

**Customized development interventions for the ultra-poor:  
preliminary change assessments of health  
and health-seeking behaviour**  
*(CFPR/TUP 2002 to 2004)*

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The critical role of health for economic development of poor countries is strongly borne out by empirical evidence (WHO 2001). This is plausible, given the two way causal relationship between poverty and health: *poverty breeds ill-health, and ill-health keeps poor people poor* (Wagstaff 2002). The cost of healthcare can be a strong determinant of its use as well as a cause of poverty (Segall et al. 2002, Russell 2003). Underlying the adverse impact of serious illnesses on households are costly, and potentially irreversible, crisis coping mechanisms (e.g., selling of productive assets, mortgaging land, or borrowing from money-lenders at high interest rates) which lead to 'catastrophic health expenditure'<sup>1</sup>, pushing these households into a poverty trap from which they rarely recover (Whitehead et al 2001). This phenomenon of poverty induced by encounter with health system is often called 'iatrogenic poverty' and is a matter of great concern in international public health (Meesen et al. 2003).

The income erosion effect of ill health for the poor households in Bangladesh, especially the extreme poor (36% of its 130 million+ population living on less than US\$ 1 per day) (UNDP 2003), is well documented (Sen 1997). The burden of income loss is estimated to represent 'about a tenth of extreme poor's income' and health related shocks 'explain 16% of all cases of downward movement along the poverty spiral' during 1990-'94 period. Other studies from Bangladesh (Sen 2003, Hulme 2003) and elsewhere (Krishna 2004, Noponen & Kantor 2004, Russell 2003, Seagall et al 2002) have shown that, of all risks facing poor households, health risks probably pose the greatest threat to their lives and livelihoods. Also, access to high impact health services significantly reduces vulnerability of the poor households to illness-induced income erosion and expenditure crises. However, the overall health service consumption in Bangladesh (from any source) is low compared to the level of illnesses and to levels in other countries (WB 2003).

Microcredit/microfinance programmes of the non-Government Organisations (NGOs) is documented as an effective and powerful poverty alleviating instrument in Bangladesh (Husain

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<sup>1</sup> health expenditure exceeding 40% of effective income remaining after fulfilling subsistence needs

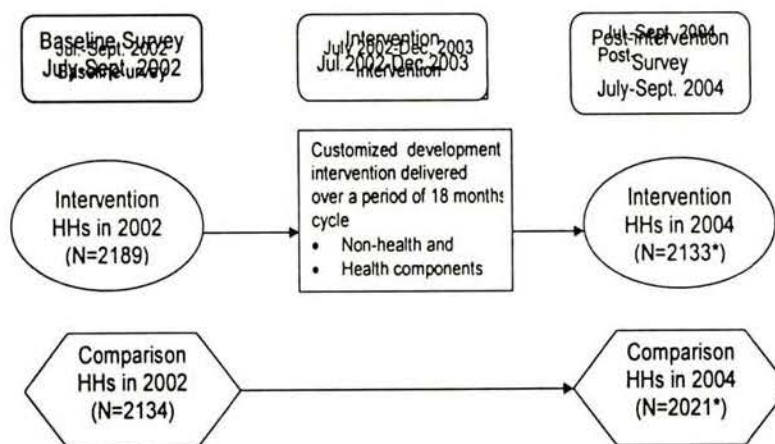
1998, Chowdhury & Bhuiya 2004). Health interventions supplement its core activities and the success of BRAC micro-credit programme as a health intervention tool is reported in the literature (Nanda 1999, Bhuiya & Chowdhury, 2002 Pitt et al. 2003). However, it is now well recognised that these programme fails to reach the 'poorest of the poor' or the extreme poor who constitutes about 36% of the population and may in fact actively exclude them. Reasons cited include both demand-side factors such as poor initial endowment of household, opportunity costs for attending meetings and income-earning activities, absence of adult males in the household, and supply side factors such as screening out the potentially risky clients by the programmes (Husain 1998; Evans 1999; Halder and Mosley 2004, Rahman & Razzaque 2000). This has encouraged BRAC (<http://www.brac.net>), to test innovative approaches for the extreme poor in recent years (Matin 2002). Experiences gained from these activities was used to design a customized development programme for the 'ultra-poor' named "*Challenging the frontiers of poverty reduction/targeting ultra-poor (CFPR/TUP)*". Launched in 2002, the CFPR/TUP programme is based on income-generating asset grants, subsistence allowance, skill-training, social awareness development training and pro-poor advocacy, all delivered over a cycle of 18 months duration (BRAC 2001). Once the grant phase is over, it is expected that the extreme poor will attain the foundation for sustainable livelihoods and participate and benefit from mainstream development programmes.. The programme recognises the role of good health care in poverty-alleviation and designed specific interventions such as health and nutrition education, installation of latrines and tube-wells free-of-cost, free pregnancy care/child immunization, basic curative care for common illnesses, ID card for privileged access to BRAC and other Govt. health facilities, financial assistance for moderate-to-severe morbidity if needed, community support during illness etc. For details of the programme and the baseline survey conducted prior to its commencement, please see RED (2004). The current working paper reports on a mid-term evaluation done to examine programme effectiveness in improving health and health-seeking behaviour of the ultra-poor, at the end of the first cycle of intervention (Jul. 2002 -Dec. 2003).

### **Materials and methods**

This study used a quasi-experimental design (a pre-test/post-test control group design) and comprised a pre-intervention baseline, followed by an 18 month cycle of intervention and a

post-intervention follow-up. For baseline survey during July-Sept. 2002, 1/3<sup>rd</sup> of the programme villages under each BRAC CFPR/TUP field office in the above three districts were randomly selected. Sample size calculation found this proportion of villages to yield adequate number of households for studying most of the variables of interest (such as EPI coverage for the under-five). All ultra-poor households in these villages receiving asset grant and other inputs in 2002 comprised our 'intervention' households (N=2,189). Approximately an equal number of comparison households (N=2,134) were selected by systematic random sampling from the pool of remaining ultra-poor households in the respective villages. Together, these 4,323 households comprised our baseline sample for which data on demographics, SES, nutrition, EPI/FP, and morbidity and health-seeking behaviour were collected. A follow-up survey of the same households was done during July-Sept. 2004 after the completion of the first round of intervention cycle (see Fig. below). If the first attempt was not successful due to the absence of the respondents, the households were visited on three repeated occasions at intervals. When all repeated attempts failed, the interview was called-off for the particular household. There was also attrition due to death of the programme participant, migration, drop outs etc. Thus in 2004, 2133 intervention HHs (out of 2189 HHs) and 2021 comparison HHs (out of 2134 HHs) were surveyed. The response rate was 96%.

