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The Impact of MGNREGA on Household Nutritional Security – An Economic Analysis in Tamil Nadu

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ABSTRACT

Mahathma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) is one of the major rural development programmes, which is being implemented in our country since 2006. It has been providing the steady income to the rural households, especially marginal, small famers and agricultural labour, especially during the lean season in agriculture. This paper has attempted to find out the household income, consumption expenditure on food and non-food items and calorie acquisition of the participants and non-participants of NREGS in Tamil Nadu. Further, it has measured the household nutritional security of the rural households and the results revealed that NREGS participants covered more than 85 per cent of the requirement of the average recommended calories per capita per day than NREGS non-participants (76 per cent). Hence, the NREGS participants consumed more calories due to relatively higher purchasing power. This development is due to availability of guaranteed employment and regular wages through NREGS to the rural households.

Keywords : MGNREA, Household, Nutritional Security

I. INTRODUCTION

Food security is an important issue both at national and household level in most of the developing countries and it plays a major role in welfare of the poor and political stability. Food insufficiency causes long-lasting challenges to nutrition, health and social policy (Bickel, et al, 2000, Carlson, et al, 1999). Thus, it has to be defined as at the individual, household, national, regional and global level is achieved when all people at all times have physical and economical access to sufficient safe and nutritious food to meet their dietary needs to active and healthy life. According to the FAO (2003), the number of people suffering from chronic hunger worldwide has increased to 848 million, representing an increase of six million over the base period estimates (1990-92). However, the proportion of hunger during 2003-05 came down to around 16 per cent. The impact of increase in food prices in 2007 has reflected in an increase in the proportion of hunger to 17 per cent (FAO, 2009). Similarly, UNICEF (2006) has noted that about 57 million children under five million are undernourished in India. Thus, it is an important area under Millennium Development Goals to reduce the under nutrition (Jha *et al.*, 2008). According to the National Nutrition Monitoring Bureau, Indian diets are qualitatively deficient in micronutrients due to inadequate intake of vegetables, fruits, pulses and millets (Bamji *et al.*, 2008). It is due to shortage of food availability, food grain production and low purchasing power of the people (Subbarao, 2003). To overcome this problem, government had implemented the direct food subsidy programme like Public Distribution System (PDS) to secure the poor people through direct supply of the essential commodities like rice, wheat, pulses, sugar, edible oil and kerosene to the people at subsidized prices (Reddy *et al*., 1992).

Besides, the food subsidy programme the government has recently implemented the employment programme, viz. the National Rural Employment Guarantee Scheme (NREGS) is one of the important employment generation programmes, which had been implemented from 2006. In 2010, the programme has renamed as Mahathma Gandhi National Rural Employment Guarantee Scheme (MGNREGS). It had covered 200 most backward districts in the country in its first year. Hundred more districts were added in the second year, and from 2008 it had been covered all districts of the country. It aims to enhance the livelihood security of the people in rural areas by guaranteeing hundred days of wage employment in a financial year to a rural household whose members volunteer to do unskilled manual work (Chakraborty, 2007).

Under this context, It mainly focuses on analysing the consumption expenditure on food and non-food items, calorie acquisition and nutritional security of the rural households and also on comparing the income of rural people between the participants and non- participants of the NREGS. Finally, it provides the recommendations to improve the effective implementation of the NREGS programme in Tamil Nadu have been provided and policy implications have been discussed.

II. METHODS AND MATERIAL

The study used both primary and secondary data collected from the participants and non-participants of NREGS and various officials in the state respectively. The secondary data such as list of participants and expenditure on NREGS were collected from District Rural Development Agency (DRDA) at district level, Block Development Office (BDO) at block level and *Panchayat* office at village level in Tamil Nadu. Well structured interview schedules were used to collect the primary data about consumption expenditure of food and non-food items calorie acquisition of participants and non-participants of NREGS and other related information from a total of 360 households, comprising 180 each of participants and non-participants of NREGS, respectively in the selected districts of Tamil Nadu, namely Cuddalore, Thiruvarur and Thirunelveli. The districts had been selected based on the poverty level of rural people and their geographical location so as to adequately represent the socio-economic diversities of the state and provide an overall picture of consumption expenditure, inequalities in assets, and calorie intake of the rural households. The data collected for analysis pertain to the year of 2007-2008. The data were analysed to estimate the following models.

