How the Global Food Crisis is Hurting Children

The impact of the food price hike on a rural community in northern Bangladesh

Save the Children
UK

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Save the Children UK is a member of the International Save the Children Alliance, transforming children's lives in more than 100 countries.

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Save the Children
1 St John's Lane
London EC1M 4AR
UK
+44 (0)20 7012 6400
savethechildren.org.uk

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Executive summary

The global food crisis is expected to push the number of undernourished people in the world to more than one billion in 2009. Inevitably, children will be particularly affected by this crisis and will be overrepresented in this statistic. As a result, progress towards reaching both Millennium Development Goals (MDGs) 1 and 4 will be in jeopardy. The response to this global disaster has been relatively slow, and at times the best way forward has been unclear. Both the cause and the impact of food price rises are complex, and without a good understanding of these complexities, identifying effective solutions will continue to be a challenge.

In November 2008, Save the Children UK undertook research to examine how this crisis affected different sectors of a rural community in northern Bangladesh. Using extensive data collected before prices started to rise, and at the end of the peak of the crisis, we were able to identify the impact of the escalation of food prices on household income and children's nutrition.

The most striking finding from this assessment is that, while the richest households benefited from the price rise, between 32% and 50% of households in this community had a lower disposable income in 2008 than before the crisis. The increase in rice prices explained most of this drop in income, whereas the failure of one of the rice harvests in 2007/08 had a minor impact on the poorest families. Furthermore, the percentage of households unable to afford a diet that meets energy requirements doubled. Poorest families were even less able to afford a diet that would have provided the macro and micronutrients essential for good health and nutrition. Children from the poorest households received fewer meals per day, had less diverse diets, and were less likely to be given highly nutritious foods. The detrimental impact of poverty on nutritional status was evident: there were twice as many chronically malnourished children in the poorest households than in the richest. There was also an indication that a potential 7 percentage point drop in chronic malnutrition may have been lost as a result of conditions experienced in the last two years, with permanent consequences for the mental and physical development of children.

Families in this community employed a number of potentially damaging strategies in response to the price rises, including sending children to work, taking children out of school, selling productive assets and reducing food intake. Commonly, poor families used loans to replace or supplement income, and previous research carried out in the region showed that they prioritised repaying loans over investing in livelihoods or more diverse diets.

Interventions put in place at national level to deal with the food price crisis need to take into account the complexity of local economies, including the fact that, as shown in this assessment, only a relatively small proportion of rural populations benefit from increased prices and agricultural output. Investment in agricultural production must be complemented by policies and programmes to protect the extreme poor, and to allow the poor who do not benefit

from agricultural development to maintain their standard of living. There are several social protection mechanisms in place in Bangladesh, and these are likely to be crucial for protecting these vulnerable households. However, it may be useful to examine whether eligible households and individuals are actually benefiting from these schemes. It is crucial to ensure that the schemes are responsive to crises, in order to protect the poorest households.

Finally, it is imperative to monitor the impact on communities (and on child growth) of food price rises and the global economic crisis. Appropriate responses to these shocks can only be put in place if we have a good understanding of who is being most affected. Without this, we will continue to fail the millions of children worldwide who were already living with hunger, as well as the millions more who have joined their ranks since this crisis hit.

Introduction

Over the last year and a half, global food prices have escalated dramatically, peaking between April and June 2008. This crisis provoked significant attention from governments, and a flurry of predictions of the potential impact on the poorest families around the world. The World Bank estimated that the increase in the price of global food commodities resulted in an additional 44 million undernourished people and a further 100 million people being pushed into poverty. Although food prices fell slightly towards the end of 2008, they remain at unprecedented high levels in many poor countries, and the global economic crisis will exacerbate further the limited purchasing power of many families.[1] The United Nations has warned that, as a result, one billion people worldwide will go hungry in 2009.[2]

One of the inevitable impacts of the food and economic crises is that children, in particular, will suffer. There is evidence that crises of this nature lead to a decreased number of children enrolled in school, increased child labour and, even more alarmingly, increased child malnutrition and mortality rates. The Countdown 2015 report[3] released in 2008 pointed out that while progress has been made in some countries where malnutrition and child mortality are high (including in Bangladesh), in other high-burden countries improvements have been negligible. The danger now is that because of the food price crisis, we will start to see a reversal of progress made towards meeting Millennium Development Goals (MDGs) 1 and 4. In many areas of the world, this will result in a worsening of an already dire situation for many children. Of the 60 countries with the highest numbers of malnourished children, 44 have experienced negative terms of trade as a result of food price rises.[4]

Since the food price crisis hit the world's media, numerous organisations have commented not only on the likely impact of this crisis, but on the responses that need to be made by national governments, international donors and others to mitigate the effect on poor families. Much of the analysis that has been carried out has been based on national-level data or individual case studies. While these have been extremely useful in emphasising the scale of the problem and creating human interest stories, there is still a need to understand better how this crisis has affected different sectors of society in low-income countries. A recent report published by the International Food Policy Research Institute (IFPRI)[5] highlighted the need to explore how countries and population groups in low-income countries are differentially affected by the rise in food prices. Without greater understanding of this, it will be extremely difficult to ensure that measures put in place actually benefit those most affected.

In 2005, Save the Children UK undertook an assessment of household income and nutrition in northern Bangladesh.[6] A further study was done in the same region in 2006 using the Cost of the Diet program, to examine the affordability of a diet that meets the nutritional requirements of a typical family.[7] These assessments provided extensive information about this community, including their sources of income, availability of foods, the nutritional status of their children, and their care

practices. Such detailed baseline information provides a unique opportunity to examine in detail how the recent commodity price rises have affected a rural Bangladeshi community, and to give a different perspective on the impact of the food price crisis.

Bangladesh still has high levels of child malnutrition (36% stunting, 16% wasting, and 46% underweight[8]), and was classified in the bottom 25% of the 2008 Global Hunger Index.[9] The rise in commodity prices in Bangladesh has been well documented by the international media, to a large extent because of the numerous price-rise protests that took place in Bangladesh during the first half of 2008. The price of key staples increased by as much as 50% between 2007 and 2008, and it has been estimated that over this period the real income of the poor in Bangladesh decreased by 37%. Bangladesh is a net importer of food and, hence, falls in the category of countries most likely to be affected by food price rises. Bangladesh does grow a significant amount of rice and other food, but flooding in mid-2007, the cyclone in November 2007, and the resulting failure of the Amon rice harvest led to a shortfall in normal production. Export restrictions put in place by India (the primary source of imported rice in Bangladesh) further increased rice prices.

A repeat study was undertaken in November 2008, in the same location in northern Bangladesh as the original 2005 study, to better understand:

- how the food price crisis has affected a rural community in Bangladesh
- how households have responded to the crisis
- the extent to which interventions by the government and other organisations might have mitigated the impact.

1 Methods

A series of assessments were done as part of this study to examine the impact of food price rises on a rural community in Bangladesh:

- modelling the change in household income
- calculating the cost of a nutritious diet
- assessing nutritional status and caring practices.

All assessments were done in the village in Kurigram, northern Bangladesh, where the original study of the relationship between household income and nutritional status was completed early in 2005. The work described in this report was done in November 2008.

Modelling the change in household income

As part of the 2005 study, the total annual income of each of the 194 households in the village during 2004 was calculated using the Individual Household Model (IHM) approach. The IHM uses a technique similar to the Household Economy Approach (HEA) to calculate total annual income from both cash and food sources. However, the IHM assesses income at individual household level, rather than by wealth groups (as done when using the HEA).

In order to remodel household incomes, estimates of the change between 2004 and 2008 in the price of all traded food and non-food items, as well as the wage rates of all forms of employment, were obtained from key informants. The incomes of the 194 households surveyed in 2005 were then recalculated using the IHM analysis software, based on the updated data, so as to model the change in income that would be expected given the change in food/non-food prices and wage rates since 2004. This model assumed that agricultural production in 2008 was at the same level as seen in 2004 (Model 1). However, in order to take into account the failure of the Amon rice harvest in 2008, a second model was run based on 2008 data, but with the Amon harvest production reduced by 80% (the estimates were that production from the Amon harvest in 2008 was 20% of normal levels) (Model 2).

The original 2004 income data and the remodelled Model 1 and Model 2 incomes have been expressed throughout this report as disposable income per adult equivalent – ie, the cash income remaining after a household has met its food energy requirement at a standardised level per adult equivalent. When looking at whether, for example, children from poor households are more likely to be undernourished, the total income of a household is not particularly meaningful. A family of seven with the same total income as a family of three will clearly be poorer in absolute terms, because it has to cover the needs of more people.