**Fig: Study design**



\*56 HHs in intervention group and 113 HHs in comparison group lost to follow-up due to death, migration, drop out etc.

## The data

Pre-tested structured questionnaires were used in face-to-face interview for data collection, following informed consent of the respondent. Demographic and socioeconomic data were furnished by household head (perceived by household members as the major decision maker in the family, who may or may not be the main income-earner). Of pertinence to this analysis are data on sex (male or female), literacy (completed years of schooling) and self-rated poverty status of the household. The later was determined by eliciting the perception of the household head about the economic capacity of the household to provide at least two square meals a day for all its members in the past one year. This self-assessment tool has been found to be a valid indicator of household socioeconomic stratification in rural Bangladesh (Sen 2001). Thus, households were categorized as being in “chronic deficit” (running in deficit most of the year), “occasional deficit” (running episodic deficit or seasonal deficit) or “non-deficit” (running in a state of break- even or having a small surplus).

Anthropometry was done for all children under 5 years of age (12-59 months) and women of child bearing age (15-49 years) present at the time of survey in the study households. Simple MUAC without regard to age or height has a satisfactory sensitivity and specificity for detecting low Weight for Age (Wt/age) and Weight for Height (Wt/Ht) in children (Trowbridge and Stachling 1980). MUAC was measured using Teaching Aids at Low Cost (TALC) numeral insertion tape to the nearest millimeter. A value of less than 125 mm identified ‘severely undernourished’ children. Other indicators of undernutrition of children included severe under-weight (Wt for Age  $\leq -3Z$ ), severe wasting (Wt for Ht  $\leq -3Z$ ) and severe stunting (Ht for Age  $\leq -3Z$ ). Body Mass Index {BMI=Wt(Kg)/Ht(Metre)<sup>2</sup>} is employed as a simple and reliable measure of adult women’s nutritional status. Cut-off point of 18.5 was used to identify the malnourished.

Specific information on recent household illness(es) and related health-seeking behaviour was furnished by any knowledgeable female member or the ill member present at the time of survey. Data on the major (longest in duration) illness episode occurring among household members within 15 days preceding the day of survey were recorded. Respondent was asked

to describe symptoms of illness (and exclude 'diagnosis') in her/his own language which were classified later into "types" of illnesses with a pre-tested coding system used in BRAC for morbidity studies and cross-checked by a physician (first author). Efforts to improve reliability and validity of illness reporting included use of culturally appropriate language, limiting recall period to 15 days, intensive field supervision, and re-surveying 5% of the household sample within three days of the main survey by an independent quality control team. Where inconsistencies were noted, interviewers were accompanied by field supervisors until quality standards were met.

Instances where a healthcare provider was consulted, information was obtained with respect to the first contact made for treatment seeking, and healthcare expenditure (comprising user fees, out-of-pocket money, transport etc.) incurred for that person during the referral period. The importance of considering the first contact lies in the fact that it is a reflection of a number of factors such as health beliefs, past knowledge of illness and its remedy, and faith in various therapies rather than the type or severity of illness alone. The treatments sought were grouped into five categories (Box 1).

Box 1: Categories of healthcare providers in the study area

**'Self-care/self-treatment'**: no medication other than rest and nursing; also included instances when common home-remedies (e.g., ORS), over-the-counter (OTC) drugs, or herbal preparations are taken without consultation with any healthcare provider.

**'Drug store salesman'**: when consultation is made to seek treatment from a drug store salesman (excluding purchase of OTC drugs without consultation).

**'Traditional'**: when treatment is sought from herbalists (*Kabiraj*) and spiritual healers; also included are homeopathic practitioners, although negligible in proportion.

**'Para-professional'**: when seeking treatment from: a) village doctors (*Palli Chikitsok*) with short training in diagnosing and treating common ailments, mostly from private institutions of questionable quality; b) medical assistants who complete a three-year medical assistant training programme from a public institution; and c) various government and non-government community health workers who have some basic preventive and curative health training.

**'Qualified allopathic'** comprised of licensed practitioners who have undergone professional training (MBBS doctors).

### *Perceived self-health*

Over the last decades, subjective evaluation of health has been found to be a valid, reliable and cost-effective means of health assessment. Lessons learned over the years show that, on average, 'the patient (*or individual*) point of view is valid' and also, 'even very brief measures can be used to measure differences in health across groups or patients' (Ware 1990) and also a simple global question asking patients to rate their overall health status on a scale from 'excellent to very poor' can provide a useful summary of how patients perceive their overall health status and a powerful predictor of clinical outcome and mortality (Fayers and Sprangers 2002). We used two such questions to elicit their perception of current health status and health transition over last year.

### *Analysis of data*

Data were analysed in two stages using SPSS ver 11.5: first, bivariate analysis (with occasional panel analysis where appropriate) was done to characterise differences between the two time periods at 2002 (baseline) and 2004 (post-intervention). Next, a simple logistic regression was done to identify determinants of seeking healthcare from formal allopathic sector (please see methodological note at the end).

## Results

The baseline characteristics of the study households in 2002 are shown in Table 1. Findings indicate marginalized situation of the ‘intervention’ households compared to ‘comparison’ households with respect to households’ initial endowments such as possession of land, poverty status, female-headship, literacy of household head etc.

Table 1: Characteristics of the study households at baseline (2002) %

Characteristics	‘Ultra-poor’ households	
	Intervention	Comparison
Possession of land		
None	54.6	42.8
1 – 10 decimals	42.5	53.0
>10 decimals	3.0	3.6
Poverty status of HH		
Always deficit	63.8	43.9
Occasional deficit	33.9	48.9
Non-deficit	2.4	7.2
Households with head engaged in wage-labour	70.6	61.7
Households with a literate head	7.3	11.6
Female-headed households	42.5	28.2
N	2189	2134

Note: All differences are statistically significant at 1% level \*HH-Household

We began with exploring how the participants themselves evaluated changes, if any, in their household’s food-security status as a result of programme intervention. This is shown in Table 2. There was about 96% reduction in the proportion of chronic deficit households in the intervention group compared to 40% reduction for comparison households, and matched by proportionate increase in non-deficit households among the intervention group.