Household Income and Its Determinants

Household income determines the standard of living and ensures the growth of assets for sustaining the realized prosperity in the long run. As income increases, household welfare improves through increase in consumption expenditure which leads to the food and nutritional security of the people. In this context, the regression model fitted to study the marginal contribution of different factors including employment opportunities and occupations to total household income.

$$HHI = a_0 + a_1 EDU + a_2 NMIG + a_3 FZ + a_4 NLU + a_5 NMAGRI + a_6 NMNAGRI + a_7 NMNREGS + Ui$$

where,

HHI - Total income of the household (Rs/Year)
EDU - Educational status of the head of the households (number of years)
NMIG - Number of migrants in the family (Persons/household)
FZ - Farm size (ha)
NLU - Number of livestock units owned (number)
NMAGRI - Number of mandays employed in agriculture (mandays/household/year)
NMNAGRI - Number of mandays employed in non-agriculture (mandays/household/year)
NMNREGS - Number of mandays employed in NREGS (mandays/household/year)
Ui - Error term.

Food and Nutrient Intake and Its Determinants

Linear estimates of nutrient intake were worked out. Per capita consumption of calorie acquirement per adult consumption and various socio economic characteristics

that may influence nutrient intake, the influence of some important variables like per capita income, family size, percentage share of PDS food commodities to the total quantity of food consumed per household, maternal nutritional knowledge, percentage of non-workers to total family size and percentage share of NREGS income to total household income were estimated (Adhiguru and Ramasamy, 2003). The regression model followed in this study is described below.

$$Y = a_0 + a_1 PI + a_2 FSIZE + a_3 PSPDS + a_4 MKN + a_5 PNW + a_6 PISNREGS + U_i$$

Y – Calorie acquired per adult consumption unit (kcal per month)
PI – Per capita income (Rs/Year)
FSIZE – Family size
PSPDS – Percentage share of PDS food commodities to the total quantity of food consumed per household
MKN– Maternal nutritional knowledge (Yes-1, No-0)
PNW– Percentage of non-workers to total family size
PISNREGS – Percentage share of NREGS income to total household income
Ui –Error term.

III. RESULT AND DISCUSSION

Household Income and Its Determinants

The details of source-wise income of NREGS participant and non-participant households are presented in Table 1.

Table 1. Source-Wise Income of Sample Households

(Rs/ year)

S.No	Source of income	NREGS participants	NREGS Non-participants
1	Livestock farming	6,673 (27.09)	8,299 (40.29)
2	Agricultural wages	7,361 (29.88)	7,837 (38.05)
3	NREGS	8,607 (34.94)	0.00 (0.00)
4	Other sources	1,993 (8.09)	4,461 (21.66)
	Total	24,634 (100.00)	20,597 (100.00)

Note: Figures in parentheses denote percentage to total income

From the above table, it could be seen that the sample households earned income from four major sources, viz. livestock, agricultural wages, NREGS and other sources. Out of the total income earned by the NREGS participant households, nearly 35 per cent was from NREGS, followed by agricultural wages and other sources. On the other hand, the non-participants earned about 40 per cent of the income from livestock followed by agricultural wages and other sources. Hence, NREGS has become a major source of income for the participant households. To find out the factors influencing household income, an income function was fitted and the results obtained are presented in Table 2.

Table 2. Determinants of Household Income in Tamil Nadu

Variables	Coefficient
Intercept	10168.10 (7.050)
Educational status of the head of the households (EDU), (number of years)	63.08 (0.192)
Number of migrants in the family (NMIG) (Person/household)	3579.16* (6.738)
Farm size (FZ) (ha)	1250.01 (0.676)
Number of livestock units owned (NLU)	3225.29* (11.919)
Number of mandays employed in agriculture (NMAGRI) (mandays/household/year)	41.44* (6.270)
Number of mandays employed in non-agriculture (NM NAGRI) (mandays/household/year)	50.75* (7.505)
Number of mandays employed in NREGS (NM NREGS) (mandays/household/year)	64.58* (11.465)
R^2	0.58

