



A Tussle to Food and Nutritional Security across Households in Meghalaya: Impact of Government Schemes

B. Nongbri, Ram Singh, S. M. Feroze, L. Devarani, S. Basant Singh and Anupam Mishra

The greatest challenge when comes to food and nutritional security was to ensure that all people avail and have access to sufficient and quality foods over the years, irrespective of months or seasons. To augment the availability of food to the households accessibility of foods has to be the cornerstone. Meghalaya a sister state among the eight North-Eastern (NE) states of India is an agrarian state where more than 81 per cent of the people depending on agriculture for their livelihood (GoM, 2018) and the maximum share of their household income is contributed by cultivation activity (Singh and Datta, 2016). The state produced 41.82 thousand MT, 12.68 thousand MT, 21.12 thousand MT of food grains, pulses and oilseeds, respectively during the year 2016-17 (GoM, 2017). However, the state faced a deficit in food grains and in pulses by 49.21 per cent and 86.61 per cent, respectively (Roy *et al.*, 2015). This is because most of the farmers in the state were marginal and small; leading to poor performance in terms of production and self-sufficiency comparing to the national level. The primary channels for food comprise four pathways, *i.e.*, their production from their fields, open market, fair price shops, wages in kind or cash or exchange with their relatives, or neighbours (Nongbri, 2020). Food self-sufficiency depends on other factors such as total production, family size and family compositions. In this context, the State Government has also commenced, two important schemes incurring the basic needs of the beneficiaries in the state especially during dry seasons. The most prominent and most advanced schemes in the state were the National Food Security Act (NFSA), 2013 and the Mahatma Gandhi National Employment Guarantee Act (MGNREGA). A total of 7.75 lakh beneficiaries belonging to non-NFSA, and 21.51 lakh beneficiaries belonging to the NFSA were under the umbrella of NFSA, 2013 (GoI, 2018). In

the milieu of MGNREGA, 6.25 lakh job cards were issued in the state with a total number of 12.19 lakh workers during 2018-2019 (GoI, 2020). Thus, the paper concentrated on the sources of food in the consumption pattern, the gap in calorie intake and the impact of schemes in sustaining the food and nutrition.

Framework

Primary data were collected during 2017-2019 *viz.*, pre-monsoon (March), Monsoon (September) and post-monsoon (December). The process of primary data collection over time was to go in-depth of the different food availability of farming households from their different agricultural produce during the different agricultural seasons (Kabir, 2016 and Peersman, 2014).

Food basket Approach

A food basket was formulated to understand the main food items consumed across the households based on the pilot survey conducted and by following the Indian Council of Medical Research (ICMR) Five Food Plan Group (ICMR, 2010). The main foods selected were rice, potato and pulses, meat and milk. In terms of vegetables, consumption was mainly concentrated season-wise with Cabbage during pre-monsoon, beans during monsoon and mustard during post-monsoon. Fruits were also selected based on the availability across seasons with banana, pineapple and mandarin at pre-monsoon, monsoon and post-monsoon, respectively.

Calorie intake estimation

The households must be able to consume the right quantity of foods, with a minimal recommended intake equivalent to approximately, 2400 Kcal per capita per day in the rural areas and 2100 Kcal in urban areas (GoI, 1993). Thus, the calorie conversion used by Gopalan *et al.*, (1989) was used for all the foods consumed and aprioristically included in the food basket. Furthermore, the gap in

calories was computed as $\text{Calories Gap} = \text{CA} - \text{CR}$ (Singh and Datta, 2016), where, CA= Calories available from the item consumed, i.e., the sum of the calories of each product which the household consumed and CR= Calories requirement normative requirement of the calories.

Discernment on the impact of schemes

Paired t-test was formulated and then compared the performance of the PDS at leveraging the food availability across beneficiary households. MGNREGA and its impact were understood using Gini coefficient and the Lorenz curve was used to understand the distribution of income among the beneficiaries (Mirzaei et al., 2017). A difference in difference (DID) approach was also apprehended where the difference in average outcome in the pre-MGNREGA and Post-MGNREGA was estimated.

