Dietary consumerism and nutrition security: The Indian perspective*

Mahtab S. Bamji

Sustainable consumption is an important component of sustainable development. Consumption is not just a problem of population growth, but also of resource-intensive consumerist life-styles. For India, the challenge therefore is to achieve progress towards equitable human welfare with lesser utilization of energy, water and other resources than is possible with the western model of development. Countries of South Asia have the highest percentage of the malnourished in the world. Malnutrition has a complex aetiology, of which household food security (which in turn depends on local availability of food, purchasing power and knowledge to utilize it properly), is an important aspect. The challenge before agricultural scientists is to make available nutritionally well-endowed foods, at least cost both to the environment and the consumer. This is a no mean challenge, because consumers (even the poor) have their own preferences for foods, which are not always guided by their nutrient content. The word 'consumerism' generally implies excessive consumption, driven by guided or unguided consumer choices and preferences. Normally, higher incomes and urbanization are associated with consumeristic life styles.

Income- and urbanization-driven dietary choices, their sustainability and nutritional and health implications

Rural–urban differences in food and non-food expenditure

THE impact of urbanization and of income on the diets of Indians was examined through scrutiny of the National Sample Survey data[1]. In all the states the income of urban populations, as judged by monthly per capita expenditure (MPCE – a proxy for income), was higher than that of their rural counterparts. On an average, the income of the urban population was 80% higher than that of rural people. However, the calorie intake of the rural population was about 8% higher (perhaps due to their higher physical activity) than that of the urban population. As a result, while urban Indians spent on an average 51% of their income on food, their rural counterpart spent 66% (Table 1). The expenditure on income-elastic foods such as animal foods, fruits and vegetables, sugar and oil, was 50–80% higher and that on beverages and refreshments, almost three-fold higher in urban populations. However, their expenditure on food grains, mostly cereals and millets, was about 8% lower. In terms of non-food expenditure, the urban people spent much more on durable goods, clothing, fuel, paan and intoxicants (a reflection of consumerism) as well as on rent and taxes.

Differences both in rural and urban incomes were also seen between different states in India, with Punjab having the highest monthly per capita income (rural Rs 170.52 and urban 185.2) and Bihar the lowest income (rural 93.75 and urban 138.43).

Expenditure in rural areas: food and non-food items among different income groups

Table 2 compares the expenditure patterns of rural Punjab with those of Bihar. The richer Punjabis spent

Table 1. Average monthly per capita expenditure (MPCE) (Rs) and calorie intake per consumer unit

Item	Rural	Urban	U/R
MPCE	202.0	365.0	1.8
Total food	133.0	186.0	1.4
Cereals	49.8	45.0	0.9
Pulses	9.2	12.1	1.3
Animal foods	26.1	44.6	1.7
Fruits and vegetables	16.4	25.9	1.6
Oil and sugar	18.1	26.7	1.5
Beverages and refreshments	8.3	23.8	2.9
Non-food	69.0	141.0	2.0
Cal/cu/day	2780.0	2574.0	0.9

Mahtab S. Bamji (Emeritus Scientist, Indian Council of Medical Research) is with the Dangoria Charitable Trust, 1-7-1074 Musheerabad, Hyderabad 500 020, India.

*This paper is a modified version of a talk given by the author at a symposium on Sustainable Development, 67th Annual Convention of the National Academy of Sciences, 24–26 October 1997, Bhubaneshwar, India.

57% more on food and almost three times more on non-food items. Amongst the items of food, it is interesting to note that despite 20% higher caloric intake in Punjab, their expenditure on cereals was less than half that of Bihar (Table 2). Rural Punjabis seem to derive their extra calories from animal foods, mostly milk and milk products, oil, sugar, beverages and refreshments. The implication of such shifts will be discussed later. Among the non-food items, the expenditure on durable goods was 40-fold higher and that on clothing and footwear, fuel and light and miscellaneous services and goods 2–4.5-fold higher in rural Punjab than in Bihar.

Thus it appears that urbanization and rising income lead to greater expenditure on and therefore consumption of foods of animal origin, vegetables and fruits, oil, sugar and beverages and refreshments (snacks). The increase in non-food expenditure is of greater magnitude than food expenditure.

Implications of the choice of the staple cereal

To find out the basis of lower expenditure on cereals in rural Punjab compared to rural Bihar, the quantities and the types of cereals/millet consumed in the two states were examined. Not only did the Punjabis eat a lesser quantity of cereal, but they ate a cheaper cereal, wheat and very little rice, which is the most expensive cereal. On the other hand, the Bihari's preference for rice resulted in a greater expenditure on cereals, despite a lower intake of calories (Table 3).

