was launched in 1997, under which households were classified as Above Poverty Line (APL) or Below Poverty Line (BPL), based on the economic status of householders. While BPL households have continued to receive subsidized foodgrains through TPDS, the subsidies for APL households have gradually been phased out. The Government of India also introduced the Antyodaya Anna Yojana (AAY) in December 2000 to provide highly subsidized food to millions of the poorest families, and the Annapurna Yojna in 2001 for those persons not enlisted for the National Old Age Pension Scheme (NOAPS) who are entitled to receive 10 kg of foodgrains (6 kg of wheat + 4 kg of rice) per month free of cost as a Food Security measure. Eligible households are given a ration card that entitled them to buy fixed rations of selected commodities.

The products are offered through a network of shops at a fair price (FPS). The main products distributed via FPS are wheat, rice, sugar, and kerosene, which are supplied to rural and urban populations. Surpluses of foodgrains generated by increasing crop yields are also managed through the Food Corporation of India (FCI), which was established under the Food Corporation Act 1964. The FCI procures foodgrains under its minimum support prices (MSP) systems and levy schemes, and stores, preserves and maintains PDS food stocks, while supplying foodgrains to the States/Union Territories, by the broad national policy on food security. The PDS can therefore be regarded as one of the most important and stable elements of food policy, in India's fight against hunger and poverty. The main objectives of the PDS system are threefold: (a) to provide foodgrains to the poor at affordable prices; (b) to support farmers by purchasing foodgrain stocks from them at reasonable prices, and (c) to maintain national food security by holding stockpiles of food grains for the future.

Odisha is one of the most backward states in the country where the food security status of the people, especially Scheduled Tribes (ST) and Scheduled Castes (SC) are appalling. There are 45 percent of the geographical area of Odisha has been declared as a scheduled area. According to the report of the Planning Commission (2008), the incidence of poverty among ST and SC was 46.4 percent compared to 27.5 percent of the national population of ST, SC are poor in both rural and urban areas. However official poverty line figures, 17.29% of the urban population and 35.69% of the rural



population were poor in 2011-12 (Planning Commission, 2013).

The India State Hunger Index, 2008, reports that Odisha is suffering from "alarming" levels of hunger (Menon et al., 2009). High levels of food insecurity are manifested in the form of higher mortality and malnutrition, particularly among ST and SC people. Against the overall 43 percent of the children being highly underweight in the state, the share of the ST and SC was found to be much at 59 percent and 59.4 percent respectively (World Food Program & Institute for Human Development, 2008). In rural areas, the incidence of poverty among STs was the highest in Odisha was 46.4 percent. As per the Planning Commission of Government of India, 32.6 percent of the population lives BPL line in Odisha and 52 percent population of the state were dependent on the PDS for rice consumption (Planning Commission 2011-12). The per capita income in Odisha is one of the lowest among 17 major states (Food Security Atlas of Rural Odisha, 2008). Besides all these food insecurities, Odisha is facing chronic poverty and the state has been placed in the category of the "severely food insecure" regions. For this reason, the PDS was set up to provide the poor and vulnerable parts of society with certain essential products for daily use at subsidized prices. This system, in turn, will stabilize the market price of various essential goods, the availability of food crops and distributive justice.

2. LITERATURE REVIEW

The present paper associated with some important article and government reports. Following are some important and relevant studies have been reviewed in this regard. Some of the study has been found that PDS has a positive impact in Bihar, Tamilnadu, Maharashtra and Andhra Pradesh i.e (Kumar et al. 2016, Arora 2013, Chandanshiv 2013, Jha 2013, Sawant 2013). In the same way in Odisha, there has been seen significant improvement in the implementation of the PDS between 2004 and 2010 (Khera 2011b; 2011c). But the people Odisha still they are facing food insecurity and malnutrition due to less attention to conduct quality research in the field of food security. Kumar et al. (2015) documented the success of the PDS to tackle the double problem of poverty and malnutrition. However, there has been a positive and significant impact of PDS on food security and nutritional intake (Kumar et al., 2012; 2017). In the same way in Odisha, there has been seen significant improvement in the implementation of the PDS between 2004 and 2010 (Khera 2011b; 2011c). The PDS system is having a significant impact on malnutrition in India by household per capita consumption of calories and proteins, where the efficiency has a different effect on different regions in the country (Jha et al., 2010). In another comparative study on PDS by the same authors (Jha et al., 2013) based on factors such as food subsidies, income transfer, and poor participation, the program was not targeted and the poor benefited from subsidies. Radhakrishna et al. (1997) noted that the PDS welfare gains in income transfer were very low and that the impact on poverty and nutrition was also low. The ineffectiveness of PDS is existing due to the corruptions are occurring in the black market (Jha and Ramaswami, 2010). Ahluwalia (1993) investigated PDS issues that revealed that about one-third of the food grains and sugar and more than half