As discussed in the 2005 survey report:

> "Disposable income is a measure of a household's capacity to acquire non-food goods, and is calculated as follows:
>
> 1. Households that produce or otherwise obtain – eg, from gifts, relief, payment in kind – less food energy than their food requirement. The cost of any balance required is calculated in terms of rice, at the price prevailing in the study period. This cost is subtracted from the household's money income; any balance is the 'disposable income'. Where household food income was in excess of household requirement, the money value of the excess rice was added to cash income (ie, to the disposable income).
> 2. Household energy requirement is calculated for each household separately, using international norms (ie, the sum of the requirements of all individuals in the household by age and sex).[10] For the very poorest households, which actually consume less food than the food requirement set, this may lead to a negative estimate of disposable income.
>
> To allow direct comparisons between households, estimates of household income have been standardised by the number of adult equivalents in the household. An adult equivalent = (food energy requirement of all individuals in the household)/(the average food energy requirement of a young adult male and female)."[11]

All income estimates presented in the report are in Bangladeshi taka.

The original IHM assessment and the remodelling of the income data were done by Dr John Seaman from the organisation Evidence for Development. Full details of the method are described in the 2005 survey report.

Calculating the cost of a nutritious diet

In order to calculate the cost of a nutritious diet in 2008, the seasonal prices of all foods available to households were collected by interviewing traders at the two local markets, and by undertaking focus-group discussions with local men and women. The seasonal breakdown matched that used in the 2006 assessment, and the reference year was mid-November 2007 to mid-November 2008.[12]

Prior to collecting price data, a comprehensive food list was developed using the 2006 food list as a basis. Additional foods were added following discussions with community members and visits to local markets.

Price data were consolidated during consultation with the assessment team, and all prices converted from cost per local unit to cost per 100g. In most cases, food prices were reported in metric units; however, where necessary, the metric weight of local units was calculated by weighing these units and converting to grams. Once all price data had been converted, the information was checked carefully by the survey team, who also confirmed seasonal availability of the foods.

The foods and price data were inputted to the Cost of the Diet (CoD) program by the survey team. Foods were selected from the composition database included in the program. As done in 2006, a standard household size of five people (three children and two adults) was used. This standard household dictates the macro and micronutrient requirements that need to be met using the foods locally available. In fact, the results of the current assessment demonstrated that the average household size in the village is still five.

In previous CoD assessments, all diets calculated have been 'physiological' diets (ie, with no constraints other than those automatically included in the program), and no additional limits have been placed on the types of foods that can be included. However, in order to examine the impact of rice prices in particular on the cost of a nutritious diet,

a minimum amount of rice (1kg per household) had to be included in the lowest cost diet during each season. The 2006 CoD analyses were also re-run to include an identical minimum amount of rice. For both datasets, the annual lowest cost diet, the average daily cost per season, and the average daily cost over the whole year were calculated. All costs are given in taka. Although not strictly the lowest cost diets, these will be referred to throughout the report as the lowest cost nutritious diets.

The remodelled 2008 total income data were then used to estimate the proportion of households in the village that were unable to afford this lowest cost nutritious diet. This was then compared with affordability estimates from the 2006 CoD study. For the 2006 CoD study, the income data from the original IHM assessment were updated using national inflation rates; these were then used to make estimates of affordability. However, during the preparation of this report, it emerged that the total income data supplied by Evidence for Development for use in the 2006 CoD study were in fact incorrect, and that the previous estimates of affordability were, therefore, wrong. In order to rectify this, the 2004 total income data were recalculated by Dr John Seaman and then updated using national inflation rates as described in the original CoD report. The 2006 affordability estimates were then recalculated, and are presented in the section 'Results'.

Much of the work done to estimate the numbers of people who have been affected by the global food price rises has looked at the change in the percentage of populations that can meet energy requirements. The CoD program can also be used to put together the cheapest diet that will just meet kilocalorie requirements. Hence, in addition to calculating lowest cost diets to meet macro and micronutrient requirements, lowest cost 'energy only' diets were calculated in order to examine the change in basic food security. As with the other diets, a minimum 1kg of rice had to be included even in the energy-only diets. These will be referred to throughout the report as the 'lowest cost energy-only diets'.

Assessment of nutritional status and caring practices

As done in the original study, a nutrition assessment was undertaken that included all children in the village aged 0 to 59 months. Since 2004, the village has increased in size by perhaps 50 or 60 households, and although income data were not available for these households, they were still eligible for inclusion in the nutrition assessment. In all cases, the survey team was asked to explain the objectives of the survey – and families could refuse to participate.

Anthropometric measurements and information about morbidity and vaccination status were taken for all children aged 6 to 59 months. Additional information relating to feeding practices and dietary diversity was recorded for all children aged 6 to 23 months. Finally, the morbidity and breastfeeding status of infants aged 0 to 5 months was obtained.

Anthropometric indices (height-for-age, weight-for-height and weight-for-age) were calculated using the National Centre for Health Statistics (NCHS) reference, to ensure that data were comparable with the original study. Unfortunately, it was not possible to obtain the original dataset and, hence, it was not possible to recalculate the indices using the World Health Organization (WHO) growth standard. Children were classified as stunted if they had a height-for-age z-score (HAZ score) <-2 SD, wasted if they had a weight-for-height z-score (WHZ score) <-2 SD, and underweight if they had a weight-for-age z-score (WAZ score) <-2 SD.

For both the original 2005 and the current assessment, the anthropometric surveys were exhaustive (ie, all children aged 6 to 59 months in the village were measured). As such, it is not valid to undertake statistical tests to examine change over time. However, a number of statistical analyses have been done using the Stata software package, to compare nutritional status with household income.

2 Results

Changes in household income

The remodelling of the 2004 income data using 2008 data showed a large increase in disposable income for better-off households, and a drop in disposable income for the poorest 32% (see Figure 1). When this model was re-run to account for the Amon harvest failure, the proportion of households whose disposable income was less than in 2004 increased to 50% (see Figure 2). [NB: the series shown in Figures 1 and 2 are each shown in ascending order of disposable income – ie, the individual households do not necessarily align.]

The modelling exercise shows that the increase in rice prices had a more negative impact on the income of poor households in 2008 than the failure of the Amon harvest. As illustrated in Figure 3, while

Figure 1. Remodelling of 2004 disposable income using 2008 data

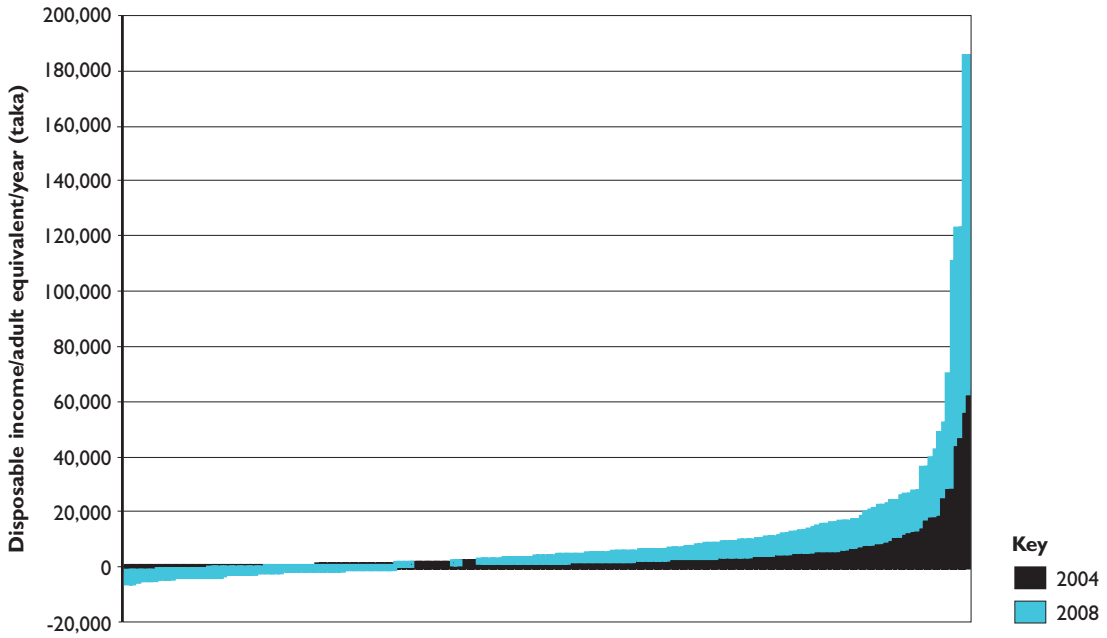
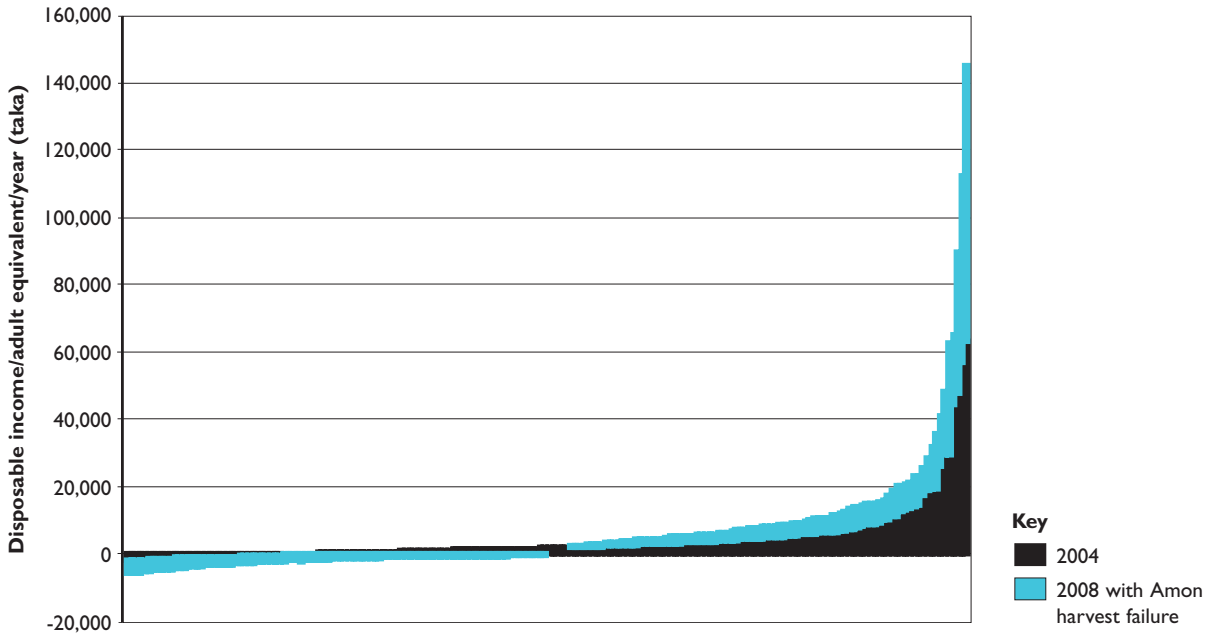