The impact of the choice of cereal on the rural household's economy and flexibility for other foods is also apparent from the comparison of rural UP and West Bengal, both having almost identical incomes (MPCE) (Table 4). West Bengal spent 71.6% of its income on food and derived only 2,500 calories, compared to UP which spent 64.4% on food and derived 3000 calories. UP's consumption of all items of foods (except for beverages and refreshments) was higher than that of West Bengal, pulse consumption being almost 2.5 fold higher. The reason for this economic and nutritional advantage is obviously the choice of the staple cereal (Table 5). While Bengal depended almost entirely on rice (91%), UP had a more mixed diet with wheat, rice and some millet. Both wheat and millet are much cheaper than rice. Nutritionally also, wheat and millet are superior with higher contents of protein, vitamins and minerals[2]. Though rice protein has a higher biological value because of a higher content of the limiting amino acid lysine, on the whole, per 100 g cereal, this advantage is offset by the lower protein content.

There is a growing shift from millet to rice even in communities which were earlier engaged in dryland farming and depended on coarse grains. Apart from being nutritionally less advantageous, rice cultivation is more water- and labour-intensive, with most of the

Table 2. Monthly per capita expenditure (MPCE) (Rs) and calorie intake per consumer unit

	Rural		
Item	Punjab	Bihar	Punjab/Bihar
MPCE	327	167	2.0
Total food	195	124	1.6
Cereals	33	69	0.5
Pulses	12	8	1.5
Animal foods	68	15	4.5
Fruits and vegetables	22	15	1.5
Sugar and oil	38	11	3.5
Beverages and refreshments	15	3	5.0
Cals/cu/day	3325	2765	1.2
Non-food	128	43	3.0

Table 4. Monthly per capita expenditure (MPCE) (Rs) and calorie intake per consumer unit

	Rural		
Item	UP	W. Bengal	UP/W. Bengal
MPCE	197	197	1.0
Total food	127	141	0.9
Cereals	41	72	0.57
Pulses	12	5	2.4
Animal foods	27	23	1.2
Fruits and vegetables	16	14	1.1
Oil and sugar	21	14	1.5
Beverages and refreshments	5	6	0.8
Non-food	70	56	1.25
Cals/cu/day	3014	2512	1.2

Table 3. Quantity and value of consumption of cereals per person for 30 days

	Rural			
	Punjab		Bihar	
Item	Qty (kg)	Value (Rs)	Qty (kg)	Value (Rs)
Rice	0.7	3.6	9.2	42.8
Wheat	10.8	28.9	6.1	23.0
Millets	0.1	0.6	0.9	2.4
Total	11.7	33.1	16.4	68.8

Table 5. Quantity and value of consumption of cereals per person for 30 days

	Rural			
	UP		West Bengal	
Item	Qty (kg)	Value (Rs)	Qty (kg)	Value (Rs)
Rice	4.1	15.2	13.60	66.20
Wheat	9.9	24.6	1.50	5.60
Millets	0.7	1.4	0.01	0.02
Total	14.8	41.4	15.11	71.82

drudgery being done by women. Groundwater is being mindlessly tapped in areas where canal irrigation is not available, to grow crops like rice and, worse still, sugarcane. A further dent in the nutrient content of a rice-diet occurs in some communities through the unhealthy practice of discarding excess rice water (ganji) after cooking, in the belief that it is unhealthy and carries pesticides. Rice has become a prestigious and convenient food. In AP, highly subsidized rice is sold through the public distribution system to the poor. Is this a good strategy from the nutrition or development points of view?

Production of major food crops in India

From 1980–81 to 94–95, there was a sharp increase in the production of oilseeds (127%), a good increase of sugarcane (67%), some increase of cereals like wheat and rice (49%) and of pulses (33%), but only a marginal increase (6%) in the case of millet[3]. This indeed is a matter of concern both from the nutritional and environmental points of view. But, most developmental decisions are based on economic and political, rather than health or environmental considerations.

Implications of preference for animal foods

In many developed and fast developing countries, preference is growing for foods of animal origin such as meat, milk and eggs. To produce animal foods, 2–5 times the quantity of foodgrain is required because of poor conversion efficiency[4]. As a result, foodgrain consumption by developed countries with lower populations but a preference for animal foods, is much higher than that of developing countries with larger populations. While developing countries of South Asia use most of their foodgrains for human consumption, in the USA, 69% is diverted to feed livestock. Many emerging economies of S.E.Asia, Central Asia and Latin America are going the western way[5]. If South Asian countries like India were to follow their example, the pressure on foodgrain production and consequently on land, water and energy will be totally unsustainable. According to one calculation made by Katels *et al.* in 1959 (quoted by Sankaran[4]), the earth can support 6 billion people if all were vegetarian, 15 billion if 15% used animal foods and 3 billion if 25% used animal foods.

