



FOOD AND NUTRITIONAL SECURITY ISSUES IN INDIA: AN OVERVIEW

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ABSTRACT

The adequate supply of food and nutrition to the ever growing population of India is the burning issue since independence. Government of India had mostly concentrate in food supply problem through the planning Commission of India. Since from the inception of the commission government has started the public distribution system for the food and allied nutritional products. The food security issues are the very complex and it is mostly coupled with the development of agriculture sector. In earlier period of independence an acute shortages and heavy dependence on food aid to self-sufficiency, or broadly, self-reliance in food. With some bold thinking and organized state action, the country's planners were able to usher in a Green Revolution in the late 1960s and early 1970s, enabling India to overcome productivity stagnation and to improve food grain production from 51 million tons in 1950–1951 to 108.4 million tons in 1970–1971 and 234.47 million tons in 2008–2009. This paper looks the way forward for the sustainable supply of food for the population.

Introduction :

The importance of optimal nutrition for health and human development is well recognised. At the time of Independence the country faced two major nutritional problems. One was the threat of famine and the resultant acute starvation due to low agricultural production and the lack of an appropriate food distribution system. The other was chronic energy deficiency due to low dietary intake because of poverty and low purchasing power; high prevalence of infection because of poor access to safe drinking water, sanitation and health care; poor utilisation of available facilities due to low literacy and lack of awareness. The major public health problems were chronic energy deficiency (CED), kwashiorkor, marasmus and micronutrient deficiencies such as goitre, beriberi, blindness due to Vitamin-A deficiency and anaemia. The country adopted multi-sectoral, multipronged strategy to combat these problems and to improve the nutritional status of the population. Article 47 of the Constitution of India states that "the State shall regard raising the level of nutrition and standard of living of its people and improvement in public health among its primary duties". Successive Five-Year Plans laid down the policies and strategies for achieving these goals. The Green Revolution ensured that the increase in food production stayed ahead of the increase in population. The country has moved from chronic shortages to an era of surplus and export in most food items. The country is self sufficient in food grain production and currently there is a buffer stock of over 60 million tonnes.

Interventions to achieve the adequate availability of foodstuffs by:

- ensuring production of cereals, pulses and seasonal vegetables to meet the nutritional needs;
- making them available throughout the year at affordable cost through reduction in postharvest losses and appropriate processing;
- more cost-effective and efficient targeting of the PDS to address macro and micronutrient deficiencies. This may include providing coarse grains, pulses and iodised/ double fortified salt to below poverty line (BPL) families through the targeted PDS (TPDS);
- improving people's purchasing power through appropriate programmes including food for work schemes.

Interventions to Improve Food Production to Meet the Nutrient Needs

Food grain production

Inputs needed to achieve a sustainable increase in food grain production to meet the needs of the growing population have to be provided. Locally produced and procured coarse grains made available through the TPDS at a subsidised rate may substantially bring down the subsidy cost without any reduction in calories provided. This will also improve targeting as only the most needy are likely to buy these coarse grains. Millets are rich in minerals and micronutrients and hence increased consumption will improve the intake of these vital nutrients by the poor.

Pulse production

In the last two decades, there has been a progressive decline in pulse consumption, especially among the poorer segments of the population. This is due to stagnant production and the rising cost of pulses. This trend has to be reversed. Measures to improve pulse production may include reactivation of the pulse component of the Oil Seed and Pulse Mission, a major thrust on research and development and innovative community-based efforts similar to the M.S. Swaminathan Research Foundation's efforts in Tamil Nadu to improve pulse production.

Need and deficit of food

Homestead production is another method of increasing consumption of vegetables, milk and animal products and reduces the gap in consumption. Strategies can be worked out for using degraded lands for vegetable production. Farmwastes as well as food grains unfit for human consumption can be used to feed backyard poultry in order to increase homestead production of eggs and chicken and also increase consumption of these at home (Table 1)

Table 1: Relation of per capita availability and deficit in India

Per capita availability and deficit

Food Items	Per capita availability	ICMR dietary guidelines for Indians	Per capita deficit
Milk	216 g**/day	300 ml/day	34 g/day
Egg	30 eggs/annum	180 eggs/annum	150 eggs/annum
Meat	3.24 kg/annum	10.95 kg/annum	7.71 kg/annum

Consequences of Under-nutrition

Apart from human suffering, malnutrition is one of the major causes of morbidity, mortality, loss of national productivity and medical expenses. Under nutrition contributes to 60% of deaths due to infectious diseases like malaria, measles, diarrhoea, pneumonia and perinatal disorders in preschool children. In India, 36% deaths and 42% DALYs lost are due to communicable diseases, perinatal and maternal conditions and nutritional deficiencies. Children born with low birthweight remain stunted. Their learning capacity and ability to fight infections is impaired. Intrauterine malnutrition and consequent low birth weight epigenetically predisposes to higher body fat and lower muscle mass (the lean fat babies). In later life they are more susceptible to life-style related chronic diseases like the syndrome X (diabetes, hypertension, dyslipidaemia). This trend is of particular concern to a rapidly developing country like India where many individuals who are born with low birth weight due to poverty and maternal malnutrition, shift to affluence and indulgence later.

