



JIBON O JIBIKA

(LIFE AND LIVELIHOODS)

A TITLE II PROGRAM OF USAID

Final Evaluation Report

November 2009



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Save the Children
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We appreciate that many people have labored long and hard in JoJ to make the program a success. We would also like to thank all the people – professional staff, program participants, and other stakeholders, particularly USAID officials – who gave freely of their time to discuss the program performance and share their ideas on Jibon o Jibika.

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Acronyms

ANC	Antenatal Care
BCC	Behavior Change Communication
BELT	Bangladesh Emergency Liaison Team
BRCS	Bangladesh Red Crescent Society
CCM	Community Case Management
CDS	Chandradip Development Society
CFW	Cash for Work
CHV	Community Health Volunteer
CPP	Cyclone Preparedness Programme of the Bangladesh Red Crescent Society
CSC	Community Service Centre
DAE	Department of Agricultural Extension
DAP	Development Assistance Program
DIP	Detailed Implementation Plan
DUS	Dip Unnayan Society
DDS	Diet Diversity Score
DLS	Department of Livestock Service
DoF	Department of Fisheries
DoL	Department of Livestock
EPI	Expanded Program on Immunization
GB	Graduated beneficiary (survey)
GJUS	Grameen Jono Unnayan Songstha
GMP	Growth Monitoring and Promotion
GoB	Government of Bangladesh
HFP	Homestead Food Producer
HKI	Helen Keller International
HQ	Headquarters
HR	Human Resources
ICDA	Integrated Community Development Association
IEE/EIA	Initial Environmental Examination/Environmental Impact Assessment
IGA	Income-Generating Activity
IPTT	Indicator Performance Tracking Table
JoJ	<i>Jibon o Jibika</i> Program ("Life and Livelihood" in Bangla)
Kcal	Kilocalorie
Kg	Kilogram
LNGO	Local Non Governmental Organization
McAid	Maternal and Child Aid Program
MCHN	Maternal and Child Health and Nutrition
MT	metric ton
MTE	Mid Term Evaluation
MoHFW	Ministry of Health and Family Welfare
MYAP	Multi Year Assistance Program
NFI	Non-food item
NGO	Non Governmental Organization

OFDA	Office of Federal Disaster Assistance
Pppd	per person per day
QPRM	Quarterly Program Review Meeting
RDO	Rural Development Organization
SAP	South Asia Partnership Bangladesh
SC	Save the Children USA
SDA	Social Development Agency
SMSE	Small and medium scale enterprises
SO	Strategic Objective
SWO	Social Welfare Organization
Tk	Bangladesh Taka
UDMC	Union Disaster Management Committee
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USD	United States dollar
USHIK	Unnayan Shikkha Karmasuchi
VDC	Village Development Committee
VDO	Village Development Organization
VGD	Vulnerable Group Development
VGf	Vulnerable Group Feeding
VMF	Village Model Farm
VOSD	Voluntary Organization of Social Development
WASH	Water, Sanitation, and Hygiene
WFP	World Food Programme

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Executive Summary

Save the Children USA (SC) commissioned TANGO International to conduct a final evaluation of its Title II Development Assistance Program (DAP), *Jibon o Jibika*¹. This program is being implemented in Bangladesh in collaboration with Helen Keller International (HKI), the NGO Forum for Water and Sanitation, the Cyclone Preparedness Programme (CPP) of the Bangladesh Red Crescent Society and 14 local NGO partners with offices in Barisal Division, Bangladesh. This report presents the findings of this final evaluation.

The *Jibon o Jibika* (JoJ) Program is explicitly directed at reducing high levels of food insecurity and malnutrition and is being implemented in 13 *upazilas* in three districts of southwest Bangladesh. The program is designed to achieve three interrelated strategic objectives (SOs): SO1: Food availability and purchasing power at the household level will have increased; SO2: The health and nutrition of pregnant women and children under the age of two will have improved; and SO3: Households will be more resilient to shocks that threaten their livelihoods.

The final evaluation aims to: (i) assess the extent to which Save the Children and its partners, have accomplished the stated goals and objectives of the five year program, as amended; (ii) assess the effectiveness of the technical approach by reviewing program activities that have been successful and those that have not, including reasons why (as much as is feasible); (iii) obtain answers to key questions that may contribute to better applying lessons learned, best practices, sustainability, and recommendations for future programming; and (iv) document/summarize the overarching lessons learned from the project to a wider audience including SC, partner organizations, donors, Government of Bangladesh (GoB) and other stakeholders.

