

Dietary Diversity and Nutrition Sensitive Agriculture in India

An Interview with Dr. Nithya D. J

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Nithya DJ is a Nutritionist at MSSRF with a doctorate degree in Food Science and Nutrition from Tamil Nadu Agricultural University. She has worked as Research Associate at the Indian Institute of Crop Processing Technology and Agricultural Engineering College in the field of Food Processing and Technology. Nithya has experience of training potential women entrepreneurs on value addition. Nithya is also responsible for the nutrition status monitoring surveys and nutrition education at various levels under LANSa. In an interview with her, she explained mainly about dietary diversity practices in India and also stressed emphasis on nutritional sensitive agriculture for more intake of nutritional requirement.

What are your views on dietary diversity practices in India?

Dietary diversity is an indicator of household food security. Studies have shown that dietary diversity is positively correlated with nutrient density, adequacy of diets of people and with nutritional status. India has a cereal based food consumption pattern and dietary diversity is very less in both rural and urban India. About 60 to 80% of energy, irrespective of seasons, is provided by cereals. As per National Sample Survey Organization (NSSO) Survey, of the 7 food groups (cereals and millet, pulses, vegetables, fruits, animal source foods, fats and sugar), food from about 4 to 5 foods groups are consumed in urban areas while it is 3 in rural areas.

Dietary diversity or a balanced food plate is not always possible as there are various factors which affect it.

1. Time: About 58% of rural households in India are dependent on agriculture. During the busy seasons, they have less time to prepare a balanced meal. During lean seasons, having less income and increased price of foods, due to scarcity, the tendency is to use stored food stock which gets depleted at the end of lean season.
2. Income: Prices of the produce fluctuates depending on the agriculture production. During harvest seasons, as the market will be flooded with agricultural produce, the prices will be minimum and household dietary diversity may be better when compared other seasons.

3. Availability: Seasonality is also an important factor and has impact on household dietary diversity.
4. Distance between market and village is also a determining factor in access to foods of different kinds.

In India, the PDS plays a wider role in household food security in most rural areas where cereals are supplied at subsidized rate. Our study shows that energy per day is largely from consumption of PDS grain, irrespective of agriculture seasons.

What practices should be adopted by farmers for nutrition sensitive agriculture?

The Farming Systems for Nutrition (FSN) study under the research programme on Leveraging Agriculture for Nutrition in South Asia (LANSA) <http://lansasouthasia.org/>, recommended the following practices:

- Increase cropping intensity
- Introduce nutrient rich crops for crop diversity
- Improved agriculture practices
- Increase land use efficiency
- Promoting home gardening of vegetables and fruits/animal husbandry
- Greater nutrition awareness and understanding of leveraging agriculture for nutrition

The practices promoted under the study are available at the following links:

http://lansasouthasia.org/sites/default/files/FSN%20Booklet%20%28final%20to%20print%29_0.pdf

<http://lansasouthasia.org/sites/default/files/NG%20Leaflet%20final.pdf>

What are the factors responsible for undernutrition in adults?

Factors that are responsible for undernutrition particularly in adults are,

1. Less dietary diversity: Earlier studies have proved that Body mass index (BMI) is closely related to an individual's food consumption pattern and household dietary diversity. <http://lansasouthasia.org/content/establishing-integrated-agriculture-nutrition-programmes-diversify-household-food-and-diets>.
2. Socio-cultural practices: Women are generally more vulnerable, particularly in rural areas of the country, mainly due to socio-cultural practices like taboos and beliefs. Tobacco chewing is widely prevalent in rural areas and this is also a reason for under-nutrition.
3. Gender: In one of our papers published in Journal of Biosocial Science (2017) <http://lansasouthasia.org/content/dietary-diversity-and-its-relationship-nutritional-status-among-adolescents-and-adults-rural>, we demonstrate that gender plays a crucial role in nutritional status of adults.
4. Energy spent is not equal to energy intake: The energy intake from foods has to be equal to the energy expenditure to lead to better nutritional status. In most rural areas where agriculture is the main activity, gender, time and energy spent on various activities is an important factor that determines the nutritional status of adults. <http://lansasouthasia.org/content/gendered-time-seasonality-and-nutrition-insights-two-indian-districts>.

Do you think increasing use of chemical fertilizers and forgotten old agriculture methods are the reasons for low nutritional status among people in India?

It depends on the agro-ecological region. As explained, in question no.1, availability of nutrient rich foods at household level depends on the agriculture production. The package of practices that will improve agricultural production will eventually affect the nutritional status of the community in the long run.

For instance, Wardha district in Maharashtra and Koraput district in Odisha are the study areas of the FSN study under LANSa. Both the areas have high levels of under-nutrition. Wardha has commercial cropping system where new nutrient rich crops like pulses and legumes were introduced to improve the household dietary diversity. Koraput has a subsistence cropping pattern where traditional method of cultivation had lower yields. Therefore improved technologies were promoted to get higher yield to achieve household food security.

Recently, your study has been published on “Factors which may limit the value of dietary diversity and its association with nutritional outcomes in preschool children in high burden districts of India”, can you elaborate on that?

Dietary diversity plays a critical role in infants as they need energy and nutrient dense foods for both physical and mental development. There are many research papers that study the dietary diversity and its relationship with the nutritional status. But the methodologies used to calculate the dietary diversity vary widely. The paper referred to, examines dietary diversity calculated using three methods: Individual food scores calculated using 24 hours diet recall (FS24hr) data; household dietary diversity using Berry’s index (DDI) and food scores calculated using food frequency data (FSFFQ). The calculated dietary diversity was validated against Nutrient Adequacy Ratio (NAR) and Mean Adequacy Ratio (MAR). The paper also shows the relationship of dietary diversity with nutritional status of preschool children, in two districts of India: Wardha, Maharashtra and Koraput, Odisha. The paper concludes that NAR and MAR correlate with FS24hr indicating that dietary diversity calculated using 24 hour diet recall ensures nutrient adequacy but showed association only with Stunting (Height-for-Age scores). Dietary diversity calculated using the three methods did not show any correlation with nutritional status of 1 to 5 years children. The nutritional status of less than 5 years children is determined by various factors, starting from mother’s nutritional status, prenatal and postnatal care, WASH, etc in addition to dietary diversity.

Do you think organic farming can give better results in nutrition sensitive agriculture?

Organic farming can be a better way to produce healthier foods that are free from pesticide residue; but I don’t think it will change the nutrient content of the produce.