Figure 2. Remodelling of 2004 disposable income using 2008 data accounting for the Amon harvest failure



the Amon harvest failure pushes disposable income down further, it actually explains only a small proportion of the total drop in disposable income for the poorest households. The increase in food prices explains the largest part of this drop.

The increase in the gap between the richest and poorest households that has inevitably occurred over the last few years can also be seen when comparing the change in the average disposable income of the poorest and richest 25% of

Figure 3. The relative contribution of the rice price increase and the Amon harvest to the reduction of disposable income for the poorest households (this figure focuses on the left side of the above graphs)

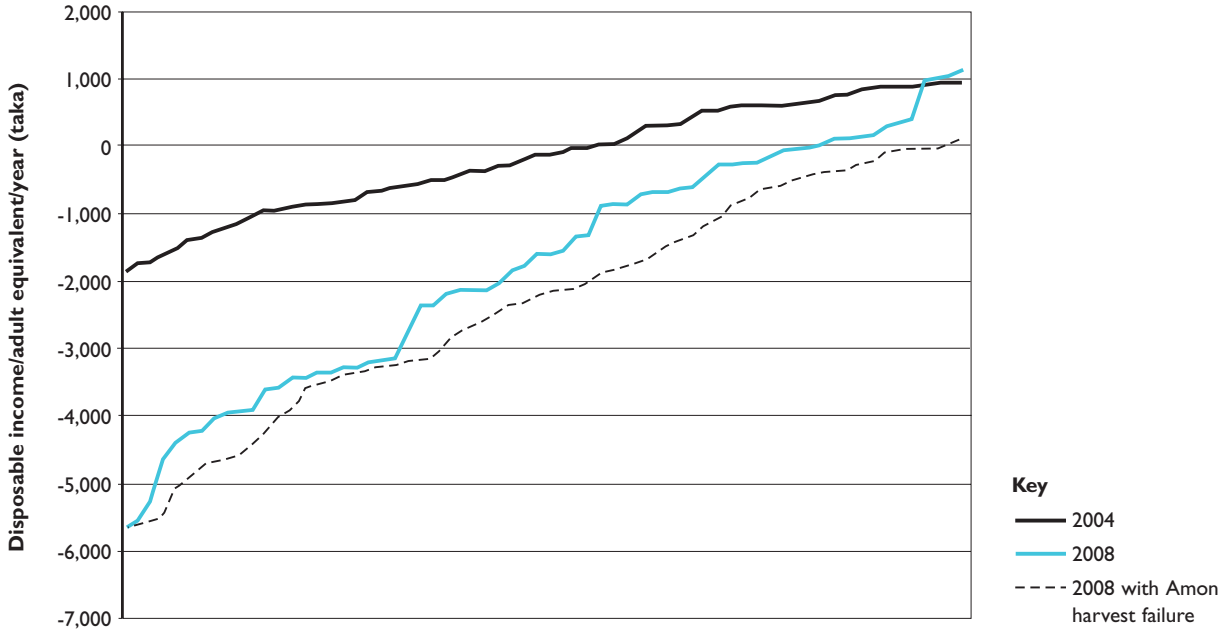
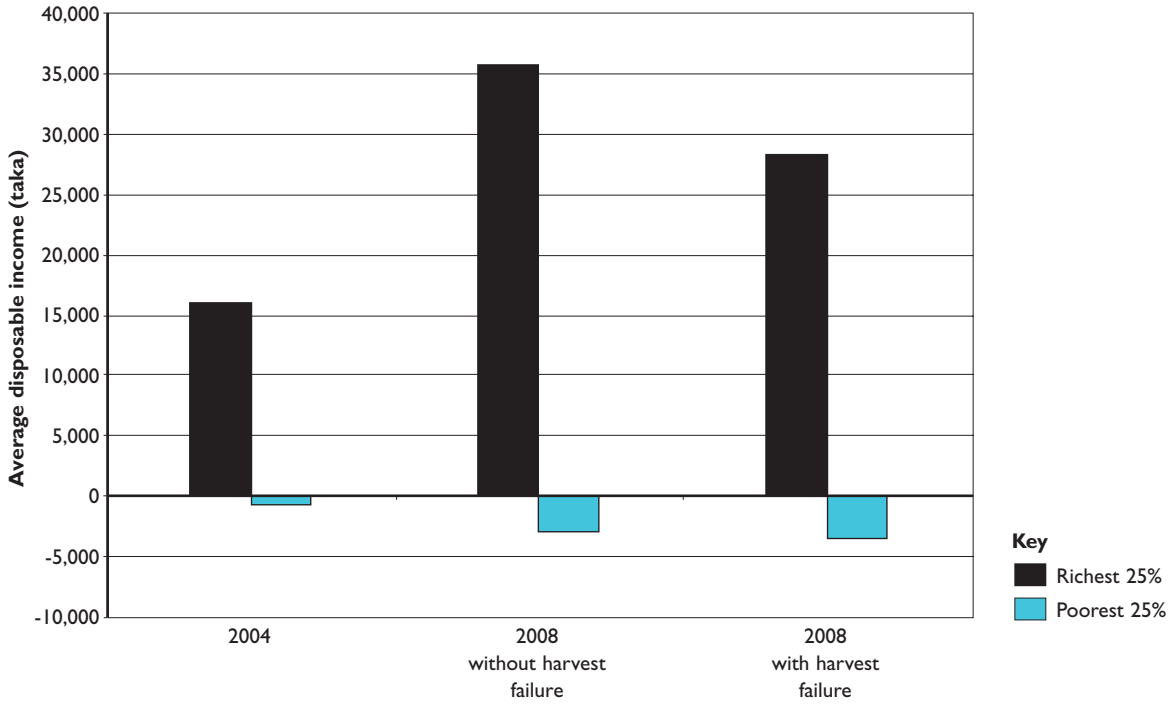


Figure 4. Mean disposable income of the poorest and richest quartile in 2004 and 2008, and in 2008 with the Amon harvest reduction



households. As shown in Figure 4, this gap has increased quite considerably since 2004. Although the Amon harvest failure, combined with the increase in rice prices, pushed the income of the poorest households lower, the failure of this harvest also worked to reduce the income of the richest households, thereby making the gap between rich and poor smaller than it would have been if the harvest had been normal.

The lowest-cost nutritious diet

The average daily cost of the diet (including a fixed 1kg of rice), the total annual cost, and the cost of the energy-only diet are presented in Table 1. As one would expect, the cost of the nutritious diet has increased. However, the most marked increase in cost is that of the energy-only diet, which has more than doubled since 2005/06.

The percentage of households with a total annual income less than the cost of the nutritious diet, and less than the cost of the energy-only diet, is given in Table 2. As shown, the percentage of households with an income less than the cost of a nutritious diet has decreased since 2005/06. However, when using income estimates taking into account the Amon harvest failure, a nutritious diet was affordable for only marginally more households than before (see Figure 5).

