BIDS Policy Brief

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Implications for Human Development - Impacts of Food Price Volatility on Nutrition and Schooling[1]

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This Policy Brief discusses the impacts of the 2007/08 food price hike on nutrition and school attendance in Bangladesh. It has been funded by the UK Department for International Development (DFID).

1. Introduction

This Policy Brief discusses the impacts of the 2007/08 food price inflation on nutrition and on school attendance. It draws on the results of studies commissioned by the UK Department for International Development (DFID).

Even at times of average food prices, extremely poor and food insecure families suffer malnutrition and difficulties in school. This Brief outlines key policy implications for tackling hunger.

2. Nutritional Impacts of Food Price Rises and Lack of Affordability

The Burden of Malnutrition in Bangladesh

Bangladesh ranks 70th out of 88 developing countries on the Global Hunger Index. Some 30 per cent of the population is under-nourished and over 40 per cent of children under five are underweight. Bangladesh is the worst performing country in South and Southeast Asia in terms of nutrition.

Undernutrition is *serious:*

- Underweight babies are at greater risk of dying, are less resistant to disease in early life, and are more likely as adults to suffer diabetes, hypertension and other chronic illnesses.

- Stunting (under fives with low height-for-age) and anaemia in children restricts their mental development, affecting their ability to learn in pre-school and school, their IQ levels and the way their brains co-ordinate their physical skills and movements.

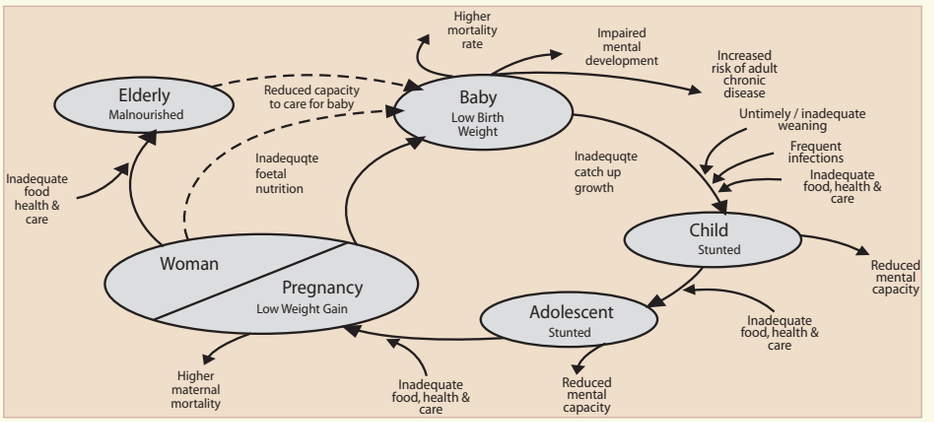
- Malnourished children commonly grow up to become underweight and stunted adolescents. Stunted and wasted mothers are more likely to have low birth weight babies, who in turn will become underweight and small children. So malnutrition passes from generation-to-generation, creating a vicious inter-generational cycle of growth failure (see Figure1).

Good nutrition is the foundation stone for survival, health and development. Well-nourished children perform better in school, grow into healthy adults and in turn give their children a better start in life.

Childhood and maternal malnutrition are the leading cause of the global burden of disease in low and middle income countries. Malnutrition accounts for 3.5 million deaths/year, and 35 per cent of the disease burden in children under-five years of age. Poor nutrition starts while the baby is in its mother's womb and this

[1] This Policy Brief was prepared for the National Conference on "Market Volatility, Vulnerability and Food Security: Strategic Issues and Policy Options" organised by the Bangladesh Institute of Development Studies (BIDS) and the UK Department for International Development (DFID) at Dhaka on April 9th, 2009. The views expressed in this paper are those of the authors and do not represent the official views of BIDS or DFID.

