



ISSN (E): 2277- 7695

ISSN (P): 2349-8242

NAAS Rating: 5.03

TPI 2020; 9(5): 09-11

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www.thepharmajournal.com

Received: 07-03-2020

Accepted: 09-04-2020

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Effectiveness of MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act) on nutritional security of farm women: A study in coastal Odisha

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Abstract

Food security is the core afflictions of poor people and it became a chronic condition for farmers of India. The women are the backbone of agricultural workforce. Several government programs were going on for involvement of the poor farmers especially aimed at providing nutritional stability and food security through generation of income to the village households. The present study was carried out to assess the effectiveness of welfare programs on nutritional security of women in agriculture sectors in the selected coastal districts of Odisha during the year 2013-2016. MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act) was found to be most popular among farmers and it was directly related to income of the target groups. The inclusion criteria was that the households having a married couple with minimum family size of 4 members and the respondent is engaged in agricultural activity aging more than 35 years. Thirty samples from each groups were selected randomly from the MGNREGA and Non-MGNREGA groups so a total 60 samples were selected in the study. We observe significant difference in means between the groups both for income ($t=4.38^*$, $p<0.05$) and expenditure ($t=3.47^*$, $p<0.05$). The mean BMI of Non-MGNREGA was lower (16.00 ± 1.38) than the MGNREGA (19.37 ± 2.71) groups. Nutritional status like intake of energy, protein and folic acid was statistically significant in MGNREGA households compared to non-MGNREGA households ($p<0.05\%$). From the study it was clear that MGNREGA had a positive impact on the income of the respondents ultimately leading towards nutritional security.

Keywords: Nutritional security, BMI, MGNREGA

Introduction

The Government of India has undertaken many reforms of the country's social safety net programmes in order to improve delivery on nutrition and food security targets. Low and subsistence level of income among the vulnerable population, especially in rural India, can be linked to the heavy reliance on the agriculture sector and a high dependency ratio, marked by overcrowding and low productivity (low output per worker ratio). While agriculture has achieved a growth rate of 1.6 percent between 1996-99 and 2015-18, it is prone to be affected by natural disasters such as cyclones, droughts and flash floods, leading to wide variation in annual outputs. Therefore, there is a need for shifting the population from farm to more productive non-farm sectors, without which the income and purchasing power of the people may not improve substantially and household access to food will continue to suffer. Government of India has undertaken various measures to improve food and nutrition security in the country. The effect of provision for additional income as well as improvement in food security status through income generation and food security programme on living conditions of landless labour families was taken up in the present study.

Materials and Methods

To know the effectiveness of welfare programmes on living conditions of rural families comparison of total income, expenditure pattern, food and nutrient intake and nutritional status assessment comprising weight and BMI of women of Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) families was compared with non-MGNREGA households in a set of sub sample ($n=30$ in each group). MGNREGA was most popular among farmers and it was directly related to income of the target groups. Therefore its impact on food security was assessed in this study. More over the awareness and knowledge about the existing programme were also measured.

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Results

Data on mean income and expenditure of the MGNREGA households and Non-MGNREGA households are analyzed and presented in table-1. The income of households suggested that the households who were the beneficiaries of MGNREGA had significantly more monthly income (Rs.3323.87±165.51) compared to non-MGNREGA households (Rs.2856.79±206.56). The expenditure was also significantly higher (Rs.3039.86±120.29) for MGNREGA

households compared to non-MGNREGA households (2689.79±106.56). The statistical analysis showed significant difference in means between the groups both for income (t=4.38*, p<0.05) and expenditure (t=3.47*, p<0.05). Ovwigho and Ifie (2014) studied the effects of the Women - In- Agriculture(WIA) programme on the welfare of the participants. Result showed a significant difference (p < 0.05) in the income of participants before and after participating in the WIA programme (t =6.941).