Results

Food basket approach

It has been reported that, although there was a drastic change in the pattern of food intake and food intake decisions (Gupta and Kumar, 2015), yet households depend on cereals as their main food items and to suffice their overall food requirements. It has been accounted that in Meghalaya, rice was still the most dominant attribute for consumption among cereals in the diet with an overall contribution of 71.94 per cent towards the overall food basket across households in the state. Potato contributed 2.13 per cent to the food basket in Meghalaya and Vegetables, on the other hand, contributed a mere share of 0.68 per cent in the state. *Masoor dal* as a major pulse contributed its share of 2.32 per cent in the state (Nongbri, 2020). Meat, on the other hand, contributed a share of 2.28 per cent to the food basket and Fruits contributed a minimal share of 0.58 per cent to the overall food basket. Thus, in Meghalaya, it has been observed that households follow a monotonous diet concentrating more on cereals and less emphasis on other food items like vegetables, fruits, meat and milk.

Gaps in the recommended food consumption and calorie intake

In terms of rice, the recommended intake was 190.50 (ICMR, 2012). However, it was reported that rice was consumed more than the average recommended intake in the state with 409.50 gm. In terms of potatoes, the recommended intake was reported to be 70.83 gm per person per day (ICMR, 2012) but average potato consumption left a deficit

of 19.17gm in terms of consumption. The recommended intake of pulses was 46gm (ICMR, 2012) but consumption was comparatively less with 20 gm per person per day leading to an approximate deficit of 26gm (Table 1).

Table 1. Average intake of foods in Meghalaya and the gap as per the recommended intake

Food items	Average intake of food items and the gap as per the recommended intake (/day in gm)			Average Calories in Kcal/person/day)
	Recommended intake	Average intake	Gap	
Rice	190.50	600.00	409.50	1726.50
Potato	70.83	51.67	-19.17	51.20
<i>Masoor Dal</i>	40.00	14.00	-26.00	55.58
Vegetables	200.00	37.67	-162.33	16.34
Fruits	100.00	22.33	-77.67	13.84
Meat	70.00	41.67	-28.33	54.75
Milk	290	30.67	-259.33	53.91
Total				2086.41
Gap				-313.59

In terms of fruits and vegetables, the deficit in terms of consumption was 162.33gm and 77.67gm across households from the recommended intake of 200 gm and 100 gm per person per day (ICMR, 2012), respectively. While there was a deficit in terms of meat consumption by 28.33 gm per person per day, there was also a deficit in terms of milk consumption by 259.33gm per person per day across the districts (Table 1). Overall, there was a gap of up to 313.59 Kcal/person/day in terms of the food intake in the state. Thus, it has been realised, that the households mostly consumed excess rice as the main food in their daily intake which was more than the recommended daily intake (Nongbri, 2020). *Prima facie*, the daily intake of other commodities has been jeopardized of the required amount as recommended.

Discernment on the impact of schemes

It was estimated that the share to the availability of food grains at each beneficiary household from the Public Distribution System (PDS) of NFSA, 2013 has significantly improved the availability of rice in the state. The increase in the availability has been estimated to have significantly bridged with an increment of 25.86 per cent.

MGNREGA on the other hand has been estimated to have increased the income in agricultural, horticultural and livestock practices by 8.47, 15.10 and 17.02 per cent, respectively. The income from this scheme has also significantly enhanced the wage, livestock and other needs in the very context by 17 per cent among the beneficiaries. The positive results of an increase in the income could be of the fact that there was an augmentation in the expenditure by almost 16.69 per cent post MGNREGA. The increase in income was relatively higher among the beneficiaries than their counterparts realising the positive impact of MGNREGA (Shankar and Gaiha, 2013). On the contrary, the purchasing power of beneficiary households tends to increase after MGNREGA (Dkhar, 2012; Tabrez *et al.*, 2019).