Methodology

The evaluation employed both quantitative and qualitative methods, implemented in two phases. The first phase involved the design and implementation of a quantitative household endline survey, including data analysis and synthesis of findings. The second phase focused on collection of qualitative data followed by analysis of data from all sources to reach final conclusions and recommendations. The end-line survey provided support to the final evaluation by: (i) providing data for key project outcome indicators; (ii) providing temporal and geographical comparisons of key indicators; and (iii) document conclusions based on quantitative results. A participatory evaluation methodology was also employed for the qualitative assessment of the program using a mixed set of rapid assessment methods (focus groups and key informant interviews) to gather qualitative information for gauging program performance, program quality, and management effectiveness.

¹ "Life and Livelihood" in Bangla.

Key Findings

Overall Impact

JoJ is a successful program that has achieved most of its targets and made some impressive gains in all three SOs. It improved food security, reduced malnutrition, improved community access to health services and improved water and sanitation, and strengthened cyclone preparedness and response in the Barisal region (undertaking a large-scale cyclone response and recovery program for two cyclones in the midst of program implementation).

In terms of changes in food security brought about by the project, comparison of end-line with baseline figures shows that household current consumption, as measured by household Diet Diversity Score (DDS), has increased. The longer-term food security conditions of households improved somewhat, with the percentage of households categorized as severely food-insecure falling from 44 percent in the baseline to 33 to 40 percent in the end-line samples.

In terms of changes on nutritional status, three indicators were measured: wasting (low weight for height), which measures the acute, or current undernutrition; stunting (low height for age), which indicates long-term, or chronic undernutrition; and underweight (low weight for age), which indicates both acute and chronic undernutrition. The percentage of under-two children suffering from all three types of undernutrition declined significantly from the end-line to the baseline survey rounds. JoJ has reduced stunting among moderately malnourished children from 35.7 percent to 31.5 percent representing an 11.8 percent reduction over baseline in stunting. Among severely malnourished children (<-3SD) JoJ has reduced stunting from 11 percent to 7.9 percent, representing a 28.2 percent reduction over baseline in severe stunting. The JOJ program reduced wasting from 25.5 percent to 18.3 percent representing a 28.2 percent reduction over baseline. Severe wasting (<-3SD) was reduced from 3.7 percent to 1.2 percent or 67.6 percent reduction over baseline.

SO1 Achievements

The prevalence rate of stunting in children aged six to 23 months is reduced by almost 17 percent over the program baseline in SO1 unions. A similar analysis of the dietary diversity data reveals that the median dietary diversity score was increased by one food group from the baseline in the SO1 unions, while it did not increase in non-SO1 unions. These results confirm that, among JoJ beneficiaries, food accessibility and availability at the household level are as important as the proper utilization of food to improving the nutritional status of children. In addition, production and consumption of dark green leafy vegetables, pulses, and animal source food (e.g., eggs) have significantly increased over the baseline for program beneficiaries.

The outcomes of the activities associated with Homestead Food Production (HFP) groups are substantial. The supply of seed, birds, and technical advice by the program has increased food availability in the households, particularly for nutrient-rich vegetables.

Collective marketing has become popular among HFP group members due to the creation of easy market access, and more importantly, the sale of surplus production. An important achievement

is that this has increased income controlled by women, some of which is used to access additional food.

The poultry vaccination activity has yielded many benefits. The poultry vaccinators themselves are benefiting from a new source of income. They make a profit from their service, generally charging around one *taka* for one or two birds. Focus group discussions with the HFP group members and key informant interviews suggest that households' loss a fewer number of poultry birds as a result of poultry vaccination.

SO1 Challenges

Cyclones Sidr and Aila were major challenges to the operation of the program. A large number of HFP group members lost their gardens and poultry stock to the cyclones.

A second major challenge was that a large proportion of the HFP group members were not chronically food insecure. This means that the interventions focused on improving food availability and access did not have a large impact on the food security of the poor.

A third major challenge was the effectiveness of the Village Model Farmer (VMF) approach. Based on the four years of experience in JoJ, a number of factors have been identified that limit the effectiveness of the VMF model in promoting active learning, developing human capacities, and sustaining innovation that would continue to provide the community with a purpose to collectively engage in sharing knowledge to improve production.

SO2 Achievements

JoJ MCHN activities have contributed significantly to preventing malnutrition in children under the age of two. MCHN impacts are measured by the changes in the percentage of underweight children under the age of two and the percentage of cases of diarrhea. The endline survey results indicate that the percentage of moderately underweight children less than two years of age in JoJ has decreased by 10.3 percent. In terms of the cases of diarrhea, the end-line results demonstrate that the program did meet its objective to reduce the incidence of diarrhea in children under two by 20 percent over the life of the program.