Table 1: Mean monthly income and expenditure of the MGNREGA and Non-MGNREGA households (n=30 for MGNREGA HHs , n=30 for Non-MGNREGA HHs)

Groups	Income (Rs.) Mean ±SD	t Value	Expenditure (Rs.) Mean ±SD	t Value
Mgnrega HHS	3323.87±165.51	4.38*	3039.86±120.29	3.47*
Non-Mgnrega HHS	2856.79±206.56		2689.79±106.56	
Difference between the groups	467.08		350.07	

*= Significant at p<0.01

The mean weight for Non-MGNREGA was 35.67kg where as for MGNREGA group it was 42.45kg. The t value indicated (t=4.44*, p<0.05) statistically significant difference between the two groups with regard to mean weight of the respondents.

Similarly the mean BMI of Non-MGNREGA was lower (16.00±1.38) than the MGNREGA (19.37±2.71) groups. The t

value (t=2.67*, p<0.05) suggested statistically significant difference between the means of the two groups with regard to BMI. The result of anthropometric study is in line with Mittal (2013) [2] who found mean weight, BMI was 48.3 ±9.4Kg and 21.2 ± 3.7 respectively in the age group between 18-40 years.

Table 2: Anthropometric measurements (Weight and BMI) of MGNREGA and Non-MGNREGA respondents (n=30 for MGNREGA HHs, n=30 for Non-MGNREGA HHs)

Groups	Weight Mean ±SD	t Values	BMI Mean ±SD	t Value
Non-Mgnrega HHS	35.67 ±2.74	4.44*	16.00±1.38	2.67*
Mgnrega HHS	42.45±3.73		19.37±2.71	

*= Significant at p <0.01

When MGNREGA and non-MGNREGA households were compared the mean cereal intake of MGNREGA households (435.05±133.28) was found to be higher than non-MGNREGA (417.28±114.05) households. The mean pulse intake was slightly higher in (28.29±3.09) in MGNREGA compared to non-MGNREGA (22.02± 3.36). The intake of leafy vegetables (19.21g), other vegetables (57.45 g), fruits

(28.61 g), milk and its product (25.52g), fish and fleshy foods (49.23g), fats and oils (11.45 g) and sugar or jaggery (23.01 g) was higher in MGNREGA compared to non-MGNREGA households. Among these food groups the intake of other vegetables and milk and milk products intake was statistically significant in MGNREGA households compared to non-MGNREGA households (p<0.05%).

Table 3: Mean food intake and adequacy among the respondents (n=30 for MGNREGA HHs, n=30 for Non-MGNREGA HHs)

Food	Non-MGNREGA	MGNREGA	t Value	Non-MGNREGA	MGNREGA
	Mean ± S.D	Mean ± S.D		Food adequacy Percentage	Food adequacy Percentage
Cereals	417.28±114.05	435.05±133.28	1.27 ^{NS}	115.91	120.84
Pulses	22.02± 3.36	28.29±3.09	1.03 ^{NS}	36.7	47.15
Leafy Vegetables	15.52±2.34	19.21±3.32	2.47 ^{NS}	15.52	19.21
Other Vegetables	48.00±7.89	57.45±6.35	2.99*	32	38.3
Fruits	22.43±2.21	28.61±1.31	0.78 ^{NS}	29.90	38.14
Food	Non-MGNREGA	MGNREGA	t Value	Non-MGNREGA	MGNREGA
	Mean ± S.D	Mean ± S.D		Food adequacy Percentage	Food adequacy Percentage
Milk and its product	15.89±1.23	25.52±2.11	3.12*	10.59	17.013
Fish and Flesh Foods	43.83±4.34	49.23±5.03	1.02 ^{NS}	109.57	123.07
Fat & oils	8.56±1.09	11.45±2.03	1.90 ^{NS}	34.24	45.8
Sugar/ Jaggery	17.34±4.56	23.01±3.45	1.36 ^{NS}	69.36	92.04

