

## Policy issue

# Is nutritional status deteriorating in Bangladesh?

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### Introduction

Food availability and the dietary pattern of an average farmer and his family in Bangladesh are largely governed by what they produce.<sup>1</sup> The country suffers from poverty, traditional dietary practices, frequent natural disasters and population growth, all of which seem to be resulting in a gradual reduction in nutrient intake per individual. This review addresses these issues and analyses their impact on nutrition status in Bangladesh over the last 50 years.

### Dietary practices in the past

The traditional dietary pattern in Bangladesh changed little until about 1937.<sup>2</sup> The diet at the village level was primarily based on rice which provided 70% to 80% of the daily requirement of energy. The source of dietary protein was commonly-used pulses, such as Bengal, green, black and cow gram, lentil, peas and kheshari. Green leafy vegetables were mainly consumed by rural people and were not popular among urban dwellers. Expensive items such as meat, fish and eggs were far less available. A survey by Wilson and Mitra<sup>2</sup> in the 1930s showed that daily nutrient intake of poor people was better than that of today. The quantity and quality of diet were closer to the expected level for the recommended daily intake of the League of Nations.

Women used to avoid animal food and restricted their dietary intake during pregnancy in fear of a difficult labour and producing heavier babies. Newborn babies were not fed the colostrum and breastfeeding was delayed for about three days after birth.<sup>3</sup> Newborns were fed mustard oil,

honey and water to clear their mouth and stomach and to protect them from coughs. Although rice was introduced at six months of age at a festival called Anna Prashana, infants received mostly breastmilk until two years of age.

### Food and natural disasters

There was massive starvation among the people during the devastating great Bengal famine of 1943 when there was a scarcity of cereal foods.<sup>4</sup> About 14% of the population died of starvation and 29% became destitute. People ate green leaves, roots, tubers and many unfamiliar foods. The price of rice in Dhaka city increased by 14 times. The critical period lasted from March to November 1943, though many people died due to infection and malnutrition over the following year. In November 1970, there was a national disaster which followed a cyclone and a flood which destroyed crops. People lived for one year on food aid including grain, fish protein, milk powder, etc. until the next crops were harvested.<sup>1</sup> In 1971, the war of independence again caused widespread misery and distress. About nine million people were destitute and lived as refugees in India and a further two million died. Children were offered unfamiliar foods in the relief camps and they accepted new food items such as fish protein concentrate (FPC). Their daily intake improved from 50g to 150g of FPC.<sup>1</sup> Many refugees stayed for one year in the relief camps and gradually accustomed themselves to using wheat as their staple diet. During and after the war of independence, wheat, milk powder and vegetable oils became the main food items for relief.

During the 1974 famine, crop failure was very severe in the northern districts of Bangladesh. People had to eat unusual foods such as wild arums (kachu), green leaves and roots. A variety of root vegetables served as a rice substitute.<sup>3</sup> Again in 1977 such new food items as dried fish powder, wheat and millet were commonplace in feeding programmes after another flood.<sup>4</sup>

### Transition in dietary pattern

Since the late 1960s, a limited number of agricultural development programmes have introduced small-scale cultivation of high yielding varieties of wheat, sunflower seeds and soya beans in Bangladesh. Labourers have been paid with wheat for their wages in some 'food for work' programmes. Some voluntary organizations and government programmes have begun dietary education on child feeding and practices for urban and semi-urban areas and the early introduction of solid food and animal protein have been accepted in child feeding programmes for the village level.<sup>5</sup> Feeding during diarrhoeal disease is now being practised in some places instead of withholding food during the illness.<sup>6</sup> But the activities supporting nutritional education have not been able to benefit the vast majority of the rural population.

The dietary pattern of tribal people in the northern and eastern hilly areas of Bangladesh is significantly different and their daily energy intake is higher than that of the plains people.<sup>7</sup> They have accepted the cooked curry foods and milk products from the plains.<sup>8</sup> Wheat and millet are increasingly produced and consumed in the middle and eastern districts where they meet about 50% of total cereal requirements. Vegetable oils have now replaced the traditional mustard oil. A pulse called kheshari dal (*Lathyrus sativa*) is being used as a substitute for rice and wheat by the poorer people in the northern part of Bangladesh.