JoJ trained 3,200 Community Health Volunteers to provide information and educate pregnant women on appropriate reproductive health practices such as ANC, and danger signs during pregnancy. Pregnant women and mothers also received education on preventative practices such as: optimal breastfeeding, immunization, complementary feeding, growth monitoring, and promotion, seeking timely care and treatment, and normal feeding during illness. The CHVs are extremely motivated, have become well-respected members of the community, and play a vital role in the MCHN program.

JoJ has been very successful in developing a strong partnership with the Government of Bangladesh's (GoB) Ministry of Health and Family Welfare (MoHFW). As a result of JoJ's

partnership effort, MoHFW satellite clinics now consistently deliver both their EPI and ANC services on the same day and at the same place in the majority of the 110 unions.

Throughout the life of JoJ, 177,676 pregnant women – 247 percent of the target of 72,000 – received ANC check-ups at GoB satellite clinics. The program increased the service utilization rate of women who sought three or more ANC check-ups during their pregnancy from 13 percent at the baseline to over 84 percent five years later. Pregnant women also received iron and vitamin A tablets during these check-ups.

During the combined services health days, CHV organized growth monitoring and promotion (GMP) sessions. After five years, the program had enrolled 413,642 children under two years of age against a target of 180,000, or 230 percent of the target. This represents 88 percent of the total estimated population of children under two years of age, an impressive amount of coverage.

JoJ has achieved the planned targets for hardware activities related to water and sanitation. These include deep tube wells, pond sand filter systems, rehabilitated water points, and latrines installed with water seal.

In terms of sanitation facilities, the biggest change was the increase in ownership of ring slab latrines (with intact or broken water seal), from 36 percent of all facilities in the baseline to 74 percent in the end-line. It is important to note that the program provided households with ring slab latrines at a highly subsidized rate.

There have been substantial improvements in reported hygienic practices regarding latrines. The percentage of women in the baseline survey who reported using hygienic practices (e.g. flushing latrines) was less than five percent for households with any type of latrine, and 30 percent for households with hygienic latrines. By the end-line survey round, essentially all surveyed households with latrines of any kind were employing hygienic practices; in the U2 sample, of the households with latrines, 99.5 percent of women employed hygienic practices and in the GB sample the percentage is 84.5 percent of women.

There was a dramatic increase in the percentage of women that demonstrated awareness of appropriate hand washing behavior in the end-line survey. The percentage of women who achieved scores of eight or higher on hand washing behavior² increased from less than 20 percent in the baseline to 74 percent in the end-line U2 sample and 97 percent in the GB sample.

SO 2 Challenges

After a successful pilot, it has been challenging for SC to provide complete coverage of Community Case Management (CCM) activities. Twenty-seven unions out of 110 have CHVs trained and equipped to provide the CCM service, and another 10 unions have trained village doctors and pharmacists who provide the CCM services. This is fewer than 35 percent of the unions participating in the program. The low coverage is partly due to cyclone Sidr, and that

² The hand washing behavior score is the sum of the number of critical times for hand washing and the number of appropriate hand washing techniques correctly identified by the respondents.

CCM services are dependent the GoB MoHFW to provide training, equipment, and supplies (ORS and Cotrim) to CHV and village doctors. JoJ has obtained GoB agreement to support 60 new unions, which will increase coverage to about 88 percent (97 out of 110 unions). This expansion is planned for January 2010.

JoJ has been very successful in motivating mothers to participate in ANC check-ups and in enrolling their children in the GMP program, and the food ration has been important to that motivation. The ANC check-ups and GMP initiatives have achieved, respectively, 247 percent and 230 percent of their targets. The success raises the important question of what role the ration played in obtaining these results and what benefits were gained?

Although there has been considerable work done on rehabilitating water points and tube wells, it is still uncertain whether these tube wells are potable.

The program was very successful in increasing the knowledge and awareness of the population on the importance of hand washing and using a latrine with a water seal. However, knowledge and a good attitude alone towards the practice of appropriate sanitation and hygiene do not necessarily lead to behavior change. There are many barriers; e.g., the household cannot afford the latrine, the model offered doesn't work at their home, or there is no space for it. With hand washing, there are additional barriers, such as the cost of soap, inconvenience, or limited access to clean water. The barriers are not always obvious or easily overcome.