Table 1. The average daily cost and total annual cost of a nutritious diet, and the total annual cost of an energy-only diet

	Average daily cost of nutritious diet (taka)	Total annual cost of nutritious diet (taka)	Total annual cost of energy-only diet (taka)
2005/06	61.8	22,555	11,637
2007/08	96.3	35,244	28,072

Table 2. Percentage of households with an income less than the cost of a nutritious diet, or less than the cost of an energy-only diet

n = 194	Nutritious diet	Energy-only
2005/06	51.5% (41.8–63.4%)	14.9% (8.2–25.3%)
2007/08	43.3% (34.0–55.2%)	33.0% (18.0–42.3%)
2007/08 with Amon failure	48.5% (38.1–59.8%)	34.0% (21.1–47.4%)

In contrast, the percentage of households unable to afford the energy-only diet has increased since 2005/06. As previously discussed, this analysis fits more closely with macro-level work done to examine the impact of price rises on food insecurity, which has typically focused on household ability to meet kilocalorie requirements only. The fact that fewer households would now have sufficient income to meet energy requirements confirms the estimates presented by the World Bank and the United Nations Food and Agriculture Organization (FAO).

The affordability of the nutritious and energy-only diets has changed in this way, because while the price of key staples increased dramatically, the cost of some of the foods required to meet protein, fat and micronutrient requirements (ie, the difference between the energy-only and nutritious diet) did not increase to the same extent.

The change in the daily cost of the nutritious diet by season, comparing 2005/06 with 2007/08, is shown in Figure 6. The change in the daily cost of the energy-only diet by season is presented in Figure 7. The increase in cost seen in summer and the peak during the 2008 rainy season coincides with the period when rice prices peaked in Bangladesh in 2008 (ie, between May and June/July 2008; see Figure 8).

Figure 5. Household income distribution and the cost of a nutritious diet

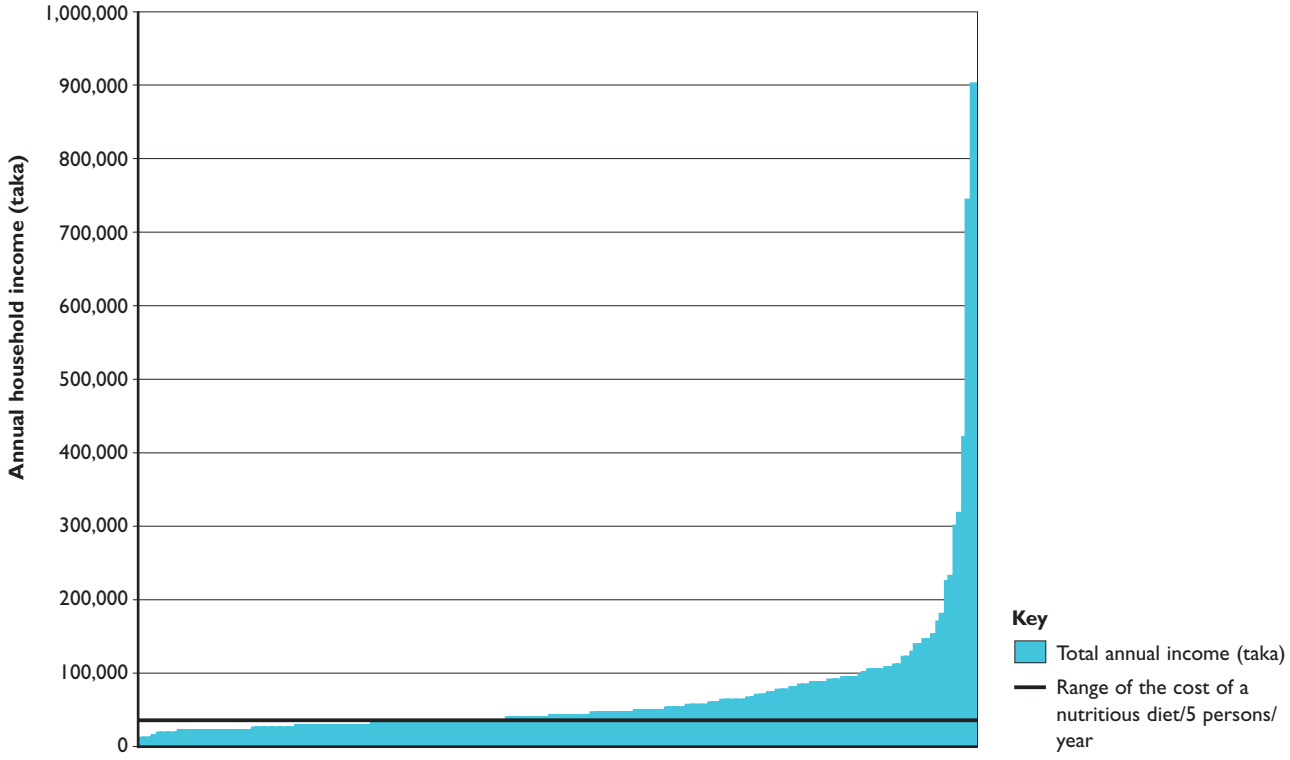


Figure 6. Change in the daily cost of a nutritious diet by season, comparing 2005/06 with 2007/08

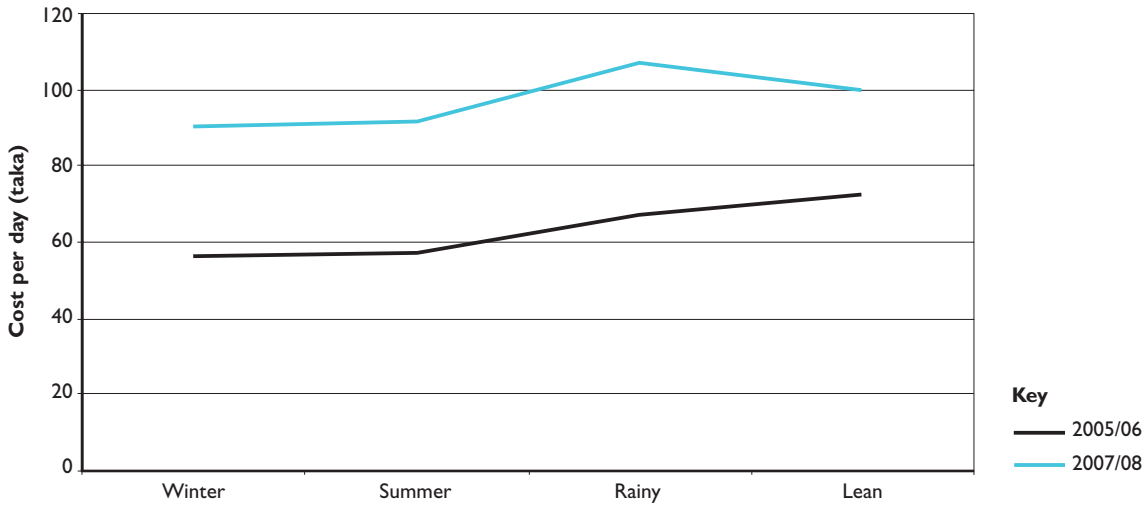


Figure 7. Change in the daily cost of an energy-only diet by season, comparing 2005/06 with 2007/08

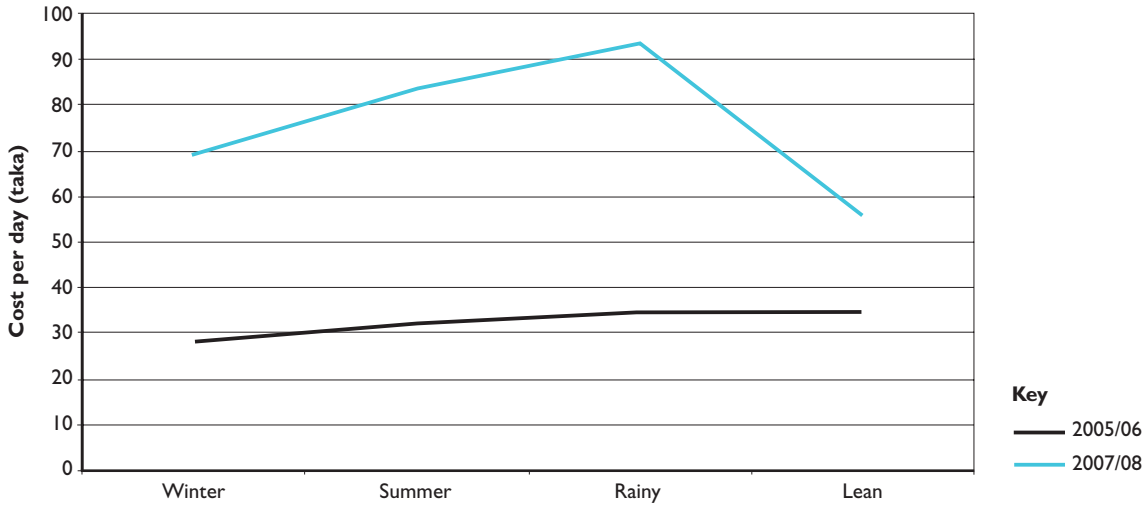
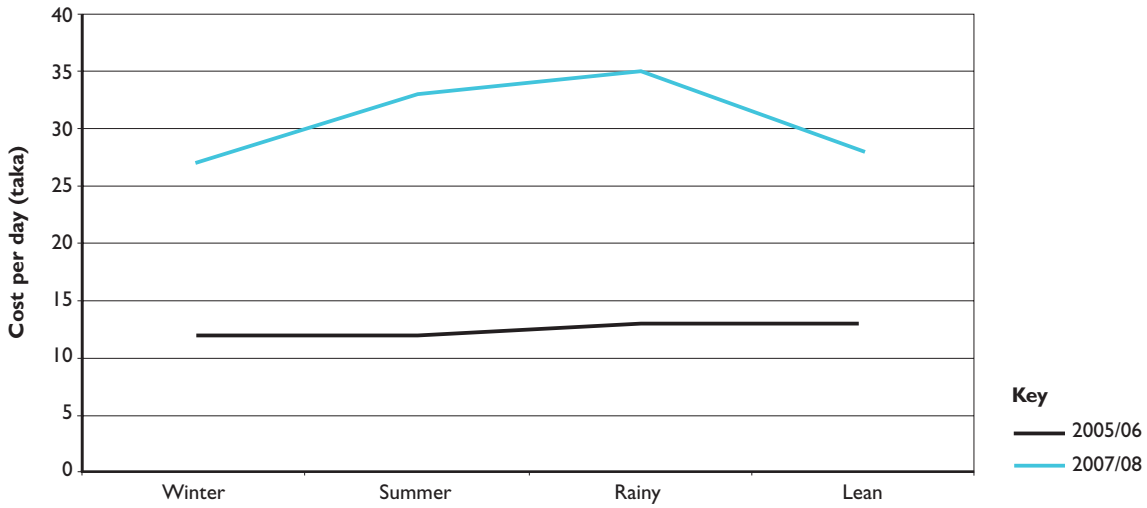