of the edible oil that feeds the PDS are exiting the program. Parappurathu et al. (2015) showed that the households with access to PDS have a greater dietary diversity score. FPS's are the most easily available source of food grains, especially for rural beneficiaries (Balasubramanian, 2015). The impact of the PDS and the elasticity of income transfers do not correspond to the amount of money transferred to non-food items (Dreze 2010, Khera 2011a). There is a positive impact on food security on population, where government expenditure on rural development maintains as a macro variable (Applanaidua et al. 2014). The National Food Security Act (2013) focuses primarily on ensuring food security through the expansion of PDS. However, to what extent this would lead to food security depends on how families respond to the availability of cheap grain. For instance, families that depend on PDS for buying cheap cereals save money to buy other nutritious foods like milk, fruit, nuts, and perhaps eggs and meat (Bhargava, 2014). This should significantly improve the income diversification opportunities of rural households by an optimum combination of interventions to enhance food security Abafita and Kim (2014). Rahman (2016) has found that the calorie intake and food security have improved by PDS through food subsidies and the PDS system has a positive impact on households' nutritional intake. The availability of food followed by the food accessibility a study has been done in rural household's food security of 20 regions from Africa and Asea (Bashir and Schilizzi, 2013). Prosekov and Ivanova (2018) have studied that hunger does not occur as a consequence of food grain limitation but due to the scarcity of income sources of households in most of the developing countries making food products inaccessible for a large number of households.

3. HYPOTHESES OF THE STUDY

1. There is no significant difference in quantity consumption between PDS and Non-PDS sources.
2. There is no significant association between PDS and household food consumption.

4. METHODOLOGY

In this study, the data has been used of household consumer expenditure surveys corresponding to household quantity consumption in which improved governance and expansion of the PDS could be adequately captured. The data has been used from the level and pattern of consumer expenditure of Odisha based on state sample data of the 68th round conducted by the National Sample Survey Organisation (NSSO). The household data is based on quantity consumed of PDS items, quantity consumption from other than PDS, and consumer expenditure values on sources of food items which has been taken from the NSSO survey data under the 68th round covering in the year 2011-2012.

4.1 Methods Used

In this paper we have used independent t test and linear regression to determine the impact of PDS items on household food consumption. The independent t test has been used to know the contribution of PDS sources and Non-PDS sources to total household consumption. In this test dependent variables are quantity consumption of food items such as quantity from



PDS and quantity from another source. Secondly, a linear regression model has been run to test the significance level between PDS items and households overall food consumption. In this model-independent variable are the sources of the quantity of food consumption while the dependent variable is the total quantity consumption of foods. Based on the above explanation we have specified the following equation as:

$$TQC = \alpha + \beta_1 PDS_BPL/AAY + \beta_2 OTHER_PDS + \beta_3 NON_PD + UI$$

Where,
 TQC = Total Household Quantity Consumption of food grains
 PDS_BPL/AAY = Quantity Consumption by BPL/AAY Card Holder Only
 OTHER_PDS = Quantity Consumption by other PDS Beneficiaries

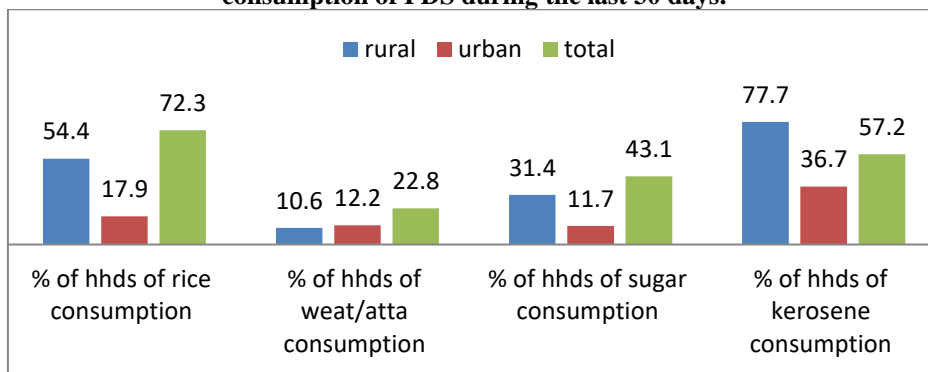
NON_PDS = Quantity Consumption from Non_PDS Sources

5. RESULTS AND DISCUSSION

5.1 Descriptive Statistics

Odisha is one of the predominant states of India in rice consumption (Figure No. 1). The percentage of PDS rice consumption of households in 2011-2012 was about 54.4% in the rural sector and about 17.9% in the urban sector. The PDS items consumption percentage in all items in the rural sector has consumed more as compare to the urban sector. Kerosene and rice have been consumed in the highest percentage of households in the rural sector of Odisha. As per this data, the rice consumption in both rural and urban sectors in Odisha is highest as compared to wheat/atta consumption.

