World Health Day

# The Nutrition Problem in India

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**The nutritional problems which confront India today are in many respects similar in nature, if not in magnitude, to those confronting many developing countries of the world. A review of India's current nutritional problems is, therefore of general interest.**

THE THREE MAJOR factors that generally determine the nutritional situation of any country are population growth, food production and the distribution of food. The population of India, which stood at 361 million in 1951, rose to 547 million in 1971. According to current projections, India's population, even allowing for the most optimistic estimates of the impact of family planning programmes, will touch the 900 million mark by the turn of the century. India's performance with regard to food production must be judged in the light of this relentless growth of population.

Apart from the vastness of her population, the age structure of India's population and consequently the dependency ratio are also unfavourable from the nutritional and economic standpoints. Children below 12 constituted 38% of the total population in 1971, as against just under 20% in the technologically advanced affluent countries. It would seem unlikely that the situation will be materially different by the turn of this century.

## The green revolution

Throughout the last two decades, India's food production managed to keep pace with population growth. During the 1950s, increase in food production was achieved largely through bringing more land under cultivation. It would have been impossible to continue this process during the 1960s and to increase the area under cultivation to levels necessary to meet the demands of the growing population. Fortunately, however, during the 1960s a breakthrough in agricultural technology resulting in the propagation of high-yielding varieties of food-grains enabled India to register an impressive increase in food-grain production from a figure of 82 million tons in 1960 to 108 million tons in 1971. Thus, thanks largely to the green revolution, it became possible to ensure that food-grain production kept pace with population growth.

The initial success which attended the green revolution generated considerable optimism, and indeed at one stage led to the facile assumption that the final answer to India's food problem has been found. This mood of elation has now given place to a more realistic appraisal of the tremendous problems that still remain to be overcome, and there is at present a growing realization that some of the earlier expectations were perhaps unwarranted. The green revolution has so far been largely a wheat revolution. It has not been possible to repeat with other food-grains the miraculous success achieved with wheat. While there has been some progress with rice, there has not been much headway with millet. It has been estimated that out of 40 million acres under sorghum cultivation, only one million acres have so far been devoted to high-yielding drought-resistant varieties.

The green revolution has also so far tended to distort the cereal-pulse ratio. A real beginning has yet to be made with regard to augmenting pulse cultivation. Also, a vigorous programme for overcoming the serious shortage in edible fat has yet to be initiated. Apparently, many practical and logistic problems which are at present impeding the tempo of these programmes have still to be overcome.

The new agricultural strategy envisages substantial increase in the yield per hectare through better irrigation, increased fertilizer inputs and an intensive programme of inter-cropping using short-duration varieties of crops. If this new agricultural strategy is faithfully implemented, the country will be able to achieve food-grain production of the order of 180 million tons per annum by the turn of the century. But this level of food-grain production would enable the country only to maintain the *per caput* availability of food *at the present level.* Even on the basis of the low-cost balanced diets proposed by the Indian Council of Medical Research, India will have to boost its milk production by 200%, its oil production by 430% and its meat, fish and poultry production by 380% to meet the demands of her population by the year 2000 A.D. The prospects of the country being able to achieve these targets do not at present appear rosy. A spectacular breakthrough in animal husbandry which would match the earlier breakthrough in agriculture will be necessary.

## Maldistribution of available food resources

On the basis of figures for food-grain production and population for 1971, it may be computed that if all the food produced in the country were equitably distributed among the people, caloric intake in the adult male would be roughly of the order of 2000 calories, as against the requirement of 2400 calories for an average male adult engaged in sedentary occupation, and 2800 calories for a male adult doing "moderate work". Average caloric intake in the adult female would be 1900 calories for a female adult engaged in sedentary work and 2300 calories for a female adult doing "moderate work". The

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protein intakes would be between 55 and 60 g, more than adequate by accepted standards.

However, the diets of different groups of population in India vary enormously, so that computations of average availability of calories and proteins have no practical meaning. The unfortunate fact is that there are vast pockets of under-nutrition in different regions of the country where the calorie and protein intakes fall far below the minimum requirement. Thus, among the poorest groups, caloric intakes as low as 1700 calories among adult males and 1400 among adult females have been noticed.