When mobility of the individual intervention households was followed longitudinally, we found these households reaching a better step up the poverty ladder, compared to the comparison households (Table 3). This was reflected in greater proportion of intervention households reaching ‘surplus’ or no deficit level from lower level of deficits, or lesser proportion of households reporting unchanged self-rated poverty status, compared to their counterpart.



Table 2: Poverty status of study households %

	Intervention			Comparison		
	2002	2004	% diff.	2002	2004	% diff.
Poverty status of households						
Always deficit	63.8	2.7	-96	41.3	24.9	-40
Occasional deficit	33.9	21.0	-38	50.8	49.9	-2
No deficit	2.4	76.4	+3083	7.8	25.2	+223
$\chi^2$ Sig.	p<0.001			p<0.001		
N	2189	2133		2134	2021	

Table 3: Perceived changes in poverty status of households during 2002-2004 (%)

Perceived changes	Intervention	Comparison	All
I. Moved up to occasional deficit			
From chronic deficit	13.7	20.6	17.1
II. Moved up to breakeven from			
Occasional deficit	15.3	11.9	13.6
Chronic deficit	29.3	7.5	18.7
III. Moved up to surplus from			
Breakeven	0.8	0.0	0.4
Occasional deficit	11.2	1.2	6.3
Chronic deficit	18.8	0.9	10.1
IV. Remained unchanged	8.9	39.7	24.0
V. Moved down from baseline	1.3	16.8	8.8
No. of households included in both surveys (n)	2133	2021	4154

Next we explored changes in participant women's self-rated health (SRH) status following period of intervention (Tables 4 and 5). Significant improvements in perceived self-health were noted among women from the intervention households compared to the comparisons. In the intervention households, the proportion of women who perceived their current health status to be good increased by about 27% while the proportion who perceived their current health status to be bad (or not good) decreased by about 9%, the figures for comparison households were 6% and 12% respectively (Table 4). Similar trend was also noted in case of perceived health-transition over past one year (Table 5).

Table 4: Self-rated current health status of women %

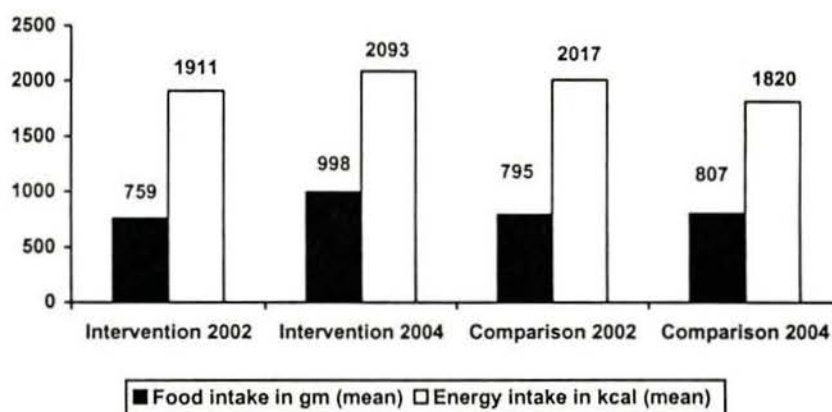
	Intervention			Comparison		
	2002	2004	% diff.	2002	2004	% diff.
Current health status						
Good	43.2	54.7	+27	44.9	47.4	+6
Fair	36.5	26.9	-26	35.4	30.6	-13
Not good/bad	20.2	18.4	-9	19.7	22.0	+12
$\chi^2$ Sig.	p<0.001			p<0.001		
N	1987	1655		1862	1505	

Table 5: Self-rated health transition over past year by women %

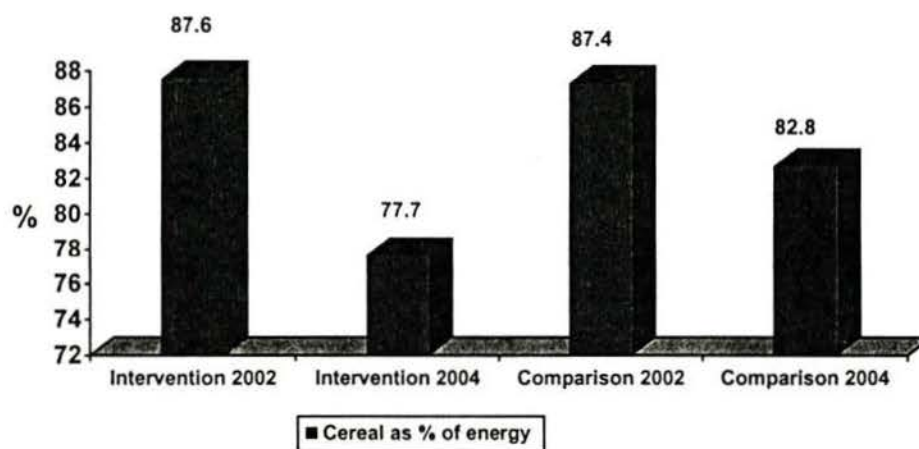
	Intervention			Comparison		
	2002	2004	% diff.	2002	2004	% diff.
Health transition over past year						
Better	24.8	50.6	+104	24.4	24.2	0.0
About the same	25.6	25.1	-2	26.6	36.0	+35
Worse	49.6	24.3	-51	49.0	39.8	-19
$\chi^2$ Sig.	p<0.001			p<0.001		
N	1987	1655		1862	1505	

Now, was there any material basis for these greatly improved perceptions of participants regarding poverty alleviation and self-health? To find an answer to this, we first studied the total per capita food and calorie intake of the study households (Fig. 1). We found a 31% increase in food intake, and 9% increase in energy intake in the intervention group while there was only 1% increase in food intake and 10% decline in energy intake for comparison households. The proportion of cereal as % of total energy also declined in much greater proportion among the intervention households, compared to the comparison households (Fig. 2).