### Present pattern of dietary practice

Recent FAO recommendations for the daily energy intake for adult males are 2558 kcal and for adult females 1719 kcal.<sup>9</sup> In Bangladesh males consume more calories than females, depending on seasonal variation.<sup>9</sup> Seasonal food

shortages during the wet season are associated with weight faltering in adult females.<sup>12</sup> Urban and semi-urban elites have an adequate energy and protein intake compared to most of the rural people.<sup>13</sup>

Table 1 shows the trends in nutrient intake since 1937. The 1937 figures reflect the dietary intake of people from lower socioeconomic groups at that time. Total energy and protein intake have gradually declined. Wheat was introduced later and its consumption has increased gradually (Table 2). The intake of protein from pulses and fish had decreased significantly. The daily energy intake in 1982 has been reduced to about two-thirds of the 1937 value and the energy intake of the population is 40% below the FAO recommended daily energy allowance. Protein intake is 40% less and fat intake is 50% less.

### Change in nutritional parameters

The earliest nutrition survey of Bangladesh dates back to 1937. A report of Assam, rural Bengal and Calcutta has been used for comparison. Nutritional parameters used were Gomez classification for weight for age and Waterlow classification for weight for height. The subsequent reports were from the 1964 Nutrition Survey of East Pakistan and the 1975 and 1982 surveys of Bangladesh. Figure 1 shows the changes in the weights and heights of growing children. The nutritional status of children from the wealthier social classes in 1937 was equal to those of western children. In 1982, 43% of under-five children and 76% of children aged 7 to 12 from the higher income group were suffering from second and third degree protein energy malnutrition.<sup>14</sup> Compared with the survey of 1964, the nutritional status further deteriorated by 1975 and 1982 in the 5 to 11 year age group.<sup>15</sup> Twelve per cent more children from poorer socioeconomic groups were affected in 1975 as were an additional 6% from the better socioeconomic group in 1982. In the 1981-82 survey it was found that some 80% of children below 12 years were suffering from second and third degree malnutrition. Girls were more undernourished than boys. A gradual fall in height and body weight is evident in 7 to 12 year old boys from 1938 to 1982.

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Table 1. Trend of nutrient intake per capita per day in Bangladesh (1937 to 1982)

| Nutrients        | 1937           | 1962-64 | 1975-76 | 1981-82 |
|------------------|----------------|---------|---------|---------|
| Calories         | 2743           | 2251    | 2094    | 1943    |
| Protein (g)      | 78.4           | 57.5    | 58.8    | 48.4    |
| Fat (g)          | 19.7           | 17.7    | 12.2    | 9.8     |
| Carbohydrate (g) | 562            | 476     | 439     | 412     |
| Calcium (mg)     | 470            | 304     | 303     | 260     |
| Iron (mg)        | 72             | 4.7     | 22.2    | 23.4    |
| Vit A (IU)       | 1850           | 1390    | 730     | 763     |
| Vit B1 (mg)      | 767 (IU)       | 1.47    | 1.65    | 1.38    |
| Vit B2 (mg)      | 1.42           | 0.5     | 0.5     | 0.68    |
| Vit B6 (mg)      | 363 (rat unit) | 22.8    | 22.21   | 13.15   |
| Vit C (mg)       | 16             | 39.6    | 9.5     | 13.26   |

Recommended daily intake 2400 kcal/day  
Sources: References 2, 14 and 15.

Table 2. Trend of consumption of principal food items per capita per day (1937 to 1982)

|                            | 1937  | 1962-64 | 1975-76 | 1981-82 |
|----------------------------|-------|---------|---------|---------|
| Animal food (g)            | 45.0  | 56.5    | 44.0    | 17.0    |
| Sweet and white potato (g) | 0     | 79.9    | 38.6    | 35.0    |
| Wheat (g)                  | 0     | 16.0    | 29.0    | 30.0    |
| Pulse (g)                  | 40.0  | 28.0    | 23.8    | 17.3    |
| Fish (g)                   | 51.1  | 27.7    | 22.3    | 17.7    |
| Vegetable (g)              | 284.0 | 142.0   | 125.7   | 126.1   |
| Milk (ml)                  | 88.0  | 19.3    | 16.7    | 14.3    |

Sources: References 2, 14 and 15.