Extensive surveys among different groups of people go to show that, in Indian diets, the major bottleneck is calories and not proteins. Though Indian diets are predominantly cereal-based, if these are taken in amounts sufficient to meet the daily calorie needs, the minimum protein requirements will also be usually met. But unfortunately, among the poor communities, even cereals are not taken in quantities sufficient to meet minimum calorie needs. In such a situation, protein in the diets tends to be used by the body in such a way that it is diverted for purposes of providing energy and not for building of body tissues. In effect, then, what we are dealing with primarily is not a "protein gap," as is often made out, but really a "food gap."

Surveys carried out among poor children have shown that 90% of them have calorie intakes well below their minimum requirements, the deficiency being of the order of 300-400 calories daily. The calorie intakes in these children provide roughly only two-thirds to three-quarters of minimum requirements. Thirty-five per cent of children in poor communities have been found to have a protein intake below the requirement.

But, as pointed out above, the protein requirement in these children could be met to a great extent, if the diets on which they are now subsisting were taken in quantities sufficient to meet their total caloric needs.

Such gross inadequacies in diets are naturally reflected in a high incidence of nutritional deficiency diseases. Using the widely accepted criterion of growth retardation, it may be computed that nearly 65% of toddlers in poor communities in India suffer from moderate malnutrition and 18% from severe malnutrition. The incidence of nutritional deficiency diseases in schoolchildren of some poor communities has been found to be as high as 22%.

Malnutrition among pregnant women of poor communities is also widespread. A large proportion of these women suffer from anaemias in the last term of their pregnancy. Such malnutrition has now been shown to be responsible for low birth-weights of infants (small-for-date babies) and to result in a high degree of pregnancy wastage—nearly 30%.

Apart from the immediate effects, the long-term effects of malnutrition are now being appreciated. The "quality" of a very high proportion of human resource in the country is being undermined because of widespread malnutrition.

## Protein-calorie malnutrition

The major nutritional problem which has attracted global attention is so-called "protein-calorie malnutrition" in children. The fact which has emerged is that in the current diets of pre-school children in India, the major bottle-neck is calories and not proteins. Asian diets, unlike African ones, are largely cereal-legume-based, and cereals and legumes provide a fair concentration of protein. The basic strategy in combating this problem in India is to bridge the "food gap", using the existing diets with marginal improvements in their quality.

It may be stated, with regard to most villages in India that there is *no* problem of protein-calorie malnutrition in these villages which cannot be solved with inexpensive foods available within a radius of 10 miles of the villages. The solution is to use inexpensive, locally available foods in proper combinations. Several recipes based on such foods, which the housewife can prepare in her home to feed her children, have been set out by the Indian Council of Medical Research. A major effort is now called for to educate mothers to use such recipes in the feeding of their children.

The Government of India has now started a massive decentralized programme of supplementary feeding of children at risk in poor communities. The supplements will be based entirely an inexpensive, locally available foods and every effort will be made to ensure local community participation in the programme. The supplements will be so designed as to bridge the calorie gap, using conventional food ingredients.

## Vitamin A deficiency and blindness

Vitamin A deficiency is a major cause of preventable blindness in children in many parts of Asia. Unfortunately, keratomalacia, or xerophthalmia, the eye disease resulting from vitamin A deficiency and ending in blindness, is still commonly found in many paediatric and ophthalmic hospitals in South-East Asia.

The logical answer to the problem of vitamin A deficiency is to encourage poor communities to include more green leafy vegetables in the diets of the children. But this approach involves intensive nutrition education and will take time to yield results. Since vitamin A can be stored in the body for prolonged periods, it should be possible to build up sufficient vitamin A stores in a child through the administration of one or two massive oral doses of vitamin A in a year. This approach has been found feasible in the extended field trials carried out by the National Inst tute of Nutrition, Hyderabad, and today a national programme for the prevention of blindness in children through the use of such massive doses of vitamin A given twice a year has been undertaken

The evaluation of this programme in two states of India—Kerala and Mysore—has indicated a decline in the incidence of vitamin A defi-

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