According to a recent projection made by FAO, the demand for cereals for direct food consumption may grow at only 1.9% per annum, whereas that for feed will grow at 3.7% per anum. However, diet surveys done in India over the years show that the diets of the rural poor have not changed much in the past 15 years, except in some states like Kerala.

How healthy are animal foods?

The quality of protein of animal foods is superior to that of foods of vegetable origin[2]. Also, the availability of vitamins and minerals from animal foods is better because of lower content of fibre and of anti-nutrients like phytates and tannin. Therefore, inclusion of some quantity of animal foods like milk and eggs, particularly in the diet of children and pregnant and lactating women is certainly desirable. On the negative side, animal foods are more atherogenic due to a higher content of cholesterol (except fish and skinned white meat) and saturated fats (except fish) compared to vegetarian foods.

As far as protein is concerned, the biological value of vegetarian food can also be improved and made almost comparable to that of animal foods, by mixing cereals, which are deficient in the amino acid lysine, with pulses which have adequate lysine but are deficient in methionine. Thus a judicious combination of cereals and pulses can provide adequate protein, both in terms of quantity and quality. A balanced developmental strategy would be, to produce as much animal food as is possible by the utilization of farm waste or foodgrains not suitable for direct human consumption. Land and its precious resources should not be burdened to grow foodgrains for fattening animals destined for slaughter.

In recent years, a lot of stress is being laid on the inclusion of fruits and vegetables. particularly the green leafy vegetables, for their vitamin and mineral contents. Besides, fruits and vegetables have some precious phytochemicals with health-giving properties (anti-oxidants, detoxifying agents, etc.). A higher consumption of fruits and vegetables is associated with lower incidence of degenerative diseases such as cardiovascular and cancer. Unfortunately, the nutritionally best endowed vegetables such as the green leafy vegetables, receive the least attention both in terms of production and consumption. Excess consumption of sugar and oil is positively undesirable, resulting excess intake of calories, lesser fibre and a tendency to obesity apart from greater susceptibility to degenerative diseases like diabetes, hypertension, heart disease and cancer. While too much fibre interferes with absorption of micronutrients like minerals and vitamins too little is also bad.

Nutritional and health implications of rags to riches

Recent epidemiological studies from the UK show that migrants of Indian origin are more vulnerable to coronary heart disease and diabetes[6]. They also show greater susceptibility to the syndrome X, characterized by abdominal obesity, hypertension, hyper-insulinaemia and lower concentration of high density lipoprotein (HDL). According to Barker[7], increased susceptibility to

syndrome X may be due to intrauterine (foetal) undernutrition, which takes its toll in later life, particularly amongst those who are exposed during that period to the risk factors generally associated with affluence. In other words, an individual who is programmed to frugality *in utero*, is less prepared for and less able to tolerate the dietary and environmental changes that predispose him to degenerative diseases, than an individual who has had the privilege of good nutrition in foetal life. A country like India which is in transition has therefore got to be more careful about extravagant life styles, including diet.

Demand, production and consumption of different foods in India

Having cautioned against an excessive leaning towards foods of animal origin and refined foods like fats, oils, sugar and jaggery, let us see where India stands today with regard to demand, production and consumption of different foods. The Indian Council of Medical Research has made recommendations for a balanced diet which include cereals, pulses, oil seeds, vegetables, fruits, milk and other foods of animal origin. Using those guidelines, termed recommended dietary allowances (RDA) and considering a population of over a billion (1.015) by the year 2001 and food productions recorded during 1994–95, it is obvious that India falls short of even its modest dietary demand of foods of animal origin (Table 6)[8]. Recent diet surveys conducted by the National Nutrition Monitoring Bureau in 8 states of India show that despite such shortfalls, the rich are consuming more than what they need, whereas the poor are not able to afford even the minimum that is required for a healthy, balanced diet (Table 7)[9]. The question, therefore is, if India does produce more, into whose diet will the extra go? Will the poor continue to be deprived and the rich consume even more? Most certainly yes. If the poor are not able to afford even foods like pulses, fruits and vegetables, which are relatively cheaper, will they ever be able to afford the more costly foods of animal origin though there is some indication that consumption of sugar and jaggery and to some extent fats and oils is going up even in their diets.