Nutrition-related morbidity has also increased. Biot's Spots were found in 1.1% in 1964 compared to 3.8% in 1975 amongst 5-14 year old children. Goitre increased from 12% of pregnant and lactating women in 1964 to 31% in 1975. About 75% of 5-14 year old children were anaemic in 1975 and 1982. In 1975, calcium deficiency was present in 31% of households, Vitamin A deficiency in 89%, riboflavin deficiency in 85% and Vitamin C deficiency in 93%.

There are many underlying factors associated with the reduction in food intake and the probable deterioration in health and nutritional

status, with food production, food availability and economic constraints being the most important. The country has been facing a food deficit since 1970 and the population growth rate is between 2% and 4%. Population density has increased from 656 people per sq mile in 1931 to 1566 people per sq mile in 1981. In the food sector the combined production of rice, wheat, potato and groundnut in 1975 amounted to 12.2 million metric tons compared to 15.7 million metric tons in 1981.<sup>26</sup> Total tonnage of pulses produced in 1972, 1975 and 1981 remained static at 34.3, 34.8 and 33 thousand tons. Per capita agricultural production has further decreased

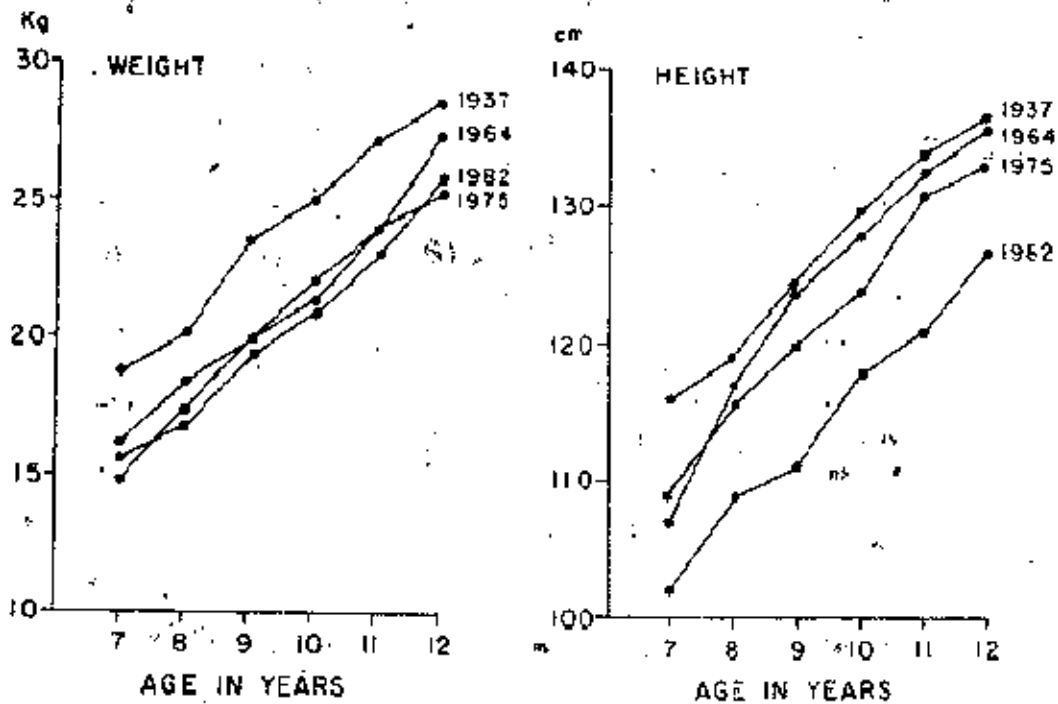


Figure 1. Weight and height for age of boys of rural Bangladesh (1937 to 1982)

from 1981 to 1986 affecting food availability. Recent disasters include a cyclone in 1985 and massive flooding in 1988 both of which damaged the crops and affected particularly the marginal farmers and agricultural labourers.

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