Figure 8. Rice price (taka/kg) by season in 2005/06 and 2007/08



Child nutrition

In total, there were 103 households in the village with children less than 5 years of age; the average household size was five. A total of 117 children aged 0 to 59 months were included in the overall survey. The age and sex breakdown of the sample population is shown in Table 3.

A total of 107 children aged 6 to 59 months were included in the anthropometric survey; 52.3% were male and 47.7% female. Overall, 30.8% of the children surveyed were stunted, compared with 45.8% in 2005 (see Table 4), and 8.4% were classified as wasted using weight-for-height, compared with 12.5% in 2005.

There was no difference in the prevalence of stunting when comparing boys and girls (32.1 versus 29.5%). Although fewer girls were classified as wasted compared with boys (3.9 versus 12.5%), this difference was not statistically significant.

The percentage stunting by age group in both 2005 and the current survey are shown in Table 5. Interestingly, the difference in the prevalence of stunting between 2005 and 2008 among the younger children is less than that seen in the older

Table 3. Age and sex breakdown of the sample population

Age (months)*	Boys	Girls	Total
0 to 5	5 (50.0%)	5 (50.0%)	10
6 to 30	25 (59.5%)	17 (40.5%)	42
31 to 59	31 (47.7%)	34 (52.3%)	65
Total	56 (52.1%)	51 (47.9%)	117

*These age groups have been used to enable comparisons to be made with the 2005 data.

Table 4. Percentage of stunted, wasted and underweight children comparing 2005 and 2008

	Stunted (%)	Wasted (%)
2005	45.8%	12.5%
2008	30.8%	8.4%

Table 5. Percentage of stunted children by age group comparing 2005 and 2008

	Percentage stunted	
	6 to 30 months	31 to 59 months
2005	35.9%	54.5%
2008	23.8%	35.4%
Difference	12.1%	19.1%

Table 6. Mean height-for-age z-score (HAZ) by age group comparing 2005 and 2008

	Mean HAZ score	
	6 to 30 months	**31 to 59 months**
2005	-1.59	-2.01
2008	-1.49	-1.74
Difference	0.10	0.27

age group. Similarly, when looking at the change in mean z-score, the improvement in height-for-age has been smaller among the children aged 6 to 30 months than for those aged 31 to 59 months (see Table 6). Using either measure, the difference in the change in percentage stunting comparing the two age groups equates to approximately 7%.

Household income data were available for 51 children aged 0 to 59 months (three of whom were <6 months), and for 12 children aged 6 to 24 months. It was felt that the remodelled income data, taking into account the Amon harvest failure, is probably a better reflection of real change in income between 2004 and 2008. Hence, these data have been used for all analyses of the association between income and nutritional status.

Households with both income data and children aged 6 to 59 months are relatively evenly distributed along the wealth scale (from poorest to richest households). There are marginally fewer very poor households represented; the average disposable income of the households with children aged 0 to 59 months is 10,214 taka, whereas for all 194 households the average disposable income is 9,053 taka.

Disposable income (DI) for the 48 children aged 6 to 59 months was grouped into quartiles. This was done in order to retain reasonable sample sizes in each income group. The mean DI, together with mean HAZ and weight-for-height z-score (WHZ) scores for each quartile, is shown in Table 7.

There is a significant difference in the mean HAZ score when comparing the poorest with the richest quartile (P = 0.036). 50% of children in the poorest quartile were classified as stunted, compared with 16.7% in the richest (this difference

Table 7. Mean height-for-age and weight-for-height z-scores by wealth quartile

Quartile	**1 Poorest**	**2**	**3**	**4 Richest**
Mean DI*	-1,203	2,647	7,445	24,739
Mean HAZ score	-2.21	-1.59	-1.44	-1.33
Mean WHZ score	-1.14	-1.23	-0.98	-1.10

* Based on 2008 incomes with the Amon harvest reduction

Table 8. Mean height-for-age z-score by wealth quintile comparing 2005 and 2008

Quartile	1 Poorest	2	3	4	5 Richest
2005	-1.86	-1.85	-2.31	-1.50	-1.30
2008*	-2.06	-1.94	-1.31	-1.51	-1.35

* Based on 2008 incomes with the Amon harvest reduction

Figure 9. Mean height-for-age z-score by wealth quintile comparing 2005 and 2008

is borderline significant; P = 0.083). There is no difference in mean WHZ scores by income.

A comparison with the 2005 data is shown in Table 8 and illustrated in Figure 9. In this case, disposable income has been grouped into quintiles in order to match the 2005 analysis.

Data relating to feeding practices were collected for infants age 0 to 23 months (ten children <6 months, and 32 children aged 6 to 23 months). Of the children aged 6 to 23 months, 43.8% were reportedly fed foods from at least four food groups in the previous 24 hours. Of the children aged 6 to 23 months, 62.5% were reportedly fed with appropriate frequency in the previous 24 hours. Only one child out of the 32 aged 6 to 23 months was no longer being breastfed. All ten children <6 months were being breastfed; however, 50% of these infants had been given additional liquids (mainly water, fresh milk and sugar-water) during the previous 24 hours. One infant aged 5 months had reportedly been given cereals in the previous 24 hours.

Unfortunately, due to small sample sizes, it was not particularly meaningful to run statistical tests on the association between income and feeding practices for children <2 years (complementary feeding data and income data were available for only 12 children

Table 9. Mean disposable income by feeding practice

Children aged 6 to 23 months who, in the previous 24 hours, received:	Mean disposable income (taka)*
<3 meals	4,789
At least 3 meals	10,732
Foods from <4 food groups	4,457
Foods from at least 4 food groups	10,856
No animal source foods	4,457
Animal source foods	10,856
No vitamin A-rich fruits/vegetables	3,479
Vitamin A-rich fruits/vegetables	9,326
No pulses	9,645
Pulses	8,177
No other fruits and vegetables	5,699
Other fruits and vegetables	11,954
No oil	8,095
Oil	9,958

* One household with an extremely high disposable income was excluded from the above calculations because the child from this household was always categorised in the 'positive practice' category, and the high value increased the mean disposable income quite considerably.

aged 6 to 24 months). However, there are some interesting trends identified from the data. The mean household disposable income was calculated for a number of the indicators relating to the quality of the diets of children aged 6 to 23 months (see Table 9). With the exception of the use of pulses or oil, the mean disposable income for the positive practices (number of meals, number of food groups, use of animal source foods, and fruits and vegetables) was always at least twice as great as that of the negative practices.

3 Discussion

Impact on income

There are a number of important observations from this assessment that highlight not only the complexity of the impact of food price rises on a rural community, but the potential longer-term impacts of this crisis. One of the most significant findings is that, while the wealthier households in this community most likely benefited from the increase in the price of key staples in 2007/08, the poorest households in the community were worse off. Furthermore, the proportion of households that would have been able to purchase enough food to meet energy requirements decreased. This finding is in line with the predictions that have been made internationally about the impact of the food price crisis.

In theory, the gains made by wealthier landowners because of the rise in food prices should translate into equivalent increases in wages in the agriculture sector. However, there have been a number of debates regarding the time required for this to happen. Certainly in this example, wage rates did not increase to a level that would have enabled families to keep up with the rising price of food. The failure of the Amon rice harvest might have played a role in this. Interestingly, rates of pay for relatively skilled occupations and seasonal migratory agricultural labour increased more than those for local agricultural labour between 2004 and 2008. Gender inequality in wage rates is well documented in Bangladesh[13], and this may well explain why there was a difference in the rate of wage increases for different occupations. The exact dynamics of the labour market in rural areas, and the importance of women's wage rates, certainly need to be explored further when looking for ways to enable all households to cope with price rises.