**Fig 1: Total per capita food and calorie intake (72 hours recall)**



**Fig 2: Cereal intake as % of energy intake (72 hours recall)**



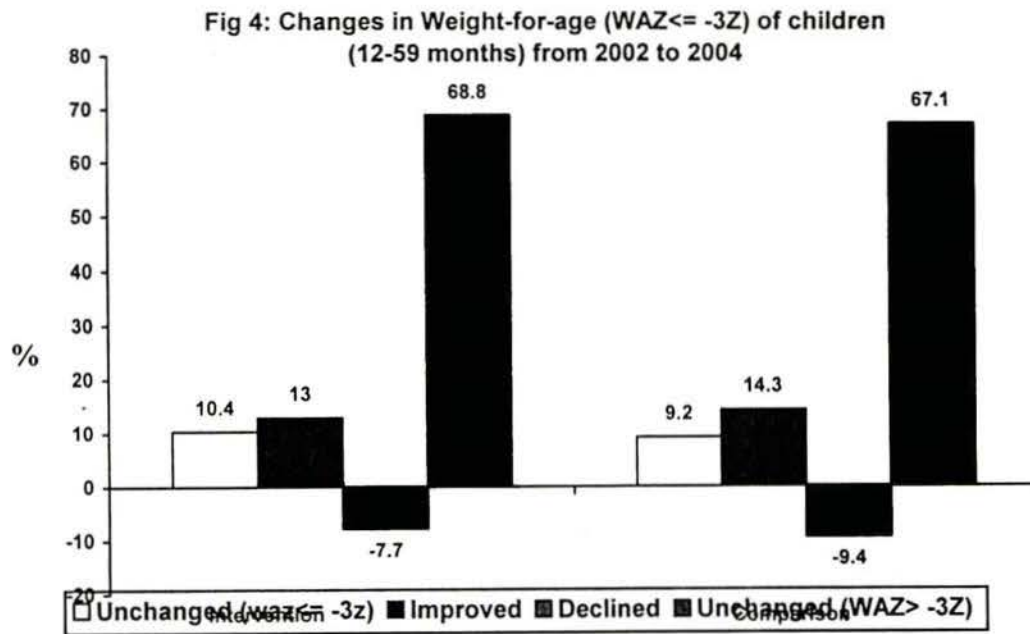
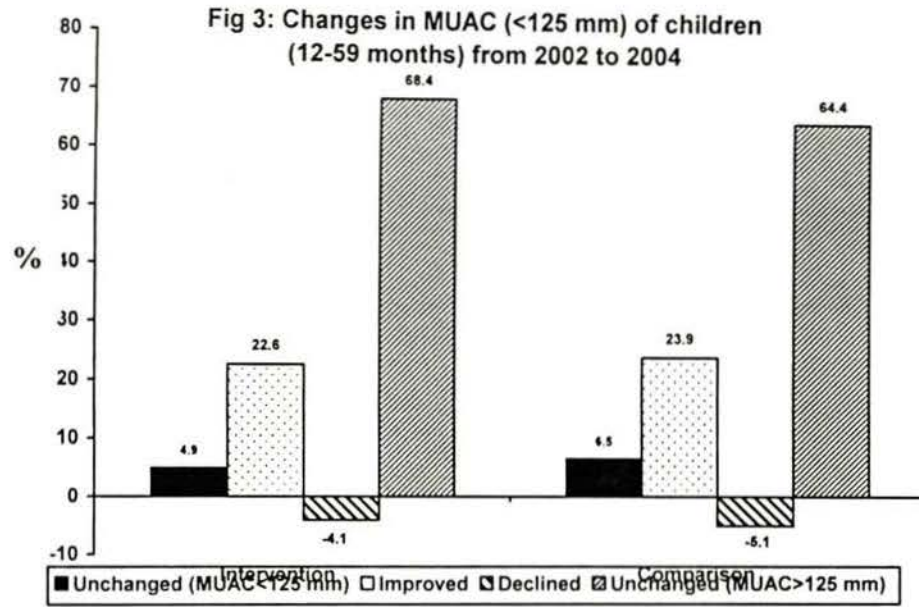
The effect of the above changes in food and calorie intake on the nutritional status of children and women was the focus of our next investigation. Anthropometry was done for all children aged 12-59 months, and women of child bearing age (15-49 years) present in the study households at the time of survey. Table 6 presents the state of under-nutrition among children from the two groups of households. There was substantial decline (29%) in severe malnourishment (as measured by MUAC<125 mm) as well as severe wasting (65%) in the intervention group compared to modest decline in the comparison group (9% and 46%) respectively. However, the decline in the proportion of severe under-weight and stunted children was more among the comparison households.

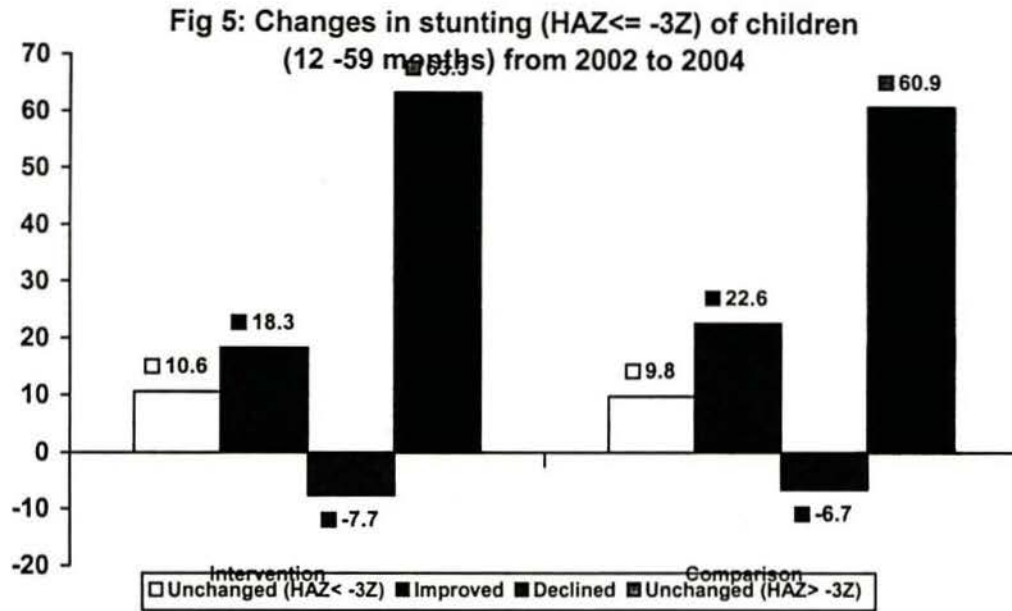
Table 6: Severe malnutrition among under-five children (12-59 months) %