Government initiatives

Successive Five year plans since 1950s laid down the policies, multi-pronged strategies and multi, and inter-sectoral programmes to improve availability, and access to food, and facilitate absorption and assimilation. Such

nutrition safety net programmes for increasing availability, and access to food and nutrition and improving assimilation (absorption) are;

Increasing Availability of Food

India's food grain production stayed ahead of population growth till mid nineties and food prices were stable and low. Since then, situation has worsened a bit even on food grains (cereals) front. Fortunately last year harvest was good and food grain (rice and wheat) stocks were built. These will help to tide over the 2009 drought. Production of nutritious millets and pulses has stagnated and cost of pulses has soared. In spite of being global No 1 and 2 in milk and vegetable and fruit production, per capita consumption of these has been very low and remains unchanged due to lack of purchasing power and awareness regarding their nutritional importance. Government has initiated several nutrition 'safety net programmes' such as:

1. Rashtriya Krishi Vikas Yojana–Increased investment in agriculture to increase growth.
2. National horticulture mission. Horticulture production has doubled. However, focus is on income and export, rather than nutrition.
3. National food security mission. Focus is on rice, wheat and pulses.

Improving Access

- National Rural Employment Guarantee Act (NREGA).
- Integrated Child Development Service (ICDS) - targeted at preschool children and pregnant and lactating mothers. Supplementary feeding is an important component of ICDS.
- School Mid-Day-Meal programme (MDM)
- Annapoorna scheme-10 Kg food grains to elderly above 65 years
- Food Security Act (proposed). National Food Security Act now being debated in the parliament promises 25 Kg rice or wheat at Rs 3/Kg for families below the poverty line (BPL).
- Public distribution system. Currently targets BPL population, leaving out a vast segment of undernourished people above the poverty line. The issue of BPL and targeted PDS needs to be revisited from the point of view of nutrition security for all.
- Micronutrient supplementation programmes like a) anaemia prophylaxis programme (distribution of iron folic acid tablets to pregnant and lactating women, children, and adolescent girls), b) massive dose vitamin A programme (administration of 100,000 iu of oral vitamin A to 1-6 years old children).
- Linking it with measles immunisation and thus netting younger children is being tried.
- Universal iodisation of salt to combat iodine deficiency disease. Supplementary feeding and micronutrient supplementation programmes have failed to have desired impact. Among the reasons are: i. Poor targeting. In ICDS, the most vulnerable infants, 6-36 months old are not reached for practical reasons. This is the window of catch-up growth when the impact of good diet is most, ii. Improvement in nutrition is not clearly spelt out as the outcome indicator. MDM programme is primarily to improve school enrolment, iii. Perhaps the most important reason is lack of adequate awareness in the community. Top down approach fails to elicit community participation.

Scientific and Technological responses

1. Increased agricultural productivity through conventional methods.
2. Bio-fortification-This includes conventional breeding methods, molecular breeding and

genetic engineering. Bio-fortification is a sustainable intervention being seed-based technology. No cost, once the varieties are developed and adopted. Can reach the poor (if the cost of seed is kept low and not exploited by seed companies). The Harvest Plus: bio-fortification challenge programme is an interdisciplinary, global alliance of research and implementing institutions. India is part of this. It includes: Beta carotene (pro-vitamin A)-rich sweet potato, and cassava, zinc and iron-rich rice, wheat, maize, pearl millet, and beans. DBT network project on bio-fortification of rice, wheat and maize is currently being implemented by ICAR Institutions and state agriculture universities. Golden rice rich in pro-vitamin A; high-iron rice (high ferritin gene from mangrove-(MSSRF); high protein and essential amino acid-rich transgenic potato varieties using AMAI gene from *Amaranthus hypochondriacus* (National Institute of Plant Genome Research); oxalate-free and disease-resistant transgenic tomato using oxalate decarboxylase gene from edible mushrooms are examples of transgenic technologies. Zero erucic acid mustard has been developed using conventional breeding methods. Issue of bio-availability and safety need to be examined, and proper legislative checks put in place.