Figure 1: The Inter-generational cycle of malnutrition



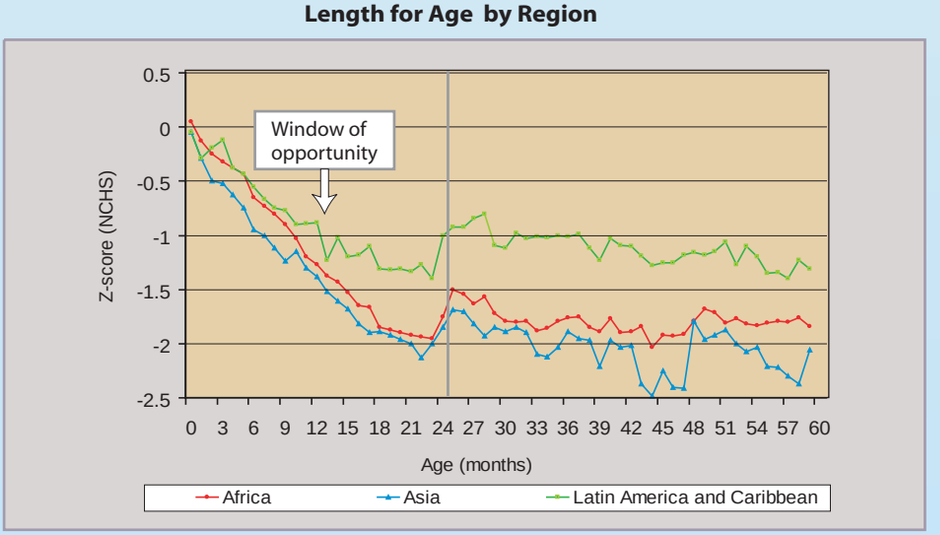
Box 1: Impacts of under nutrition

- Under-nourished women face greater risks during pregnancy and childbirth.
- Under-nourished children have lowered resistance to infection and are more likely to die from common childhood ailments like diarrhoeal disease and respiratory infection.
- Frequent illness undermines the nutritional status of those who survive, locking them into a vicious cycle of recurring sickness and faltering growth.
- Growth deficits cause learning problems, slower development and lower work capacity.
- Malnutrition in childhood is also associated with increased risk of several adult onset chronic diseases.

has adverse consequences in early life, through childhood and adolescence, and in adulthood. So the window of opportunity for improving nutrition is small, from before pregnancy through the first two years of life (see Figure 2).

Malnutrition is more common in South Asia than in sub-Saharan Africa. This "Asian Enigma" is puzzling since in general incomes are higher, food in greater supply and access to safe drinking water, education and health better in South Asia. One of the main reasons is the low status and lack of empowerment of women in South Asia.

Figure 2: The window of opportunity for improving nutrition
Length for Age by Region



Source: Shrimpton *et al.* (2001).

Key Millennium Development Goals (MDGs) for Bangladesh include improving the nutritional status of children (MDG1) and lowering death rates among children (MDG4). Although progress has been made, many families, regardless of their income levels, have children who suffer wasting, stunting and underweight. In addition, millions of people do not eat enough to fulfil their dietary energy requirements.

Table 1: Infant mortality and nutritional indicators in Bangladesh – 1990 and 2004

Indicator	1990	2004
Mortality in children < 1 year old	100/1000	56/1000
Underweight	66 %	48 %
Stunting	65 %	43 %

Bangladeshi children suffer very high rates of anaemia (over 85 per cent of children aged 6 to 23 months are anaemic), which can seriously affect cognitive development. Maternal undernutrition, including chronic energy and micronutrient deficiencies, is common in Bangladesh. Approximately 40 per cent of women suffer from low Body Mass Index, while 46 per cent of non-pregnant women and 39 per cent of pregnant women are anaemic.

Box 2: Definitions of Nutritional Status

Nutritional status is widely assessed using anthropometric measures. In infants and children, weight and height are commonly used in conjunction with age to define nutritional status:

- Low weight-for-height refers to wasting and is a measure of acute malnutrition.
- Low height-for-age and weight-for-age measure stunting and underweight respectively and refer primarily to chronic malnutrition.

In adults chronic energy deficiency or under-nourishment is defined by a Body Mass Index (BMI) of below 18.5 kg/m2. (BMI= weight in kg/ height2 in m.) The z-score indicates how many standard deviations an observation is above or below the median. A person is considered malnourished if they are two standard deviations or more below the median.