	Intervention			Comparison		
	2002	2004	% diff.	2002	2004	% diff.
MUAC <125 mm (Severely malnourished)	15.8	11.2	-29	13.9	12.8	-9
Wt for Age $\leq$ -3Z (Severe under-weight)	25.6	20.5	-20	24.7	18.1	-27
Wt for Ht $\leq$ -3Z (Severe Wasting)	3.7	1.3	-65	2.8	1.5	-46
Ht for Age $\leq$ -3Z (Severe Stunting)	30.9	17.3	-44	31.4	14.4	-54
N	811	677		720	662	

*Note: Children with illness during past 15 days were excluded from analysis*

We tried to explore the state of under-nutrition from a different angle: we followed the same children (within the age range of under-five years) longitudinally to see how they performed during the study period. This is shown in Fig. 3. Only marginal improvement in child nutrition (i.e. MUAC beyond 125mm) was observed among intervention households compared to others. The great majority of them remain unchanged, either as undernourished or normal. We did the same exercise for severely under-weight and stunted children (Figs. 4 and 5 respectively). In both these indicators also, the children from intervention households performed no better than the comparison households.



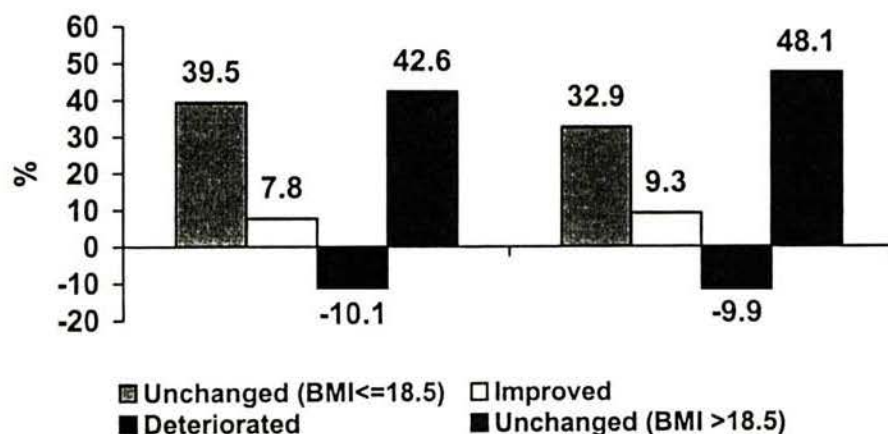


Using the BMI < 18.5 criterion, we observed almost no change in the nutritional status of women in either group (Table 7). When followed longitudinally during the study period, we found women from intervention households performing worse than their counterparts from comparison households: respective improvement was 8% compared to 9%, while 39% remained in chronic energy deficiency as opposed to 33% among the comparison households (Fig 6).

Table 7: Nutritional status of women (15-49 years)

	Intervention			Comparison		
	2002	2004	% diff.	2002	2004	% diff.
BMI						
mean ± sd	18.8 ± 3.0	18.7 ± 2.5		19.1 ± 3.2	19.1 ± 2.5	
BMI < 18.5 (%)	47.9	49.5	+3	42.2	42.6	+1
N	1681	1302		1497	1081	

Fig 6: Changes in BMI of women (15-49 years) from 2002 to 2004



Next we looked at some proxy variables of health care utilization such as immunization of children (12-23 months) and contraception among currently married women between 15 to 49 years of age. Table 8 shows the status of immunization against five common childhood diseases (Tb, diphtheria, whooping cough, tetanus and measles) under EPI. Only marginal increase (7%) in complete immunization (receiving all five doses) was noted among children of intervention households. On the other hand, sharp improvement in contraceptive prevalence (37%) among the intervention households was noted (compared to 23% increase among comparison households) during the study period (Table 9). Changes in method used was most prominent for injection (23% and 28% increase respectively for intervention and comparison households), vasectomy (50% and 31% increase respectively) and natural methods (around 54% decline for both groups) of contraception.

Table 8: Child immunization status (12-23 months) %

	Intervention			Comparison		
	2002	2004	% diff.	2002	2004	% diff.
Immunization status						
Complete	60.0	64.1	+7	66.1	65.3	-1
Partial or none	40.0	35.9	-10	33.8	34.7	+3
N	190	128		192	173	

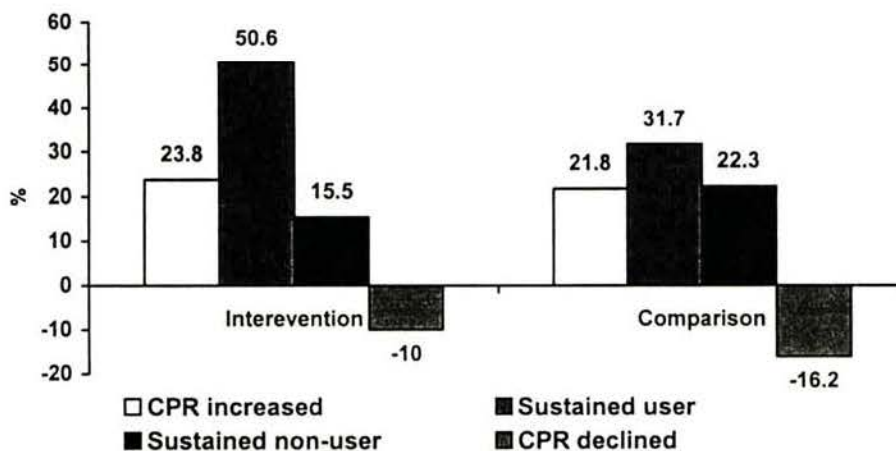
Table 9: Current use of contraception and methods used by currently married women %

	Intervention			Comparison		
	2002	2004	% diff.	2002	2004	% diff.
Current user	53.0	72.8	+37	49.5	60.7	+23
N	1360	1144		1587	1286	
$\chi^2$ sig.	p<0.001			p<0.001		
Methods used						
Pill	45.9	45.1		55.6	52.8	
Injection	22.2	27.4	+23	21.9	28.0	+28
Ligation	21.2	21.2		14.0	14.1	
Vasectomy	1.2	1.8	+50	1.3	1.7	+31
Other(s)*	9.4	4.4	-53	7.3	3.3	-55
N	721	835		786	778	

\*mainly natural methods such as abstinence, withdrawal etc.