3. All government supplementary feeding programmes are based on research by nutrition scientists. Poor impact may not be due to technology, but implementation infirmities.
4. Recommended Dietary Allowance (RDA) for important nutrients, relevant to Indians has been worked out on the basis of experiments on humans and is periodically updated. These have been translated into dietary guidelines for ease of understanding and use by common person.
5. Nutrition status is monitored by the National Nutrition Monitoring Bureau (using dietary assessment and clinical examination), but in only 9 states. Biochemical tests for assessing nutrition deficiency at the preclinical state have also been developed, and applied in population studies.

6. Macro and micro-nutrient content of over 100 Indian foods have been analysed and periodically updated. Current research emphasis is on health giving phytochemicals (nutraceuticals) in food.
7. Food processing helps to prevent post harvest losses, generates employment, and contributes to nutrition security. CFTRI, Mysore, Defence Food Research Laboratory (DFRL), Mysore, agriculture universities, ICAR and several other institutions and NGOs have developed useful products, and storage devices. Affordability is an issue, since processing and packaging add to the cost. Nutrient-dense fortified foods like biscuits and ready to eat mixes have a role in situations like reaching food and nutrition to calamity-hit populations and special groups working in special conditions like high altitude. However, for government programmes like ICDS and MDM, proper hot meals made from raw food grains or ready-to-cook cereal-pulse products, fortified with selective nutrients like iron (whose availability through natural foods is a problem), are needed.
8. Food fortification for increasing micronutrient security eg. Iodised salt and double fortified salt, (iron and iodine). Iodised salt is being marketed since

Increased Availability and Access to Variety of Foods

1. Environmentally sustainable, nutrition oriented cropping pattern, using a blend of time-tested conventional and new technologies with appropriate safety checks. – Awareness and education of agriculture professionals at all levels and community – Ministry of agriculture (MOA), ICAR, State agriculture universities, MI&B.
2. House-hold food and nutrition security through decentralised, nutritionally oriented cropping pattern, homestead production of nutrient-dense vegetables, fruits, and animal products – poultry, dairy, fishery. Home grown food can ensure livelihood security, reliable and affordable food security and reduce rural urban and gender divide. - Awareness and education of agriculture professionals at all levels – MOA, ICAR, State agriculture universities, I&B.
3. Nutrition dimension should be mainstreamed into national missions like Horticulture, Food security, NREGA

and Rural Health Mission, with defined input and output parameters for monitoring. NREG scheme should be well structured to create assets that would help ecology and nutrition and develop skills. S&T institutions should be involved in its execution. – MOA, Ministry of rural development (MRD), MOH.

4. Orphan crops like millets should be revived. Increase in production of pulses should receive high priority. – MOA, ICAR, State agriculture universities, MI&B.
5. Efforts need to be made to bridge the gap between actual and potential productivity of all crops. – MOA, ICAR, State agriculture universities, MI&B.
6. Community gene, seed, grain and water banks, and crop livestock integrated farming will enhance nutrition security in dry land areas. – Agriculture extension, MOA, ICAR, State agriculture universities.
7. Post harvest technologies including establishment of modern silos, and food processing for value addition should receive high priority to prevent wastage of farm produce and generate employment. – MOA, MRD, Ministry of food processing industries (MFPI).
8. Public distribution system should be strengthened and basket of commodities increased to include millets, pulse and oils. – Ministry of civil supplies.
9. Export of Soya bean products should be stopped till availability of other pulses improves. Soya bean can be used to fortify wheat flour and other vehicles. - MOA, MFPI, Civil supplies.

Conclusion:

India still faces the challenge of ensuring food and nutrition security, given its high poverty and malnutrition levels. Although the poverty level went down from 55% in 1973–1974 to 27.5% in 2004–2005, more than 300 million people still live below the poverty line (Figure 14). While growth alone cannot take care of the vulnerable groups, and social safety net programs are needed, it is also true that higher growth resulting in better employment and income opportunities is a more sustainable solution to ending poverty and hunger. This is in line with the inclusive growth principle of the country. The huge investment in farming can accelerate the growth of agriculture to 6% or 7%, and which is widespread geographically and socially to ensure food and nutrition security to its

masses. Looking into the role of the various stakeholders, the public sector can enhance investments by rationalizing subsidies as these have much lower rates of return than investments in, say, agriculture R&D, rural roads, and irrigation. But ironically, today, quite a bit of the public resources going to agriculture are in the form of subsidies. The private sector can take an obvious lead in investments in the value chain; the investment can be as small as a farmer's investment in setting up a tube well to as big as a corporate player's investment in logistic services. The role of multilateral and bilateral agencies can come in supporting many of the public sector initiatives as well as private ventures.

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