Figure 1: Rural and urban household’s difference in the percentage of share in rice, wheat/atta, sugar, and kerosene consumption of PDS during the last 30 days.

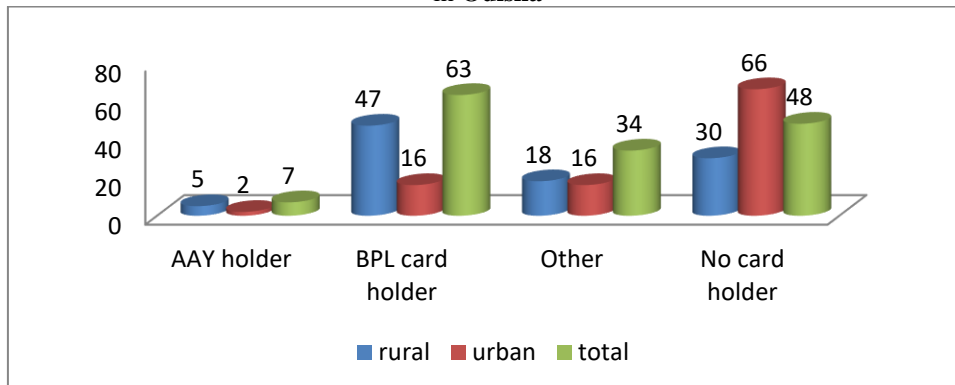


Sources: NSSO report 68 round 2011-12

In the rural area, ration card possession is higher as compared to an urban area (Figure No. 2). Around 47% of households possess BPL ration cards in the rural sector Odisha which is higher than in the urban sector, BPL households have possessed the highest number of PDS ration cards (63%) as compared to other beneficiaries. The lowest ration card holders are AAY, where only 7% of households have possessed the AAY PDS

ration card. Out of 7% of AAY cardholders, 5% of households are from the rural sector and only 2% have possessed in the urban sector. There are about 34% of households are other PDS beneficiaries. As per, this report there are about 48% of households have no ration card out of which 66% in the urban sector and 30% in the rural sector of households.

Figure 2: Percentage distribution of households in a different type of ration card possessed in both rural and urban sector in Odisha



Sources: NSSO report 68 round 2011-12



Table 1: Per 1000 distribution of rural households of different social groups by type of ration card possessed in Rural Odisha

Social Group	AAV	BPL	Other	No. ration card	All
ST	46	598	76	281	1000
SC	59	539	151	251	1000
OBC	58	412	205	325	1000
Others	52	319	298	331	1000
All Odisha	54	469	177	300	1000

Sources: NSSO report 68 round 2011-12

Table 2: Monthly household consumption of rice, wheat/attack and sugar from PDS and Other Sources in the study area of Odisha

Deciles class of MPCE	Quantity Consumed (0.00Kg)			
	BPL/AAV	Other PDS Households	From Other Sources	Total Consumption
1	22.3	2.28	29.52	54.1
2	27.57	1.29	32.27	61.12
3	20.54	3.03	31.9	55.48
4	18.53	1.61	36.14	56.29
5	15.94	1.7	43.19	60.82
6	17.47	1.36	38.62	57.46
7	12.89	1.08	37.65	51.62
8	9.04	1.77	41.47	52.29
9	9.91	0.82	40.41	51.13
10	6.08	0.32	41.22	47.64
11	5	0.41	40.22	45.62
12	1.51	0.46	35.15	37.12

Sources: State sample data of 68th round NSSO (2011-12), Odisha

In rural Odisha, the entire social group has possessed low Antyodaya ration card which is on 54 (5.4%) out of 1000 sample households (Table No.1). There was the highest number of BPL card holders out of 1000 sample households in Odisha which is 59.8% ST, 53.9% SC, and 41.2% OBC, wherein all Odisha there was 46.9% BPL households out of 1000 sample households. There were only 30% of households have not possessed ration cards according to this data. There were about 33% other categories households have no ration card out of 1000 sample households, where 32% BPL cardholders, 30% other cardholders and only 5% are AAY cardholders.