More alarmingly, although the gap between the richest and poorest households was wider in 2008 than in 2004, this gap would have become even wider had the Amon harvest in 2008 not failed. The relatively small gain that the poorest half of the community would have made if the Amon harvest had been at normal levels has serious implications in terms of the type of response that has been promoted globally as being the answer to the food price crisis. The international community has particularly emphasised that investment in agricultural development should be a major approach for dealing with this recent crisis. The logic behind this is clear: if agricultural yields are improved, this will drive down the price of global food commodities. However, this is based on the assumption that (a) production will reduce prices and (b) that this will benefit the wider population.

Although it is likely that the Amon harvest failure in Bangladesh in 2007/08 contributed to the high rice prices in Bangladesh in 2007/08, and that a normal or improved harvest may have gone some way to mitigate this, the crisis in the country was part of a much bigger problem. The escalation in global food prices has been the product of a number of complex factors, many of which can only be addressed by global reforms. A recent

report reviewed the various factors that have been purported to be the likely drivers of the recent increase in food prices. These have been wide ranging, including: rapid economic growth in countries such as China and India, and the resulting nutrition transition; increased production of biofuels; commodity investments and hedge fund activities; and increased cost of fuels and fertilisers.[14] None of these can be influenced or controlled by one country alone. For this rural Bangladeshi community, the impact of boosting agricultural yield while food prices remain high is, in effect, the difference seen between the two sets of remodelled income data (with and without the Amon harvest failure). While improved yields would benefit the richest third of households, the poorest would be left struggling, benefiting only marginally from improved production, but hit much harder by high prices.

Although food prices dropped towards the end of 2008, rice prices in particular have remained high, and it was recently predicted that prices in general are set to rise again.[15] Unless the much discussed support for agricultural yield is complemented by strategies that (a) provide direct support for the extreme poor, and (b) enable poor households that do not benefit from developments of the agricultural economy to keep up with the rising price of food, the result will be that poorer families get poorer while we wait for food prices to go down.

Household coping strategies

The remodelling of household income does not factor-in the strategies that would have been employed by families to mitigate the impact of the price rise. Given the need to ensure that the poor are protected from this crisis, it is important to have an understanding of the ways in which people cope with this type of shock. Individual Household Model (IHM) interviews were repeated for a representative sample of the 194 households included in the original study. In addition, interviews were held with key members of the community, and with families that were identified as having been significantly affected by the food price crisis. Finally, the nutrition assessment included questions relating to changes in this household that could have been attributed to this particular shock.

The households spoken to during this assessment agreed that 2007/08 was a particularly difficult year for the poorer families in the village. During the various interviews and assessments, a number of methods for supplementing or protecting household income were identified. These included a fairly heavy reliance on food and cash gifts from family and other community members and, as seen in previous work done in this region, significant use of consumption loans from banks and other local money lenders.[16]

The credit and loan system in Bangladesh is comparatively sophisticated, and is clearly an important source of income for very poor households during lean times. During the previous study done in the region, it was found that families with malnourished children were more likely to have taken loans for consumption purposes. Repaying loans taken during the lean season was reported to be the top priority, over and above spending money on purchasing livestock or buying additional food. Research looking at the impact of flooding on microfinance initiatives in Bangladesh highlighted the need for a range of adaptations to credit/loan systems when shocks occur.[17] As well as ensuring rapid distribution of loans to protect asset loss, the review noted that loan repayment schedules should be adapted to protect the most vulnerable. Although a number of families interviewed had been able to access consumption loans during 2008, there was no mention of whether repayment schedules had been modified during this period. The food price rises have been, and are likely to continue to be, a major shock for these communities. Hence, there is perhaps a need to examine whether credit and loan institutions are responding appropriately.

A number of government-led social protection schemes were also used by households in this community to supplement food and cash income. However, it was not clear what proportion of the people who were eligible for the various support schemes were actually benefiting from the schemes.

Only one household we spoke to had gained access to the government's 100-days rural employment scheme, which was implemented in 2008 to provide specific support for poor households in response to price rises. This programme required beneficiaries to do public work activities (ie, maintenance, repair and development of rural infrastructures) at a rate of 100 taka per day. The report from the local officials noted that 80 people from this community and the neighbouring community participated in this programme. However, it was noted that beneficiaries only did 51 days work; the second phase is due to start in March 2009.

Interestingly, while the government did provide rice at subsidised prices to households in the region, none of the families in this particular community had been able to access it. As in previous years, families with children in school received a stipend as well as regular distributions of high-energy biscuits from the United Nations World Food Programme (WFP). The poorest households were also eligible to receive regular amounts of cereals from the government (this is a long-standing programme not related to the price rises). A number of households also reported receiving fertiliser stipends from the government. Finally, some households were apparently receiving widow, elderly and 'freedom fighter' stipends; but the exact number of beneficiaries was not clear.

A number of negative coping strategies were mentioned by households during the various interviews. At least three households were reported to have left the region altogether because, according to the community, they could no longer afford to support their families (and in some cases to repay loans from a non-governmental organisation (NGO)), and so had moved to Dhaka for work. Several households had taken older children out of school, either because of the high cost of secondary education, or so that they could supplement family income by working. The sale of assets was also cited as a strategy for dealing with the increased financial pressure experienced during 2008. Numerous households spoken to during the assessment reported that they had reduced the amount of food eaten – particularly the quantity of rice consumed.

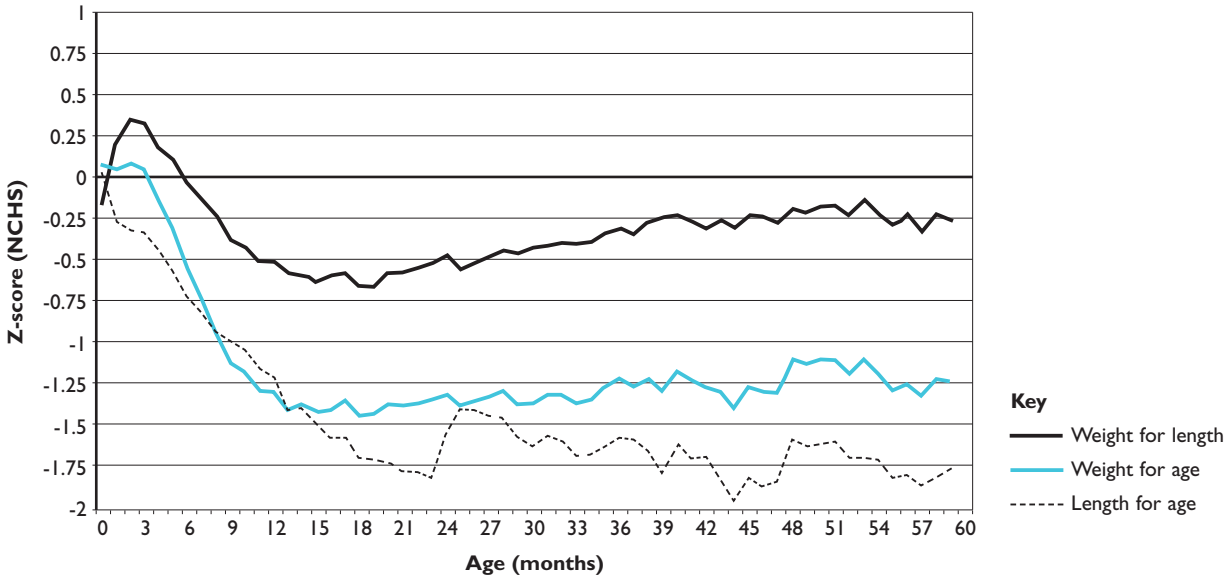
The effect of the food hike on child nutrition

The negative impact of the food price rises on poor households is clearly of concern for those who keep track of the numbers living in poverty. However, the results from this study also point to the fact that this crisis will have much longer-term impacts on children. While there has been an overall reduction in the number of chronically malnourished children in this community, the prevalence of stunting among children from the poorest 25% of households is more than twice that of children in the richest households. There is also some indication that children in the poorest households have a lower height-for-age now than in 2005. In addition, the percentage stunting and the mean height-for-age of older children in this community (ie, those that are 31 to 59 months) has shown greater improvement when compared with the same age group in 2005 than seen for the younger children.

The period of greatest vulnerability for growth failure is from conception through to 2 years of age, and as Figure 10 illustrates, in low-income countries the mean height-for-age (in this case length-for-age) of children tends to drop between birth and 24 months, and then remains relatively stable thereafter. Given this trend, the results from this study suggest that the older children spent the first two years of their lives (2004 to 2006) in an environment that put them at less risk of growth failure than the older children surveyed in 2005 – ie, conditions improved. However, the younger children included in the current survey spent the first two years of their lives (2006 to 2008) in an environment not as different in terms of risk for growth failure than for the younger children included in the 2005 survey.