Figures within the parentheses are t- values ** Significant (P<0.01) and * Significant (P<0.05)

It could be inferred from the above table that about 58 per cent of the variation in total income of the household was explained by the independent variables. The independent variables had expected relationship with the total income of the household. The variables such as number of migrants in the family, number of livestock units owned, number of mandays employed in agriculture, number of mandays employed in non-agriculture and number of mandays employed in NREGS turned out to be significant at one per cent level. However, the educational status of the head of the households and farm size have not contributed the total income of the households.

Consumption Expenditure Pattern of Sample Households

The details of the actual expenditure and percentage share of individual food items in the total food consumption expenditure of the households are presented in Table 5.24.

Table 3. Consumption Expenditure Pattern of Sample Households

(Rs/ per capita/ year)

S.No	Particulars	NREGS participants	NREGS Non-participants	Total
1	Rice	818 (28.03)	614 (29.15)	716 (28.51)
2	Other cereals	71.35 (2.44)	47.81 (2.27)	59.58 (2.37)
3	Sugar	69.15 (2.37)	50.73 (2.41)	59.94 (2.39)
4	Oil	395 (13.52)	282 (13.41)	338.50 (13.48)
5	Pulses	164 (5.63)	137 (6.49)	150 (5.99)
6	Others	285 (9.77)	220 (10.49)	252.50 (10.05)
7	Fruits and vegetables	228 (7.83)	183 (8.72)	205.50 (8.18)
8	Meat and egg	303 (10.37)	169 (8.05)	236 (9.40)
9	Milk	346 (11.85)	264 (12.56)	305 (12.14)
10	Fish	239 (8.20)	137 (6.49)	188 (7.49)
	Total	2919 (100.00)	2105 (100.00)	2511 (100.00)
11	Food expenditure	2919 (54.52)	2105 (61.35)	2512 (57.19)
12	Non-food expenditure	2435 (45.48)	1326 (38.65)	1880 (48.81)
	Total expenditure	5354 (100.00)	3431 (100.00)	4392 (100.00)

Note: Figures in parentheses denote percentage to total expenditure

It could be inferred from the above table that the average expenditure on food items of NREGS participant and non-participant households worked out to Rs. 2919 and Rs. 2105 per capita/ year respectively. Invariably in both groups cereals took major share which was found to be 30.47 per cent 31.42 per cent of total food expenditure respectively. It indicated that more cereals were consumed to meet their calorific requirement, followed by pulses, others fruits and vegetables.

In total food expenditure, rice occupied the major share, with an expenditure of Rs. 818 and Rs. 614 per capita/ year for NREGS participants and NREGS non-participants respectively. The expenditure on meat, and egg, and fish was higher among NREGS participant households (Rs. 303 on meat and egg, and Rs. 239 on fish per capita/ year) as compared to non-participant households (Rs.169 and 137 per capita/ year) respectively.

Comparing the overall food consumption expenditure of the two groups, the following inferences can be made. Among the total per capita expenditure of the NREGS participants and NREGS non-participants more than 50 and 60 per cent of their income was used for purchasing food items and remaining part of their income was used for non-food items (45 and 39 per cent) respectively. In the case of NREGS participants there was a shift in expenditure from cereals, to non-cereal food items like milk, meat and egg, and fish as these food items showed a significant proportional increase in the overall expenditure as compared to NREGS non-participants. Further, the results indicated that the NREGS participants have spent more income for non-food items than NREGS non-participants.

Calorie Intake of the Households

The food consumed by the households contain many categories such as basic foods like cereals, pulses, oils, fruits, vegetables and high value foods like meat, chicken, fish and eggs. It had provided energy to human beings and it has been measured in terms of calories. According to National Family Health Survey (2005-06) the minimum necessary calorie intake of a person is 2,400 calories per capita per day in rural areas and 2,100 calories per capita per day in urban areas.