What Happened in 2007 and 2008?

The impact of the food price rises in 2007 and 2008 was especially serious in Bangladesh because (a) poor people in the country spend a large part of their income on food and (b) many mothers and infants from these families were already chronically malnourished. It is important to understand the causes and impacts of the recent food prices rises in order to inform future policy and programming.

Between January 2006 and August 2008, the national wholesale price of rice almost doubled from 16 Taka per kg to almost 31 Taka per kg. In order to assess the impact of this on nutrition, a survey was conducted by BRAC, with support from the UK Department for International Development (DFID), in August 2008. A sample of mothers and children, from poor thanas, who had been surveyed by the Nutritional Surveillance Project (NSP) in August - September 2006 were resurveyed to assess changes in their nutritional status over the two years period.

The main findings of the study are that, over the two years period:

- Families spent more on food (Figure 3) and a larger proportion of their food money on rice. The share of rice in total food expenditure rose from 45 per cent to 50 per cent in rural areas and from almost 30 per cent to over 40 per cent in urban areas (Figure 4). The increased share of rice in total food expenditure was most dramatic amongst the poorest groups (up from 50 per cent to over 60 per cent) and nearly stable for the richest group (37 per cent to 39 per cent).
- Wages increased (by 41 per cent in rural areas and 38 per cent in urban areas), but not enough to fully offset the food price shock.
- As real incomes dropped, people coped by substituting rice for other more valuable foods (especially animal protein), resulting in less diversified and inadequate diets. Overall food consumption fell.
- The poor diet during the period of high food prices is likely to have had serious short and long-term impacts on the nutritional status of children, as they require protein to maintain their growth and prevent anaemia.
- The prevalence of wasting (acute malnutrition)

Figure 3: Per capita weekly food expenditure (Taka)

among 2 to 5 year olds in rural areas rose from 17 per cent to 23 per cent between 2006 and 2008 (an increase of 34 per cent). In urban areas it rose from 14 per cent to 21 per cent (an increase of 47 per cent).

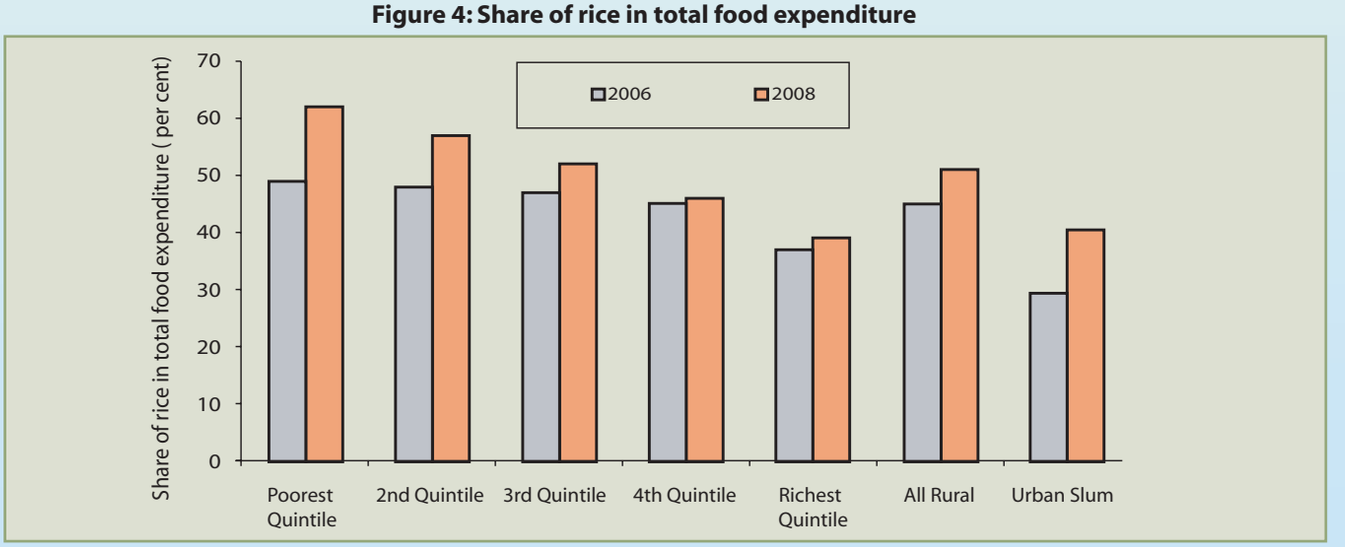
- Extrapolating from the results of the study, it is estimated that 650,000 additional under-five children in Bangladesh became wasted largely as a result of the higher food prices. There were also marked increases in the proportion of children who were underweight, stunted and wasted.