We also followed longitudinally the contraceptive behaviour of the women during the study period and the results are presented in Fig 7. Evidently, the performance of women

Fig 7: Changes in contraceptive use of currently married women (15-49 years) from 2002 to 2004



from intervention households was much better than those from the comparison households with respect to new adopters, continuation and drop-outs.

Our last leg of inquiry was assessing the changes, if any, in the health-seeking behaviour of the study population during the study period. We began with the prevalence and profiling of morbidity to elicit relevant health-seeking behaviour (Tables 10 and 11). In 2004, a slight



increase in morbidity (15-day recall period) was noted in the study area irrespective of intervention status, most probably due to an epidemic of chicken pox going on in the area during the time of survey. However, while there was 17% increase in morbidity among the intervention households, the comparative figure for the comparison households was 29% (Table 10). Among all the groups, burden of reported illnesses was significantly more in case of women compared to men. In the intervention group, a 35% increase in morbidity prevalence was seen among chronic poverty households compared to 73% increase among non-deficit households. While the differences between the deficit and non-deficit households was significant in the intervention group, there was no such difference among the comparison group.

Table 10: Morbidity prevalence by sex and self-rated food-security status (15 days recall) %

	Intervention			Comparison		
	2002	2004	% diff.	2002	2004	% diff.
<b>Morbidity prevalence</b>						
All	15.4	18.1	+17	14.1	18.2	+29
N	7827	7739		7822	7570	
$\chi^2$ Sig.	p<0.001			p<0.001		
<b>Sex</b>						
Male	14.3	16.1		13.2	16.8	
Female	16.3	19.8		14.9	19.3	
$\chi^2$ Sig.	p<0.02	p<0.001		p<0.02	p<0.01	
<b>Poverty status</b>						
Chronic deficit	17.4	28.3	+63	16.3	22.3	+37
Occasional or no deficit	12.1	17.9	+48	12.5	16.8	+34
$\chi^2$ Sig.	p<0.001	p<0.001		p<0.001	p<0.001	

Table 11: Morbidity profile of the ill persons (15 days recall) %

	Intervention			Comparison		
	2002	2004	% diff.	2002	2004	% diff.
Fever	15.4	29.9	+94	16.8	30.7	+83
Bodily pain/aches	26.4	17.5	-34	23.9	17.0	-29
GI Illnesses	22.3	19.3	-13	20.5	23.1	+12
Resp. Illnesses	18.3	15.0	-18	19.3	11.9	-38
Other Illnesses	17.7	18.4	+4	19.4	17.2	-11
$\chi^2$ Sig.	p<0.001			p<0.001		
N	1218	1402		1096	1374	

Out of three most commonly reported illnesses, bodily pain/aches (rheumatism) and gastrointestinal illnesses was common both in 2002 and 2004 (Table 11). Respiratory illnesses were the third common morbidity reported in 2002 while fever topped the list in 2004. Major change was noted in the prevalence of fever: 94% and 83% increase respectively among the intervention and comparison households. Also of importance to note, there was 13% reduction in diarrhoea related illnesses in intervention households while comparison households saw an increase of 12%. The increase in other illnesses (which included pregnancy related illnesses, anaemia and malnutrition etc.) were about four times more among intervention households than the comparison households.

The health-seeking behaviour of the ill individuals is shown in Table 12. Some interesting observations can be made from this table. The most striking of this was the sharp decrease in self-treatment (62% and 59% respectively in the intervention and the comparison groups) and increase in the use of para-professionals (100+% and 80% respectively). Also, the proportion seeking no treatment measures increased about 10% in the intervention households compared to 49% increase in the comparison households. The increase in treatment seeking from drug retailers continued during the intervention period (15% among intervention households compared to 9% among comparison households), as also from the traditional healers, though the increase was much less in case of intervention households (31% vs 57%). Differences were also noted regarding treatment-seeking from qualified allopathic practitioners: there was marginal increase (4%) in case of intervention households while there was substantial decrease (45%) for the comparison households.

Table 12: Health-seeking behaviour of the ill persons (15 days recall) %

	Intervention			Comparison		
	2002	2004	% diff.	2002	2004	% diff.
No medication	12.7	14.0	+10	11.2	16.7	+49
Self-treatment	36.6	13.8	-62	31.9	13.2	-59
Traditional	8.5	11.1	+31	7.5	11.8	+57
Drug retailers	19.4	22.4	+15	24.4	26.5	+9
Para-professionals	14.5	30.2	+108	14.3	25.9	+81
MBBS	8.2	8.5	+4	10.7	5.9	-45
$\chi^2$ Sig.	p<0.001			p<0.001		
N	1218	1402		1096	1374	

We further analysed health-seeking behaviour by self-rated food-security status to see the changes within the groups (Table 12a). Interestingly, increase in the use of traditional medicine and para-professionals were marked among the chronic deficit households in the intervention group as also the decrease in the use of qualified practitioners and drug retailers. On the other hand, the comparison group was characterised by uniform reduction in the use of qualified practitioners and a much greater increase in the use of para-professionals among the chronic deficit households and drug retailers among the non-deficit households.

Table 12/a: Health-seeking behaviour by poverty status of household (15 days recall) %

	Always deficit			Occasional or no deficit		
	2002	2004	% diff.	2002	2004	% diff.
Intervention						
No medication	14.7	22.6	+54	8.2	13.6	+66
Self-treatment	38.2	24.5	-36	33.0	13.3	-60
Traditional	8.1	9.4	+16	9.5	11.2	-18
Drug retailers	17.7	9.4	-47	23.2	22.9	-1
Para-professionals	12.5	26.4	+111	19.3	30.4	+57
MBBS	8.8	7.5	-15	6.8	8.5	+25
N	851	53		367	1349	
Comparison						
No medication	15.5	12.4	-20	7.1	18.6	+162
Self-treatment	30.3	14.0	-54	33.5	12.9	-61
Traditional	7.3	11.9	+63	7.7	11.7	+52
Drug retailers	26.8	27.6	+3	22.1	26.0	+17.6
Para-professionals	8.6	27.6	+221	19.8	25.2	+27
MBBS	11.4	6.4	-44	10.0	5.7	-43
N	534	420		562	954	

Table 12/b: Health-seeking behaviour for gastrointestinal illnesses (15 days recall) %