The Lorenz curve post-scheme was found to be closer to the equality line indicating the improved income distribution among the beneficiaries. It was also estimated that the Gini coefficient before and after MGNREGA was 0.21 and 0.16, respectively indicating that there was an improvement in the income distribution among beneficiary households and thus the standard of living among the beneficiaries (Kumar and Maruthi, 2011; Shah and Makwana, 2011).

DID was estimated to further understand the impact of MGNREGA. The DID estimate revealed that the income through MGNREGA among the beneficiary households has increased by ₹18080 per year realising that the average number of wage days estimated to be of 75 days. In terms of food expenditure which was the main crux of the study, it was estimated that ₹9245.84 was an additional entry among beneficiary households through MGNREGA wages. The increase in income was evident after the implementation of the scheme which was regarded as a boon to the overall development of the beneficiary households (Morgan, 2012).

Policy Implications

This brief paper presents that the issue of food security has wide economic, social and political dimensions and its security would exist when all people at all times have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs for an active and healthy life. It was apparent that the consumption pattern of food in the state of Meghalaya has not changed over the years realising the importance of rice as a staple food. Accordingly, there is a need for further improvement in the consumption pattern of

food in the state. First of all, proper food production has to be concentrated where the various institutions like the Department of Agriculture, ICAR, CAUs *etc.*, should encourage enthusiast the farmers in contemplating and encouraging crop diversification, kitchen garden and cultivation of pulses to properly prompt to better harvest and healthy crop management system along with self-sustenance. The cluster management systems can be adopted by the government recognising the area need-based intervention for better adoption and positive impact. The cash generated crops should be encouraged and export targets have to be made along with improved market links by the agricultural experts of the concerned department and institute in the state. Livestock on the other hand has a high scope in the state. Training on improved animal husbandry and livestock, conservation of animal biodiversity, livestock insurance and credit should be apprehended at the Departments and Institutes content with Animal Husbandry and its associates. The Sustainable Development Goals (2020-21) Index reported that Meghalaya stood among the bottom 5th ranked state in the country comprehended that the struggle to bridge the targeted 17SDGs is authentic. The NFSA, 2013, the most applauded scheme in India and Meghalaya's context, 98.04 per cent of beneficiaries have been covered under its umbrella (GoI, 2021). This has gradually withstood the poor households in the state. However; monitoring should be done for better distribution of the commodities to the rightful beneficiaries by the Directorate of Food Supplies. Whereas, PDS bridge the gap in cereal availability, the Government should also try for subsidising other nutrition-rich food supplements for better consumption. Meghalaya is also very rich in local foods and local products. Hence, the cultivation and consumption of traditionally grown foods like *shiahkrot* (*Smilax ferox*), *Shriew* (Yam), *Jangew*, *jamyrdoh* (*H.Chordata*) *etc.*, at village level should be encouraged across the state as these indigenous foods are naturally available and easily grown, rich in micro-nutrients and are climate-resilient.

References

- Dkhar D.S. (2012). Socio-economic study on Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) in East Khasi Hills district of Meghalaya. M.Sc. Thesis, Submitted to College of Post Graduate Studies, Central Agricultural University, (Imphal, Manipur) India.