These results are detailed in a report published by BRAC (Parveen *et al.* 2009).

by contracted NGOs, it provides supplements to pregnant women and children aged 6 months to 2 years of age (600 kcal/day for 6 days/week for pregnant women and 150 kcal/day to 6 months to 2 year old children) to improve maternal energy consumption and infant and child growth. Food supplementation for each person is for a limited time, and remedial rather than preventative. This may partially explain why, despite being operational for 10 years, independent researchers have found little or no evidence that the nutritional status of either pregnant women or infants and young children have improved as a direct result of the food supplements.

It is time to review the usefulness of this approach. The nutritional problems in Bangladesh are soluble and effective approaches are not costly. The following interventions would be likely to significantly improve the nutritional status of

Figure 4: Share of rice in total food expenditure



Policy Options

A. Promoting Improved Nutrition

The National Nutrition Programme, which is operational in 25 per cent of the country, has been the cornerstone of health sector nutrition interventions since 1997. Delivered

mothers and infants and make them more resilient in the face of further food price and other shocks.

Promote exclusive breast-feeding for the first 6 months

Infant growth starts to falter very soon after birth because mothers do not exclusively breast feed and they have poor

hygiene. Infants become exposed to pathogens, some of which cause gut damage, so nutrients are either lost or food is not absorbed properly. Even under-nourished women with low BMIs produce 600-700ml of breast milk, which is sufficient for a growing baby. Exclusive breast feeding costs nothing! It needs to be promoted.

Promote complementary feeding after 6 months of age

There is considerable evidence that a baby's growth falters when weaning foods are introduced and, after 6 months of age, when breast milk is insufficient to meet the nutritional needs of the infant. So complementary foods (of appropriate quantity, quality and consistency) should be provided hygienically and sufficiently frequently to promote growth and prevent both acute malnutrition and long-term under-nourishment in children. Care must be taken to ensure that these foods complement rather than replace breast milk.

Promote good hygiene practices

Simple and inexpensive hygiene measures can radically reduce infections and thus improve growth and nutritional status. For example, nail trimming, washing hands with soap (or ash) after defecation and before preparing food, and wearing flip-flops will reduce the likelihood of infection with worms, diarrhoea and pneumonia. Some worms infect through the feet. Most children have flip flops – they simply do not wear them. A UNICEF survey found that less than 1 per cent of mothers in Bangladesh wash their hands after defecating or before cooking.

Promote and distribute micro-nutrients

Adequate micronutrients (vitamins and minerals, iron, zinc, iodine) in the diet will improve the physical and mental development of children while giving additional micronutrients to mothers has been shown to reduce the prevalence of low birth weight. A supply of micro-nutrient sprinkles for a year costs about 100 Taka per family. Educating mothers on the importance of the correct quantity and quality of foods to grow and/or buy, and the best way to cook foods to maximise their nutritional value, is essential to improve children's physical and mental growth and development. Micronutrients can be provided in many different ways – as 'sprinkles', in fortified flour, high nutrient biscuits, and as iodised salt .

De-worming

In Bangladesh, many people are infected with parasites, including roundworm, whipworm and hookworm. Worms damage the gut wall causing nutrient loss while hookworms feed by sucking blood, so they are a major cause of iron-deficiency anaemia. Children with worms score lower on cognitive and mental tests than children without worms, and are more likely to be absent from school. Regular de-worming at 6 monthly or annual intervals reduces the intensity of infection with worms and prevalence of anaemia, and improves cognitive function, growth and nutritional status. The cost of annual de-worming is about 5 Taka per person (excluding distribution costs).