	Intervention			Comparison		
	2002	2004	% diff.	2002	2004	% diff.
No medication	10.3	30.0	+191	14.7	37.1	+152
Self-treatment	40.4	7.4	-82	34.7	8.2	-76
Traditional	9.6	7.4	-23	8.0	7.2	-10
Drug retailers	20.2	18.1	-10	20.4	22.0	+8
Para-professionals	14.7	30.4	+107	12.9	21.4	+66
MBBS	4.8	6.7	+40	9.3	4.1	-56
$\chi^2$ Sig.	p<0.001			p<0.001		
N	272	270		225	318	

Table 12/c: Health-seeking behaviour for bodily pain/aches (15 days recall) %

	Intervention			Comparison		
	2002	2004	% diff.	2002	2004	% diff.
No medication	11.8	9.0	-24	9.5	7.7	-23
Self-treatment	34.3	12.2	-181	29.0	16.2	-44
Traditional	5.9	8.2	+39	4.6	8.5	+85
Drug retailers	22.7	26.9	+18	28.2	30.8	+9
Para-professionals	16.5	32.7	+98	18.3	28.6	+56
MBBS	8.7	11.0	+26	10.3	8.1	-21
$\chi^2$ Sig.	p<0.001			p<0.01		
N	321	245		262	234	

Health-seeking for the most common reported illnesses like gastrointestinal illnesses and rheumatism saw changes during the study period. Use of traditional medicine for treatment of gastrointestinal illnesses decreased among study households while use of drug retailers decreased among intervention households compared to an increase observed among the comparison households (Table 12b). On the other hand, for bodily pain/aches (rheumatism), self-medication was increasingly replaced by health-seeking from allopathic practitioners, especially qualified practitioners among the intervention group, compared to the comparison group (Table 12c).

Health expenditure for the ill persons in the 15-days recall period is shown in Table 13. Evidently, the capacity of intervention households to spend for treatment of illnesses improved to a great extent (the percentage increase in spending more than Taka 26 by the intervention households far exceeded that of the comparison households). This is also evident when stratified by self-rated poverty status of households (Table 13a).

Table 13: Health expenditure for the ill persons in past 15 days %

	Intervention			Comparison		
	2002	2004	% diff.	2002	2004	% diff.
Health-expenditure in past 15 days						
None	34.5	18.8	-45.5	26.9	19.2	-28.6
≤ 25 Taka	35.2	38.6	+9.6	33.9	40.0	+17.9
26 – 75 Taka	17.1	26.3	+53.8	20.6	21.4	+3.8
>75 Taka	13.2	16.3	+23.5	18.6	19.4	+4.3
$\chi^2$ Sig.	p<0.001			p<0.001		
N	1218	1402		1096	1374	

Table 13/a: Health expenditure for the ill persons in past 15 days by poverty status%

	Always deficit			Occasional or no deficit		
	2002	2004	% diff.	2002	2004	% diff.
Intervention						
Health-expenditure in past 15 days						
≤25 Taka	73.6	67.9	-8	60.8	56.9	-6
25+ taka	26.4	32.1	+22	39.2	43.1	+10
χ <sup>2</sup> Sig.	ns			ns		
N	851	53		367	1649	
Comparison						
Health-expenditure in past 15 days						
≤25 Taka	68.4	62.4	-9	53.6	57.9	+8
25+ taka	31.6	37.6	+19	46.4	42.1	-9
χ <sup>2</sup> Sig.	p<0.05			ns		
N	534	420		562	954	

We collected some additional data related to the knowledge and use of locally available health facilities, and also satisfaction with services provided by these facilities in the post-intervention period (i.e., in 2004). Surprisingly, in both areas, people knew little about UHFWC which was nearer to the villages compared to the UZHC which was farther away. However, nearly 90% knew about drug retail outlets staffed by unqualified allopathic practitioners (Table 14).

In the past one year, UZHC and village doctors were most frequently visited by the study population as also the retail drug outlets (Table 15). Factors responsible for women's satisfaction with health services received from the health centres/providers visited within last one year is shown in Table 16. Behaviour of the attending physician, out-of-pocket expenses and cure of illness were the three most important factors determining their level of satisfaction. No difference between the intervention and comparison households was observed.

Table 14: Women's knowledge on location of available health services and source of knowledge post-intervention (%)

	Ultra-poor Households	
	Intervention	Comparison
<i>Knowledge on location of available health services/ health providers</i>		
Community Health Workers (including BRAC health workers)	24.1	5.1
UZ Health & Family Welfare centre	35.3	28.9
UZ Health Complex	77.8	76.9
MC Hospital	23.8	21.2
Sadar Hospital	22.8	18.1
BRAC Health Centre	23.2	3.7
Private clinics/health centres	10.4	6.9
Medicine retail shops	88.1	89.4
Traditional providers	15.0	15.8
Homeopath	14.0	16.6
Don't know	2.2	0.8
<i>Source of knowledge</i>		
BRAC Health workers	78.0	3.7
Other health workers/relatives/friends	48.0	62.2
Radio/TV/Newspaper/Leaflet/Bill board	0.8	0.8
Committee to assist the poor	0.7	0.2
Knew previously	64.3	70.5
N	2108	1978

Table 15: Health centres and/or providers visited in last one year (%)

	Ultra-poor Households	
	Intervention	Comparison
<i>Health providers/ centres visited in last one year</i>		
Community Health Workers (including BRAC health workers)	11.3	2.5
UZ Health & Family Welfare centre	9.0	9.8
UZ Health Complex	34.4	28.2
MC Hospital	3.2	2.2
Sadar Hospital	10.8	11.1
BRAC Health Centre	10.8	1.1
Private clinics/health centres	2.6	2.8
Medicine retail shops	28.2	30.3
Traditional providers	2.2	4.1
Village doctor	33.3	40.3
Homeopath	3.5	5.4
N	1672	1474

Note: Multiple responses considered

Table 16: Women's satisfaction with health services received from health centres/providers visited within last one year (%)