Table 4. Calories Intake of Nregs Participants And Nregs Non-Participants In Tamil Nadu

S. No	Household category	NREGS Participants			NREGS Non -Participants		
		Average calories intake (per capita/day)	Average recommended calories (per capita/day)	Percentage	Average calories intake (per capita/day)	Average recommended calories (per capita/day)	Percentage
1	Agricultural labour	2234.02	2458.25	90.87	1877.84	2457.75	76.40
2	Non-agricultural labour	2183.38	2493.01	87.58	1911.68	2495.52	76.60

It is understand from the study the average calorie intake of participants and non-participants of NREGS so as to compare it with ideal requirements. It could be observed from the Table 4 that the average per capita calories intake per day was higher in participants of NREGS than non-participants of NREGS. Moreover, the NREGS participants covered more than 85 per cent of the requirement of the average recommended calories per capita per day than NREGS non-participants (76 per cent). Hence, the NREGS participants consumed more calories due to relatively higher purchasing power. This development is due to availability of guaranteed employment and regular wages through NREGS to the rural households.

Food and Nutrient Intake and Its Determinants

In order to closely examine the nutritional well-being of households in terms of calorie acquisition and the factors influencing calorie intake, a calorie intake function was fitted. The results obtained based on the calorie function are presented in Table 5.

Table 5. Results of Regression Analysis of Factors Affecting Calorie Intake

S.No	Variables	Coefficient
1	Intercept	9.486** (64.07)
2	Per capita income (PI) (Rs/year)	0.040** (2.488)
3	Family size (FSIZE)	-0.032 (-1.112)
4	Percentage share of PDS food commodities to the total quantity of food consumed per households (PSPDS)	0.030 (1.052)
5	Maternal nutritional knowledge (MKN) (yes-1, No-0)	0.220** (11.976)
6	Percentage of non-workers to total family size (PNW)	-0.017** (-3.021)
7	Percentage share of NREGS income to total household income (PSNREGS)	0.032** (8.000)
8	R^2	0.56

Figures within the parentheses are t- values
** Significant (P<0.01), * Significant (P<0.05)

It could be inferred from the above table about 56 per cent of the variation in calorie intake per consumption unit was explained by the independent variables. The independent variables had expected relationship with the calories acquired per adult consumption unit. The variables such as maternal nutritional knowledge, percentage share of NREGS income to total household income and per capita income, turned out to be significant at one per cent level. However, the percentage of non-workers to total family size had significant negative impact on calorie intake implying that the calorie intake per consumption unit decreases with increase in the ratio of non-workers to total number of family members. Surprisingly, the percentage share of PDS food commodities to total quantity of food consumed per households has not turned out to be statistically significant.

IV. CONCLUSION

The study evaluated the impact of NREGS and PDS on household food consumption by using cross-sectional survey data in Tamil Nadu state. The household expenditure results revealed that the total per capita expenditure of the NREGS participants and NREGS non-participants more than 50 and 60 per cent of their income was used for purchasing food items and remaining part of their income was used for non-food items (45 and 39 per cent) respectively. The results of household expenditure showed that the NREGS participates divert the excess of income towards improve the standard of life of their family members by purchasing of durables assets like furniture and health, education etc. Moreover, the NREGS participants there was a shift in expenditure from cereals, to non-cereal food items like milk, meat and egg, and fish as these food items showed a significant proportional increase in the overall expenditure as compared to NREGS non-participants.

The results of calorie intake function revealed that the maternal nutritional knowledge, percentage share of NREGS income to total household income and per capita income, turned out to be significantly influencing the calorie intake of the participant and participants of NREGS households. However, the percentage of non-workers to total family size had significant negative impact on calorie intake implying that the calorie intake per consumption unit decreases with increase in the ratio of non-workers to total number of family members. The results indicated that the calories derived by the NREGS participants was relatively higher than the NREGS non-participants but still did not meet the standard calories required. Moreover, the NREGS participants covered more than

85 per cent of the requirement of the average recommended calories per capita per day than NREGS non-participants (76 per cent). Therefore, the government can freeze the PDS operations at certain level to ensure minimum provisioning of the basic food commodities and give greater emphasis on employment programmes so as to enhance the purchasing power of the poor families which will improve the nutritional security of rural households.

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