B. Promote Livelihood Opportunities

Food transfers

Most food transfer and food supplementation programmes provide insufficient food and mostly carbohydrates; they are not given on time, at the right time, or for a sufficient length of time; and are inflexible. Many food-based safety net programmes (such as VGD, FFW, CFW, VGF, OMS[2]) provide insufficient energy (kilo-calories) and make too little difference to a poor person's energy intake, as the following table from the World Food Programme shows:

Table 2: Transfer values of food-based safety net programmes

Programme	Kcal level before transfer (Kcals/pp/pd)*	Transfer value (Kcals/pp/pd)	Kcal level after transfer (Kcals/pp/pd)
VGD	1749	177	1926
FFW	1749	150	1899
CFW	1749	107	1856
Test Relief	1749	77	1826
VGF	1749	25	1774
OMS	1717	23	1740
Non -Govt. safety nets	1749	292	2041

* Kilo-calories per person per day. See footnote 2 for full names of programmes. Source: WFP.

It is essential that the size of such transfers are increased and they are targeted properly, and the effectiveness of targeting is independently verified. Supplements for pregnant women should start as soon as they know they are pregnant.

[2] Vulnerable Group Development, Food-for-Work, Cash-for-Work, Vulnerable Group Feeding, Open Market Sales.

Direct cash transfers

Daily cash-in-hand from transfers to poor women, in the form of non-recoverable stipends, can be an effective way of helping to ensure that malnourishment, in some areas and some seasons, does not worsen. This can be more effective than larger cash remittances sent home, from time-to-time, by husbands who have migrated. A small amount of daily cash-in-hand is more likely to be spent on food consumption by women than larger more irregular sums which are invested in items, such as house improvement.

Cash from employment generation and infrastructure works

Paying extremely poor and food insecure women and men wages for earth-moving on infrastructure schemes can reduce malnourishment during the monga or hunger season. However, because of the hard physical labour involved, it is important that gender differences are taken into account (e.g., allowing women to work flexible hours, adjusting work-loads for women and catering for child-care). In some circumstances, women may become more under-nourished, as a result of working on earth-moving schemes, because the energy they expend exceeds the energy they gain from the extra food earned, which is shared with all their family members. It is well known in Bangladesh that women eat last and, when food is short, eat less.

The Cash-for-Work (CFW) programme in the Chars Livelihoods Project has been found to be associated with higher household expenditure and consumption of food, especially of fish, eggs and meat, as well as improvement in women's and children's nutritional status. Children of families involved in Cash-for-Work showed significantly less stunting, underweight and wasting than the control group children (Mascie-Taylor, Marks and Goto 2009).

The Government's 100-day Employment Generation Programme (EGP), which was started in September 2008 in response to the food prices, demonstrates how effective CFW can be in boosting purchasing power and improving the welfare of extremely poor families faced with crisis. A majority of the beneficiaries interviewed in a recent survey, notably women, reported positive impacts on food consumption and investment in productive assets (NFPCSP *et al.* 2009). Food-for-Work (FFW) schemes can bring similar benefits and direct cash transfers programmes and schemes such as VGF (Vulnerable Group Feeding) can assist those families unable to work.

A finding of the BRAC nutrition study described above was that wages did not rise sufficiently to compensate for the rapid inflation in food prices. Also, wages rises lagged behind the inflation in food prices, which created significant difficulties for poor people dependent on wage labour for their livelihoods. A key recommendation, therefore, is that cash-for-work schemes must start as soon as possible after the start of a crisis and that some kind of "early warning system" for food price rises needs to be developed for different regions of the country.

Direct productive asset transfers

The direct transfer of productive assets, such as cattle, poultry, sheep or goats, together with starter packs of vegetable seeds, enables extremely poor people, including the landless and women, to start backyard livelihood activities. Evidence from BRAC, Helen Keller International and the Chars Livelihoods Programme shows that, although some surplus may be sold, families keep milk, eggs and vegetables for home consumption. Children also benefit from a more diverse diet. The approach generally requires support and training over a period of 18-24 months until the "asset" or cow produces milk, as well as access to veterinarian and seed services.