In theory, one would expect that if the prevalence of chronic malnutrition has decreased over time, this is because the conditions that children are growing up in have got better, and that unless something changes, this improvement should continue to benefit each generation of children. Indeed, there have been a number of noticeable developments in the community where this study

Figure 10. A typical pattern of mean HAZ, WHZ and weight-for-age z-score by age, seen in low-income countries (taken from Shrimpton et al[18])



was done that suggest that average living conditions for children are better than in 2005. Since the first study, there has been extensive development to the road infrastructure, and there are now much easier connections between this community, nearby towns, and transport to other areas of the country. The assessment team (who have all worked in the area for many years) also commented that the status of women has improved in the last few years. In 2005, they said it was unusual for women to communicate with outsiders; now they are much more forthcoming. Improved access and empowerment of women are linked to an improvement in the nutrition of children and, hence, these are reasonable indicators that the situation is now better for children in this community.

The question then is, did something change that could explain the smaller improvement in the height-for-age of the youngest children included in this survey compared with that seen for the older children? It is plausible that increased economic pressure experienced by families during 2007/08 as a result of the increase in food prices could have negated the improvements that had been seen in the village between 2005 and 2007.

The feeding practice data from this study suggests that the poorest families in this community are providing children with a less diverse diet, are feeding them less frequently, and are less likely to include highly nutritious foods. The link between income status and the quality and quantity of food for infants and young children has been demonstrated previously during assessments in this region.[19] It has also been shown that these factors are crucial for the nutritional status of Bangladeshi children.[20] Unfortunately, it is not possible in this case to (a) test the associations between incomes and feeding practices, or (b) make comparisons with the situation in 2005, but there is certainly a trend for children from poorer households to have worse diets.

More generally, the result of the cost of the diet analyses showed that a nutritious diet has become less affordable for the poorest households than in 2005, and that a higher proportion of families are now unable to afford a diet that even meets energy requirements. All indications are that the quality and quantity of food available to poor families and their children has deteriorated. This was corroborated by reports from community members, who said they had been forced to reduce their food intake last year because of the increase in prices.

The prevalence of acute malnutrition had decreased marginally (from 12% to 8%) since 2005.[21] This does indicate that conditions in the community have improved over the last four years and, as a result, children are better protected from this form of malnutrition. That said, there is anecdotal evidence from the Swiss NGO Terre des Hommes that admissions to feeding programmes in the area increased dramatically during the rainy and lean seasons in 2008. However, as seen in the original study, there was no association between weight-for-height and household income. Both this and the previous assessment were carried out post-lean season, and it is possible that we don't see a relationship between income and weight-for-height because we have measured children when food is cheaper and more plentiful, and so even the poorer households are in a better position to feed their children. Month-by-month household income might track more closely risk for acute malnutrition than annual income estimates.

The various findings described above, about the worsening of local diets, support the possibility that young children in this community were at greater risk for growth failure during the last couple of years than the older children, who experienced the first two years of their lives when times were less difficult. When comparing the change in percentage stunting and the mean HAZ-score for younger children and older children, it seems that a potential 7% point drop in stunting may have been lost as a result of the conditions experienced in the last couple of years. Work done previously to examine the relationship between rice prices in Bangladesh and the prevalence of underweight children showed that a 50% increase in rice prices translated approximately to a 5% point increase in the prevalence of children with a low weight-for-age.[22] The rice price in 2007/08 more than doubled, and so it is plausible that prevalence of stunting could have been affected to the extent suggested by the data from this study (the rates of change in underweight and in stunting in Bangladesh have been shown to be relatively similar[23]).

Assumptions and limitations

One of the major assumptions in this study is that the remodelled income is a reasonable estimate of actual incomes in 2008. The underlying supposition of the remodelling is that, broadly speaking, the way in which this community earns its income has not changed significantly since 2004. Individual households will, of course, have changed or diversified the way that income is obtained. However, indications from the repeat IHM interview are that this economy is similar to 2004 and, indeed, to 2001, when an HEA assessment was completed.[24]

When one considers the profiles of households identified during the 2001 HEA, the change in income predicted by the remodelling exercise is logical. During the 2001 HEA, it was noted that the rich and middle income groups (which at that time comprised approximately one-third of households) were largely self-sufficient in terms of food production, and were able to sell surplus production (in the case of the richest households, more than half of their total production was sold). The major proportion of income in both groups came from the sale of rice and other agricultural produce. It makes sense, therefore, that according to the income data remodelling, the escalation in the price of rice and other commodities translated into a large increase in income for the richest 30–40% of the households.

The poor households (who at the time of the HEA assessment comprised 25% of the community) are also likely to have benefited from the increase in rice prices and the resulting increase in labour rates. This group was found to get most of its income from small-scale production and skilled labour (including construction and agriculture). This group would, therefore, have benefited both from the marginal increase in skilled labour rates and the sale price of foods.

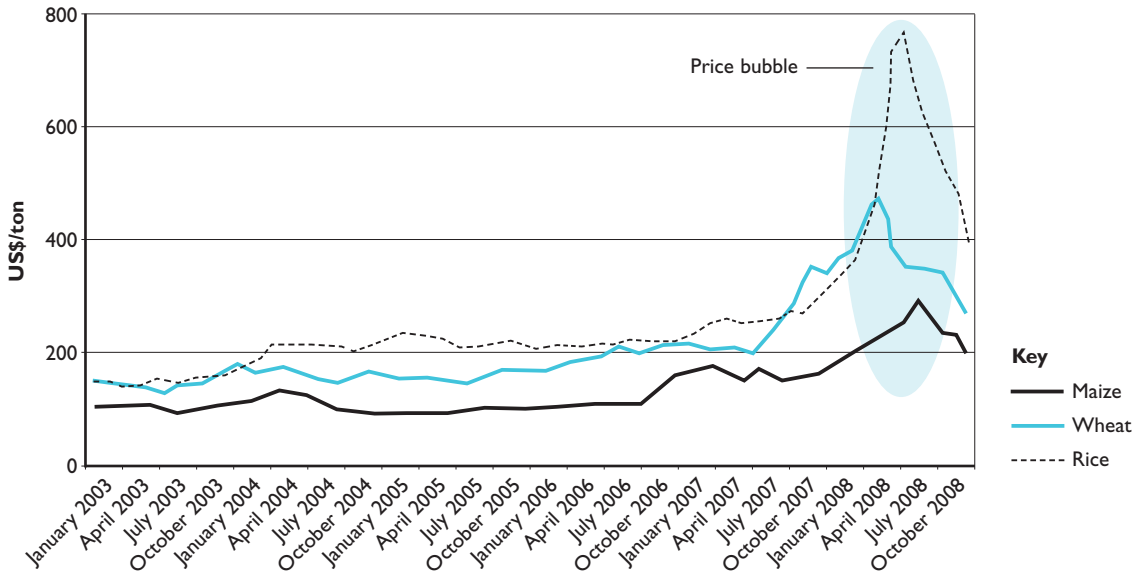
Meanwhile, in the 2001 HEA, the landless poor (42% of the population) were found to purchase virtually

all of their food, and to rely on relatively unskilled labour as their main source of income. Given that there is no evidence that this profile of the landless poor has changed since 2005 (or indeed since 2001), it is unsurprising that the remodelled data predicted that the income of the poorest 32–50% of households was effectively less in 2008 than in 2005. This group would have been hardest hit by the rise in the price of rice due to their reliance on purchased food. At the same time, they would have been less likely to benefit from the increase in the wage rates for skilled labour. The only change that could affect the validity of the remodelled income estimates is that improved transport access and the use of mobile phones has increased seasonal labour migration. This would likely have benefited mainly the poor category of households and, potentially, some of the landless poor.

Finally, the significant association between child malnutrition and the predicted income of these households also suggests that the remodelled data are reasonably valid. The remodelling of income did shift some households further up or down the wealth scale but, in general, families who were poor in 2004 remained poor after recalculating income using 2008 data. If there had been a significant change in the opportunities for households to earn income and pull themselves out of poverty, we would have been unlikely to see an association between predicted family income and the height-for-age of their children.

Another assumption of the work presented here is that the change we are seeing in income is the result of the increase in food prices. Again, we are reasonably confident that much of the change in income found during the data remodelling exercise is the result of the dramatic increase in the price of food (particularly rice). In this region, rice production is the major driver of the economy. Rice is the main (and indeed essential) staple and a significant amount of money is generated from the production, processing and sale of rice. If the price of rice had gradually increased since the original 2004 study, it would have been difficult to identify what proportion of the change in income was due to specific changes in 2008. However, the spike in the price of rice clearly occurred during late 2007 and 2008, matching the spike seen in global rice prices (see Figure 11). Hence, it is reasonable to assume that a large proportion of the increase/decrease in income was the result of this dramatic price rise.