Time trends in food and nutrient consumption

The NNMB data show that over the last 20 years, cereal consumption in most states has come down slightly. With that there is marginal decline in calorie intake. The intake of pulses has on an average remained constant and that of milk and milk products, sugar and jaggery and oils and fats has tended to go up[9]. However, the shifts are not substantial except in certain instances, such as a reduction of almost 200 g in the cereal intake in Karnataka and an almost 2-fold and 4-fold increase in the intake of milk and milk products in AP and Kerala respectively.

Malnutrition in pre-school children: time trends

The NNMB surveys show that over the past 15 years (1980–95), the proportion of normal and mildly-malnourished (grade I malnutrition) among children has increased, whereas that of moderate and severely malnourished children has decreased (Table 8)[9]. This suggests that though there is some improvement in the degree of malnutrition in the country, over 50% of preschool children continue to suffer from moderate and severe grades of malnutrition. In fact India has the dubious distinction of having a greater degree of malnutrition in children than even sub-Saharan Africa. The situation with adults is similar. Thus India needs to redefine its developmental priorities and strategies, so that the fruits of development reach the masses and do not benefit just a few privileged individuals.

Table 7. Impact of per capita income on food consumption

	Per cent RDA				
	Rural			Urban	
Food	Average	Rs 30	Rs 300	Slum	HIG
Cereals	101	110	76	90	69
Pulses	82	75	95	28	105
GLV	32	48	15	28	52
Milk	63	34	189	28	283
Fats and oils	65	45	120	65	230
Sugar/jaggery	77	43	120	67	130

Table 6. Projected food requirements (in million tons) for 2001 – population, 1015 M

Food	Requirement 2001 AD	Production in 1994–95
Cereals	181	182
Pulses	20	15
Vegetables and fruits	48	51
Milk	92	64
Animal foods	17	7
Fats and oils	7	7

Table 8. Nutrition status of 1–5 yr children (wt/age)

	Grades of undernutrition Per cent		
Grade	1980	1990	1995
Normal	4.2	8.9	8.5
Mild	34.5	37.8	40.6
Moderate	50.9	44.3	43.4
Severe	10.4	9.0	6.9

Processed foods and fast foods

Primary processing of foodgrains as well as horticultural products is part of India's tradition. To increase the shelf-life and for value-addition, food processing is receiving great emphasis in the country and even a separate ministry has been established. Essential as food processing is, it does result in loss of nutrients, particularly micro-nutrients. Addition of salt as a preservative, increases the sodium content and alters the sodium/potassium ratio. Such foods are contraindicated for those having blood pressure. Also preserved foods like jams, jelly and juices have a high sugar content. Questions have also been raised about the use of chemical preservatives and colours. Fast foods are also a part of Indian culture and are becoming more and more popular with urbanization, with new foods entering the menu. Unhygienic conditions of the food stalls and repeated use of oil which has been heated for frying are the common health risks. These issues, however, can be tackled through corrective measures like enforcing hygiene, use of safe preservatives and food-grade colours, etc. Consumerism in fast foods can lead to excessive caloric intake and obesity.

In conclusion, for better nutritional security, demand for and production of foodgrains and fruits and vegetables which are nutritionally better endowed and less resource intensive for their production should increase. Excessive demand for foods of animal origin, may create unsustainable pressures on land, food and water. Future research should try to identify/develop nutrient-rich foodgrains, fruits and vegetables.

1. National Sample Survey, *Sarvekshana*, 1994, **17**, 57–84.
2. Gopalan, C., Ramasastry B. V. and Balasubramaniam, S. C. (eds), *Nutritive Value of Indian Foods*, National Institute of Nutrition, Revised & updated by Narasinga Rao, B. S. Deosthale, Y. S. and Pant, K. C., Hyderabad, 1989.
3. Parikh K., *India Development Report*, Oxford University Press, Delhi, 1997.
4. Sankaran, A., *Indian Farming*, October 1992, 4–10.
5. FAO, *World Agriculture towards 2010*, 1995, 436–438.
6. McKeigue, *Br. Heart J.*, editorial, 1992, **67**, 41–42.
7. Barker, D. J. P., Hales, C. N., Fall, C. H. D. *et al.*, *Diabetologia*, 1993, 62–67.
8. Achaya, K. T., in *Text Book of Human Nutrition* (eds Bamji, M. S., Prahlad Rao, N., Reddy Vinodini), Oxford & IBH, New Delhi, 1996, pp. 483–488.
9. Krishnaswamy, K., Vijayraghavan, K., Gowrinath, Sastry, J. *et al.*, *25 Years of National Nutrition Monitoring Bureau*, National Institute of Nutrition, Hyderabad, 1997.

Received 22 May 1998; revised accepted 18 August 1998