The vegetables grown in home gardens should be nutrient rich (e.g., dark green leafy vegetables rich in vitamin A, as well as yellow-orange gourds and fruits). Vegetables that have a lower price in the market or are of lower "market quality" are more likely to be eaten by the family and not sold.

Regional and ethnic differences in eating culture and tastes also need to be taken into account when promoting nutritious gardens. Some cultures and family members may prefer more bitter vegetables; gardens should be developed close to homes for women who lack mobility; and arsenic toxicity in vegetables should not avoided by not using arsenic contaminated water for irrigation or cooking.

3. Impacts of Food Price Rises on Schooling[3]

A second study was commissioned by DFID to explore the impact of the food price rises on the education of children in poor and vulnerable households in Bangladesh. A survey was conducted in different locations in five districts between March and May, 2008, at a time when the prices of rice, pulses and edible oil were increasing rapidly and threatening the food security of poor households in Bangladesh. A number of the findings on food intake and expenditure corroborate those of the BRAC study outlined above.

[3] This section was written by Selim Raihan, who undertook the study.

The key findings of the study were as follows:

1. *As a result of the food price rises, poor households had to increase expenditure on food. Expenditure on food jumped from 65 per cent to 80 per cent of household expenditure.* Earlier studies indicate that the share of food expenditure in total monthly expenditure is approximately 65 per cent for the poor households in Bangladesh. At the time of this survey, it had jumped to 83 per cent in rural areas and 79 per cent in urban areas. For female-headed households, it was 86 per cent. The high share of food expenses in total expenditure indicates that, because of the food price hike, households are forced to cut their non-food expenses in order to meet their minimum food requirements.

2. *To cope with the price hike, poor families cut down their overall food intake but the majority maintained their intake of rice.* As a result of the price hike, a significant proportion of households were forced to cut their consumption of rice, pulses and edible oil. Households which could maintain their existing intake of rice generally did so by reducing consumption of other non-rice food items and/or by cutting back the non-food expenditure (e.g., children's education).

   Rice is the main food item for the poor and vulnerable households in Bangladesh. At the time of the survey, the price of rice had risen by over 50 per cent in rural and urban areas. Although most poor households managed to maintain or even increase their rice consumption, despite the higher prices, over 25 per cent of households in rural areas were forced to cut their consumption of rice, compared to 19 per cent in urban areas. In both rural and urban areas, those households who cut rice consumption did so by just over 20 per cent. Those households who increased their rice consumption did so because the price of rice rose less than the prices of other non-rice food items, which became too expensive to buy.

   Poor households used several strategies to cope with the jump in the price of rice and other essential food items, including taking loans, selling assets, reducing expenditure (e.g., by taking their children out of school), putting their children to work and early marriage of daughters.

3. *The opportunity cost of sending children to school is high and the food price rises resulted in high school drop out rates.* The food price hikes resulted in high dropout rates from rural and, to a lesser extent, urban schools. In rural areas, almost 88 per cent of female-headed households reported that their children had to quit school because of the food price rises, compared to 57 per cent of male-headed households. The dropout rates are much higher for girls than boys.

   Many of the children who dropped out took work in order to contribute to their household's income. The opportunity cost of sending children to school is high for poor and vulnerable households. By withdrawing a child from school, such households could save approximately 8 per cent of their monthly expenditure; by sending them to work they could cover 10-11 per cent of their monthly

household expenses. Drop-out rates were highest for the children of female-headed households and for households in the remote char and monga areas in the northwest of the country.

4. Key Policy Implications

Two key policy recommendations of the study are:

- *Increase targeted cash transfers:* It is critical that the government increases the scope and volume of the primary education stipend programme to offset the increased direct and opportunity costs of education. This programme has been a success and with more focus on pro-poor targeting and gender inclusiveness can prevent drop out from schools.

- *Regular monitoring of dropout levels, involving local government*. The government does not have adequate data on dropout rates of the children from schools. There is a need for regular monitoring of dropout rates by upazila and union councils.

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