	Ultra-poor Households	
	Intervention	Comparison
<i>Satisfied with services received from health centres/ health providers</i>	93.3	89.6
<i>Reasons of satisfaction</i>		
Good behaviour of physicians	38.0	32.7
Good behaviour of other workers	5.1	1.4
Short waiting time	3.4	1.8
No extra expenses	48.6	47.2
The illness was cured	30.3	31.4
Medicine on credit	2.1	2.5
<i>Reasons of dissatisfaction</i>		
Bad behaviour of physicians	27.7	30.5
Bad behaviour of other workers	0.0	8.4
Long waiting time	14.3	13.0
Extra expenses	48.2	53.9
The illness was not cured	18.8	18.8
No/not adequate medicine received	16.1	14.2
N	1672	1474

Note: Multiple responses considered



Lastly, we ran a simple logistic regression (please see ‘methodological note’ at the end) to identify predictors of seeking allopathic care from qualified allopathic practitioners (MBBS) and para-professionals (Table 17). Three models were constructed: in the first model, only

Table 17. Odds ratios of seeking formal allopathic care (para-professional and MBBS) for illness during the 15-days recall period

	Odds of seeking formal allopathic care (=1, else including no treatment=0)					
	Model I		Model II		Model III	
	OR	95% CI	OR	95% CI	OR	95% CI
Self-rated poverty status of household						
Always deficit	1.00		1.00		1.00	
Occasional/no deficit	1.50 <sup>d</sup>	1.34-1.69	1.17 <sup>b</sup>	1.01-1.36	1.11	0.95-1.30
Level of health expenditure (BD Tk <sup>a</sup> )						
≤ 60	1.00		1.00		1.00	
60+	3.52 <sup>d</sup>	3.10-3.99	3.36 <sup>d</sup>	2.90-3.89	3.36 <sup>d</sup>	2.90-3.90
Time						
Baseline (2002)			1.00		1.00	
Post-intervention (2004)			1.63 <sup>d</sup>	1.42-1.88	1.66 <sup>d</sup>	1.44-1.91
Household category						
Control			1.00		1.00	
Intervention			1.2 <sup>c</sup>	1.07-1.38	1.18 <sup>b</sup>	1.04-1.34
Time*Household category						
2002*control					1.00	
2004*Intervention					1.40 <sup>b</sup>	1.07-1.82
<hr/>						
-2 log likelihood	7632.63		5866.18		5860.02	
Model Improvement	447.03 <sup>d</sup>		359.19 <sup>d</sup>		365.34 <sup>d</sup>	
Overall predicted	72%		69.9%		71.2%	

<sup>a</sup>BD Taka 60=US \$ 1 in 2004; <sup>b</sup>p<0.05; <sup>c</sup>p<0.01; <sup>d</sup>p<0.001

two predictors, self-rated poverty status and expenditure on illness were included. In model two and three, in addition, time and household type with respect to intervention, and the interaction term time\*household category, were successively added on. Formal allopathic

was found to be strongly predicted ( $p < 0.001$ ) by level of health expenditure (probability more if spent more than taka 60 in the recall period of 15 days) and time (probability more if in post-intervention, 2004) in all the models. Self-rated poverty status also emerged as strong predictor (probability more if the household self-evaluated its status to be in occasional or no deficit category) in model I, but its importance declined as other predictors were introduced in Models II and III. Household category was also found to be significant (probability more in intervention households) in models II and III, but with lesser level of significance.

## Summary and programmatic implications

The findings presented above can be summarised as follows:

- Substantial improvement in household economic status (as proxied by self-rated food-security status) and perceived self-health among programme participants; this was matched by improved household capacity for health-expenditure and health services and food consumption (and also reducing the proportion of carbohydrate in the diet)
- Improvement was also observed in unde-five children's nutritional status from the level of severe malnourishment. However, no discernible change was noted in women's nutritional status.
- Contraceptive use increased substantially but not immunization coverage among children (11-23 months) against all EPI diseases
- Morbidity profile varied little during the study period (with the exception of sharp rise in the prevalence of fever in 2004 due to an epidemic of chicken pox in the study area at the time of survey), as also between the two groups of households, reflecting the strong influence of environmental and seasonal risk factors
- Increased health-seeking for illnesses occurred during the study period, mostly from allopathic providers; sharp decrease in self-treatment and increase in use of semi-qualified 'para-professionals' was also noted. Drug retailers continued to be one of the major healthcare provider for the rural poor
- Persistence of gender inequity in health-seeking from qualified providers was noted
- Potential 'health empowerment' effect of development interventions was noted (e.g., increase in knowledge about locally available healthcare, increase in treatment-seeking from formal providers etc.)

### *Programmatic implications*

- Strengthen Immunization, sustain FP coverage
- Promote use of services from UHFWC/UZHC at PHC level
- Improve capacity of the drug retailers and other unqualified/semi qualified healthcare providers (including SS) for providing rational healthcare to the poor and develop appropriate referral mechanism for secondary care
- Reduce gender inequity in treatment-seeking from qualified providers
- Measures for 'health-empowerment' of the poor (such as moving from health education to health literacy)

*A Methodological note*

One of the challenges posed by this data set is the fact that the socio-economic/demographic characteristics of the two groups of households (intervention and comparison) households were not comparable at pre-intervention baseline. This means that the two groups of households did not have the same initial endowment with respect to material and human capital asset to start with. This may be due to the fact that the households were not randomly allocated between the two groups (i.e., it was not a RCT design). Rather, the intervention households were pre-selected by the Programme and the comparison households had to be selected from the unselected (equally ultra-poor, drawn randomly) households in the neighbourhood. As such, contamination of the comparison group could not be ruled out and may be responsible for much of the similar trend of changes observed in these households as in the intervention group. Thus, to evaluate the impact of intervention, a strategy of studying the 'difference of differences' (i.e., measuring the differences in the value of variables of interest within each categories of households during 2002-2004, and then comparing the two groups for magnitude of these differences) was adopted. However, though adequate for descriptive purpose, this may not suffice for multivariate analysis. To be able to handle our pre-post intervention-comparison data with different baseline values among the intervention and comparison households, and also repeated measurements, something like a mixed model with interaction effects is postulated:

Outcome of interest (i.e, health-seeking behaviour) = year + intervention + intervention\*year

It allows for different mean values between two years (a change is also allowed for the comparison) and the two groups (intervention and comparison, different baseline values). The intervention effect is then captured by the interaction term (also called effect modification) intervention\*year which gives the extra value of being intervention household and at year 2004. Pending such sophisticated modelling, the present analysis used a simple approach (differences of difference) to describe the changes occurring as a result of intervention implemented in the study period.

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