- GoI. (1993). Planning Commission, Perspective Planning Division. 1993. Report of the Expert Group on Estimation of Proportion and Number of Poor, Government of India, New Delhi.
- GoI. (2018). Year End Review-2018. Department of Food & Public Distribution Ministry of Consumer Affairs, Food and Public Distribution. Government of India.
- GoI. (2020). Economic Survey. Ministry of Finance, Department of Economic Affairs. <https://www.indiabudget.gov.in>.
- GoI. (2021). SDG India Index & Dashboard 2020-21. Partnerships in The Decade of Action. National Institution for Transforming India (NITI Aayog), Government of India, New Delhi.
- GoM. (2017). Statistical handbook of Meghalaya. Directorate of Economics and Statistics. Government of Meghalaya, Shillong.
- GoM. (2018). Directorate of Agriculture and farmers' welfare. <http://www.megagriculture.gov.in/>. Accessed February 2018.
- Gopalan, C., Sastri, R.B.V., and Balasubramanian, S.C. 1980. Nutritive values of Indian foods. 3rd Edition, Indian Council of Medical Research, New Delhi.
- Gupta, A. and Kumar, P. (2015). Regional Patterns of Food intake and Nutrients in Rural India: Evidence from NSS 66th round. *International Research Journal of Social Sciences*, 4(7): 1-11.
- ICMR. (2010). Dietary Guidelines for Indians - a Manual. National Institute of Nutrition, India Council of Medical Research. NIN Press, Hyderabad.
- ICMR. (2012). Current trends in food security to meet national nutritional challenges. Pre-Conference Workshop On Recommended Dietary Allowances and Diet Planning 15th November, 2012. Nutrition Society of India. Department of Home Science, Sri Venkateswara University, Tirupati.
- Kabir, S.M.S. (2016). Basic Guidelines for Research: An Introductory Approach for All Disciplines. Book Zone Publication, Chittagong-4203, Bangladesh.
- Kumar, P., and Maruthi, I. (2011). Impact of NREGA on wage rate food security and rural urban migration in Karnataka. Agricultural Development and Rural Transformation Centre. Institute for Social and Economic Change, Bangalore.
- Kumar, A., Parappurathu, S., Bantilan, M.C.S., Joshi, P.K. (2015). Public Distribution System in India: Implications for Poverty and Food Security. <http://vdsa.icrisat.ac.in/Include/MiniSymposium/12.pdf>. Assessed 26 June 2018.
- Mirzaei, S., Borzadaran, G., and Amini, M. (2017). A comparative study of the gini coefficient estimators based on the linearization and u-statistics methods. *Revista Colombiana de Estadística.*, 40(2):205-221.
- Morgan, J.P. (2012). Wages in Rural India Accelerated Sharply Post MGNREGA: India Equity Research. An Anthology Of Research Studies on The Mahatma Gandhi National Rural Employment Guarantee Act, 2005, 2006-2012, Ministry of Rural Development. New Delhi.
- Nongbri, B. (2020). Food and Nutritional Security at Farm Household Level in Meghalaya: Impact of Government Schemes. Ph.D. Thesis. Submitted to Submitted to College of Post Graduate Studies in Agricultural Sciences, Central Agricultural University, (Imphal, Manipur) India.
- Roy, A., Singh, N.U., Dkhar, D.S., Mohanty, A.K., Singh, S.B., and Tripathi, A.K. (2015). Food security in North-east region of India: A state-wise analysis. *Agric. Econ. Res. Rev.*, 28: 259-266.
- Shah, V.D., and Makwana, M. (2011). Impact of NREGA on Wage Rates, Food Security and Rural Urban Migration in Gujarat. Research Study, 141. Agro-Economic Research Centre, Sardar Patel University, Vallabh Vidyanagar, Gujarat.
- Shankar, S. and R. Gaiha. (2013). Battling Corruption: Has NREGA reached India's Rural Poor?. *Indian Journal of Labour Economics*. 58: 191-193
- Singh, S.R, and Datta, K.K. (2016). Farm household food security in India. *Indian J. Econ. Dev.* 2016:12 (1): 15-23. doi : 10.5958/2322-0430.2016.00002.0
- Tabrez, S., Choudhury, A., Datta, K.K., Feroze, S.M., Hemochandra, L. (2019). Impact of MGNREGA on income, expenditure and assets in Ri-Bhoi district of Meghalaya. *Indian Journal of Hill Farming*. 32(1): 37-41.
- UNDP. (2018). State Human Development Reports for Indian States. Sustainable Development Goals. United Nation Development Programme, India.