Figure 11. Trends in global staple prices from January 2003 to October 2008 (adapted from the Global Hunger Index[25])



During the original cost of the diet work done in 2006, affordability was based on the cost of a purely 'physiological' diet (ie, one with no constraints other than those automatically included in the program). In this work, rather than calculating this physiological diet, a minimum of 1kg of rice per five-person household had to be included in the diet. The change in the total annual cost of the diet for 2006 increased by just 2% as a result of including this minimum amount of rice (from 22,118 taka per year to 22,555 taka per year).

Inclusion of a fixed amount of rice did increase the 2008 estimate to a greater extent. However, given the nature of this piece of research (to examine the impact of the food price rises), it was felt to be important to ensure that rice was included in the diets calculated by the cost of the diet program. Otherwise, the program replaces all the rice with low-cost alternatives (such as taro). But research has shown that the purchase and consumption of rice remains relatively consistent in Bangladesh, even as prices fluctuate.[26] In fact, the 1kg minimum is relatively conservative; it is common for a household of five in Bangladesh to consume approximately 2kg of rice per day.[27]

The final area of potential concern regarding this assessment is whether the findings from this community are representative of the wider population. This particular region was selected for the initial study in part because it was felt to be typical of a rural, agriculture-driven economy. The households surveyed own and farm both lowland flood-affected areas and upland regions. The changes seen in income within the community align with theoretical estimates of the impact of the food price crisis on rural populations. The drop in the prevalence of chronic malnutrition shown in this study is quite large, and more than one would perhaps expect, which does raise a question of whether this population is in some way unusual.

At the time of the first assessment, the prevalence of chronic malnutrition was higher in this community than the overall estimates for rural Bangladesh (45.8 versus 39.2%[28]). Since then, the rate of stunting has dropped more than has been projected for the general rural population, but this has simply meant that this community has caught up with the average for a rural population. The development of the road system and the likely improvement in the status of women may have been the factors that contributed to the ability to 'catch-up' on malnutrition rates.

4 Conclusion and recommendations

This study has provided a unique opportunity to examine the likely change in income of a rural community as a result of the recent food price crisis, as well as its potential impact on the nutrition of children. Responses by governments, donors and other key actors need to be several fold, and should take seriously the differential impact of this type of crisis on sectors of the population.

1. Social protection mechanisms need to (a) be in place, and (b) be implemented and scaled-up in response to crises, to ensure that the poorest households can receive support before resorting to damaging coping strategies. These mechanisms should take into account the fact that extremely poor households are often labour poor. These mechanisms must be designed to maximise impact on the nutrition of the youngest children.

2. Investment in agricultural production must be complemented by policies and programmes to protect the extreme poor, and to allow the poor that do not benefit from agricultural development to keep up with the rising price of food.

3. In settings where loans are a common source of income for poor families to tide them over during lean seasons, systems should be put in place to ensure that credit can be accessed in response to need. Repayment schedules should be adapted to protect vulnerable clients when shocks such as escalations in food prices occur.

4. The potential impact of food prices on the growth of children needs to be monitored. The lag time for a crisis – such as the food price spike – to show in chronic malnutrition rates is not clear, but there are some indications from this study that this may have already happened.

5. Similarly, work needs to be done to monitor how these price rises affect school attendance and issues such as child labour, in order to ensure that children are being protected as much as possible from this shock.

Endnotes

Introduction

[1] Comment from the High Level Task Force, January 2009

[2] 'Number of hungry people worldwide nears 1 billion mark, UN agency reports', 9 December 2008, UN News Centre, http://www.un.org/apps/news/story.asp?NewsID=29231&Cr=Food+crisis&Cr1

[3] UNICEF, *Tracking Progress in Maternal, Newborn and Child Survival: The 2008 Report*, 2008, UNICEF

[4] World Bank, *Rising Food and Fuel Prices: Addressing the risks to future generations*, Human development network. World Bank, 2008

[5] T Benson, N Minot, J Pender, M Robles and J von Braun, *Global Food Crises: Monitoring and assessing impact to inform policy responses*, IFPRI, Washington DC, 2008

[6] Save the Children UK, *A Study of the Relationship Between Household Economy and Nutritional Status in a Village in Kurigram, Bangladesh*, 2005

[7] C Chastre, A Duffield, H Kindness, S LeJeune and A Taylor, *The Minimum Cost of a Healthy Diet*, Save the Children UK, 2007

[8] UNICEF, *State of the World's Children report*, UNICEF, New York, 2009

[9] K Von Grebmer, H Fritschel, B Nestorova, T Olofinibiyi, R Pandya-Lorch and Y Yohannes, *The Challenge of Hunger 2008: Global Hunger Index*, International Food Policy Research Institute, Washington DC, 2008

1 Methods

[10] World Health Organization (WHO), *Energy and Protein Requirements*, WHO Technical Report Series 724, Geneva, 1995

[11] Save the Children UK, *A Study of the Relationship Between Household Economy and Nutritional Status in a Village in Kurigram, Bangladesh*, 2005

[12] Reference year for the Cost of the Diet: winter, mid-November 2007 to mid-March 2008; summer, mid-March 2008 to mid-June; rainy season, mid-June to mid-September; lean season, mid-September to mid-November 2008

3 Discussion

[13] S Kapsos, *The Gender Wage Gap in Bangladesh*, International Labour Organization (ILO) Asia-Pacific Working Paper Series, ILO, Bangkok, 2008

[14] A Evans, *The Feeding of the Nine Billion: Global food security for the 21st century*, Chatham House, London, 2009

[15] Ibid

[16] Save the Children UK, *A Study of the Relationship Between Household Economy and Nutritional Status in a Village in Kurigram, Bangladesh*, 2005

[17] W Brown and G Nagarajan, *Bangladeshi Experience in Adapting Financial Services to Cope with Floods: Implications for the microfinance industry*, Microenterprises Best Practices Project, 2000

[18] R Shrimpton, C G Victora, M de Onis, R Costa Lima, M Blossner and G Clugston, 'Worldwide timing of growth faltering: implications for nutritional interventions', *Pediatrics*, 107, e75, 2001

[19] Save the Children UK, *A Study of the Relationship Between Household Economy and Nutritional Status in a Village in Kurigram, Bangladesh*, 2005

[20] H Torlesse, H Moestue, A Hall, S de Pee, L Kiess and M W Bloem, 'Dietary diversity in Bangladesh: evidence from the nutritional surveillance project', in *Alleviating Malnutrition through Agriculture in Bangladesh: Biofortification and diversification as sustainable solutions*, International Food Policy Research Institute, Washington DC, 2004

[21] Save the Children UK, *A Study of the Relationship between Household Economy and Nutritional Status in a Village in Kurigram, Bangladesh*, 2005

[22] H Torlesse, L Kiess and M W Bloem, 'Association of household rice expenditure with child nutritional status indicates a role for macroeconomic food policy in combating malnutrition', *Journal of Nutrition*, 133: 1320–25, 2003

[23] Nutrition Surveillance Project, *Bangladesh: Trends in child malnutrition, 1990 to 2005*, Bulletin No. 19, Helen Keller International, 2006

[24] Save the Children UK, *Household Economy Approach: Kurigram District assessment*, 2001

[25] K Von Grebmer, H Fritschel, B Nestorova, T Olofinibiyi, R Pandya-Lorchand and Y Yohannes, *The Challenge of Hunger 2008: Global Hunger Index*, IFPRI, Washington DC, 2008

[26] H Torlesse, H Moestue, A Hall, S de Pee, L Kiess and M W Bloem, 'Dietary diversity in Bangladesh: evidence from the nutritional surveillance project', in *Alleviating Malnutrition through Agriculture in Bangladesh: Biofortification and diversification as sustainable solutions*, International Food Policy Research Institute (IFPRI), Washington DC, 2004

[27] I Tetens and S H Thilsted, 'Rice in the Bangladeshi context: consumption, preferences and contribution to energy intake and satiety', in *Alleviating Malnutrition through Agriculture in Bangladesh: Biofortification and diversification as sustainable solutions*, IFPRI, Washington DC, 2004

[28] Nutrition Surveillance Project, *Bangladesh: Trends in child malnutrition, 1990 to 2005*, Bulletin No. 19, Helen Keller International, 2006

Save the Children
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How the Global Food Crisis is Hurting Children

The impact of the food price hike on a rural community in northern Bangladesh

The global food crisis is expected to push the number of undernourished people in the world to more than one billion in 2009. Inevitably, children will be particularly affected by this crisis and will be over-represented in this statistic. As a result, progress towards reaching Millennium Development Goals 1 and 4 (on reducing poverty and child mortality) will be in jeopardy.

The response to this global disaster has been slow, and the best way forward has been unclear. Both the cause and the impact of food price rises are complex, as are local economies. Who benefits from the price rises? Who loses out? How are they affected? How can they be helped?

This research identifies the impact of the crisis in a rural community in northern Bangladesh. Using data collected both before and at the peak of the crisis, it describes changes in household income and children's nutrition. It also assesses how much government and other organisations might have mitigated the impact of the crisis on families.

This briefing will be of interest to governments, donors and NGOs seeking to understand and tackle the global food crisis.