As per above Table No.2 average monthly household quantity consumption of rice, wheat/attack, and sugar from PDS and other sources in both rural and urban sector of Odisha has classified according to their monthly per capita consumption expenditure (MPCE). The MPCE of this table has arranged in deciles classes by the NSSO report. According to this report the household total quantity consumption has derived from both PDS source and other sources. From the PDS sources, BPL/AAV households are attributing the highest quantity to total quantity consumption as compare to other PDS households. But maximum households are more dependent on other sources for food quantity consumption as compare to PDS sources. As per this MPCE deciles class, lower MPCE households have the highest average quantity consumption of PDS sources and the quantity of consumption has been

declining with the increase of the households MPCE. On the other hand, the quantity consumption of Non-PDS sources has increased with the increase in household MPCE.

5.2 Econometric Analysis

However, as per the result of regression analysis, there is a positive association between total quantity consumption and the sources of food items that are attributing to total quantity consumption (Table No-3). As per the R square, the independent variables are 96% explaining to the outcome variable and the f test p value 0.000 which indicate that the data is fit well for this model. Out of these three variables, the quantity consumption from PDS (BPL/AAV) and quantity consumption from other sources are significantly affecting total quantity consumption, whereas the p-value of other PDS households are not significantly influencing total quantity consumption. As the result we can conclude that the PDS systems have a positive impact on household food security. Yet, complete food security has not been provided as they are more dependent on non-PDS sources.

We also estimated the independent t test to show the difference between PDS and non-PDS food sources. There are significant differences in quantity consumption between PDS and non-PDS sources of food items which influencing total quantity consumption; the households are more consuming from other sources as compare to PDS sources.



Table 3: Role of PDS on Households Food Consumption as compared to Non-PDS Sources

Total_Quant_Con	Coef.	St.Err.	t-value	p-value	Sig
BPL_AAY_hh	.167	.017	9.59	0	***
Other_PDS_hh	.015	.021	0.73	.487	
Con_Other_Sources	.311	.083	3.74	.006	***
R-squared 0.966, F-test 75.970***, Number of Observation 12 P value 0.000					

*** $p < .01$, ** $p < .05$, * $p < .1$

Sources: Authors' estimates

As per the Table No-4, the mean value of PDS sources is only 15, where the mean value of other sources is 37 and the difference between the mean values of these two variables is 22, where the combined mean value is 26.

Table 4: Quantity Consumption of food grains from PDS and Non-PDS Sources

	Obs PDS	Obs Non-PDS	Mean PDS	Mean Non-PDS	dif	St Err	t value	p value
Qunt_Con Food	12	12	15.243	37.313	-22.07	2.732	-8.1	0

Sources: Authors' estimates

6. POLICY SUGGESTIONS AND RECOMMENDATIONS

- In Odisha, most of the PDS beneficiary households are not using kerosene to prepare their food. So kerosene should be excluded from the PDS items and it should be replaced by other food items in order to improve the household's food security.
- The higher MPCE households are not consuming the PDS items as they are selling the PDS items to others. Therefore the government should take the right decision to eliminate such higher MPCE households group as per their income, expenditure, and other socioeconomic status.
- In Odisha, most of the people are consuming rice, so the quantity of rice should be increased and there more food items like pulses and cereals should be included as like in other states such as West Bengal, Sikkim, and Haryana to improve the household's food security.

7. CONCLUSIONS

In this paper attempted to analyze how the PDS has served the quantity consumption of food grains in rural and urban areas according to the ration card possessed by different social groups in Odisha. We also described the household quantity consumption and its percentage of household share in rice, wheat/atta, and sugar consumption of PDS during the last 30 days and type of ration card, and their average quantity and value of average monthly household's consumption of PDS items. We have used an independent t-test and linear regression analysis to explain the outcome of this study. As the result it has been shown that there is a significant difference in quantity consumption between PDS and non-PDS sources of food items, while the household consumption of food grains from non-PDS sources is higher than the PDS sources. On the other side the

PDS systems have a positive impact on household food consumption. But still, complete food consumption has not been provided as they were more dependent on non-PDS sources. The percentage of PDS consumption in the rural area is higher than the urban area, in 2011-2012 about 54.4% in the rural sector were consumed the PDS rice, where only 17.9% in the urban sector. Even in ration card possession rural area is higher as compared to urban area. Around 47% of households possess BPL ration cards in the rural sector of Odisha which is higher than in the urban sector. Only 5% of households are possessing Antyodaya ration cards in the rural sector and 2% in the urban sector. As per the NSSO report of 68th round 2011-12, the highest percentage of no cardholders exist in the urban sector i.e. 66% of households. The study is concluding with above the result that the household food consumption positively influenced by the PDS items but still it has not been provided full food security as most of the households are more dependent on non-PDS sources.

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