*= Significant at p<0.05 NS= Not Significant

When MGNREGA and non-MGNREGA households were compared the mean energy intake of MGNREGA household (2165.64±384.35) was found to significantly higher than non-MGNREGA households (2020.33±361.20). The mean protein

intake was significantly higher (47.48±5.65) in MGNREGA compared to non-MGNREGA (30.62±4.06) households. The intake of fat (39.27g), β-carotene (1546.74 g), calcium (348.29 g), folic acid (169.37g), vitamin-C (20.39 g), iron

(17.35g) and fiber (21.96 g) was higher in MGNREGA compared to non-MGNREGA households. Among these nutrients the intake of energy, protein and folic acid was statistically significant in MGNREGA households compared to non-MGNREGA households ($p < 0.05$). Nair *et al.* (2013) [3] suggested that earnings from MGNREGA contributed

towards preventing hunger particularly when there was crop failure ultimately providing food security. Kumar and Joshi (2013) [1] concluded that effect of MGNREGA has been positive and effective in increasing house hold food consumption and changing dietary pattern providing food and nutritional security.

Table 4: Mean nutrient intake and adequacy among the MGNREGA and Non-MGNREGA respondents (n=30 for MGNREGA HHs , n=30 for Non-MGNREGA HHs)

Nutrients	Non-MGNREGA	MGNREGA	t Value	Non-MGNREGA	MGNREGA
	Mean \pm S.D	Mean \pm S.D		Nutrient Adequacy Percentage	Nutrient Adequacy Percentage
Energy (kcal/d)	2020.33 \pm 361.20	2165.64 \pm 384.35	2.92*	70.88	75.98
Proteins (g/d)	30.62 \pm 4.06	47.48 \pm 5.65	3.18*	55.67	86.32
Fat(g/d)	35.91 \pm 20.02	39.27 \pm 21.25	1.61 ^{NS}	119.70	130.90
β -Carotene (μ g/d)	1457.39 \pm 549.31	1546.74 \pm 589.56	1.91 ^{NS}	30.36	32.22
Calcium(mg/d)	320.24 \pm 31.29	348.29 \pm 35.64	1.74 ^{NS}	53.37	58.04
Folic Acid (μ g/d)	152.20 \pm 33.84	169.37 \pm 37.51	2.78*	76.10	84.68
Vitamin C (mg/d)	18.43 \pm 6.34	20.39 \pm 5.23	2.17 ^{NS}	46.07	50.97
Iron (mg/d)	12.29 \pm 3.78	17.35 \pm 3.45	2.97 ^{NS}	58.52	82.61
Fiber (g/d)	21.71 \pm 1.18	21.96 \pm 1.96	0.89 ^{NS}	86.84	87.84

Discussion

The mean income and expenditure of the households who were the beneficiaries of MGNREGA was significantly higher compared non-MGNREGA households. The statistical analysis showed significant difference in mean income ($t=4.38^*$, $p < 0.05$) and expenditure ($t=3.47^*$, $p < 0.05$) between the groups. Narayanamurthy and Bhattarai (2013) [4] suggested that the real wage rates have increased substantially during post-MGNREGS period as compared to pre- MGNREGS period in both male and female agricultural labourers in all the major farming operations.

With respect to weight statistically significant difference was found between the MGNREGA and Non-MGNREGA households ($t=4.44^*$, $p < 0.05$). The BMI was also found to be significant statistically ($t=2.67^*$, $p < 0.05$). The mean food intake in terms of cereals, pulses, leafy vegetables, others vegetables, fruits, milk and milk products, fish and flesh foods, fats and oils and sugar and jaggery was more in MGNREGA respondents compared to non-MGNREGA respondents. The adequacy of all nutrients namely energy, protein, β -carotene, calcium, folic acid, vitamin-C, iron and fiber was lower than Recommended Dietary Allowances (RDA) for both the groups. The adequacy of fat was 130.00% in MGNREGA and 119.00% in non-MGNREGA households. It could be concluded that the programme had a positive impact on the economic and nutritional security of the households. The raise in income has a positive impact on food consumption pattern by inclusion of good quality of food.

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