Despite the sound technology of the water seal, which reduces the transmission of pathogens, most households had broken the seal by the time of the end-line survey. Access and storage of sufficient water are barriers to the proper use of the water seal: households break the water seal because it requires too much water (two to three liters) to flush properly; that is, they choose to break the seal to avoid carrying water to the toilet for every flush.

SO3 Achievements

Despite key resource and staff constraints in the beginning of the project, the SO3 team managed to complete almost all of its targeted activities. Union Disaster Management Committees have been reactivated, CPP and Union Disaster Management Committee (UDMC) volunteers have received basic training in disaster management, significant BCC materials have been distributed, some cyclone shelters have been rehabilitated, and mass awareness activities such as cyclone response simulation exercises have been carried out.

Cyclone warning awareness has increased substantially throughout the three JoJ districts. Before the project only 32.7 percent of the population received a warning before a cyclone. Now over 90 percent receive a warning that a cyclone is coming.³ Communities in the project area also have observed significantly improved signal dissemination during cyclones Sidr and Aila. Before the project only 40.5 percent of the population that did receive a warning received it from

³ This change in awareness is also related to two major cyclones having hit the region during the implementation of this program. Before the project started, it had been a long time period since the last major cyclone hit the area. This could also help explain the difference.

a CPP volunteer. Now 72.6 percent of the people that receive warnings get them from CPP volunteers (in JoJ unions where CPPs are active).

As a result of this improved awareness, many households evacuated from their vulnerable houses, and some were able to access and use cyclone shelters in the vicinity. From interviews conducted in several communities, it is evident that the early warning measures contributed to reduced losses of productive assets and resources.

Another substantial impact of the SO3 strategy has been a significant improvement in disaster response capacity of the SC emergency program. Responding to the emergency needs of households in the Barisal division, the SC emergency program successfully protected assets and provided households with food and other essential items in response to cyclones Sidr and Aila. SC staff conducted rapid emergency assessments immediately after the cyclones that provided useful information for targeting and prioritizing regional programming. As a result, SC Bangladesh has gained a reputation as a leading NGO in the field of emergency programming.

SO3 Challenges

A major challenge facing the staff implementing SO3 was the severe staff and resource constraints that characterized the first three years of the project, due to the reprogramming of resources into higher priority activities. SO3 activities were hindered by budget cuts from the beginning. One of the consequences of being under-staffed and under-resourced is that there were few opportunities for follow-up training for the UDMC members or the volunteers. Similarly the JoJ staff implementing SO3 did not have time to be able to track whether UDMC and CPP volunteers shared their knowledge with other community members.

Another challenge facing the SO3 staff was that SO3 did not promote disaster management interventions and activities directly at the community and household level. It primarily operated at the union level. The BCC activities it did carry out in targeted communities were not sufficiently intensive enough to bring about substantial community change in disaster preparedness.

A third challenge facing the program revolved around adequate access to cyclone or evacuation shelters. It does little good to encourage people to go to shelters when they are not available. Currently only 15 percent of the population in the program area have access to one. Although the project did rehabilitate 25 cyclone shelters and one killa, a lot more could have been done.

Other Program Achievements

Partnerships: Partnership has been a key principle in the design and implementation of JoJ. In addition to the four main partners, JoJ has relied on 13 local non-governmental organization (LNGO) partners to implement much of its program. Many of the LNGO partners have increased their capacity by working in JoJ. This has been brought about by a combination of the experience gained in implementation, in working with larger organizations, and through the

training given by JoJ. In turn, the LNGOs have contributed their local knowledge and expertise to the program.

Gender Strategy: JoJ has assisted its female beneficiaries to attain a greater measure of status and decision-making responsibility within their households through sensitization and selected activities. For example, in SO1, there has been some empowerment benefit for women due to the income earned from their home vegetable gardens. Female beneficiaries report that they have gained a slight improvement in household status and better relationships with their husbands because of the extra income they are earning, which is used for household needs and the children's education.

In SO2, according to the endline survey, there was a significant increase in awareness among husbands, mothers-in-law, and mothers about appropriate practices during pregnancy. Information on taking rest shows the same pattern, with substantial increases from the baseline to the end-line. The awareness of husbands and mothers-in-law about appropriate pregnancy practices has also improved from the baseline. Female JoJ staff report that now some husbands are sharing responsibilities for child care and are better informed about balanced diets for children. Some husbands bring the child to the growth monitoring session when the wife cannot attend.

In SO3, there has been a commendable effort by CPP to recruit more female volunteers so that the male to female ratio is equal. This is an important advantage to reaching women with early warning and disaster preparedness information, especially women who may be isolated in the house if their husbands are away. It is customary in Bangladesh that women, children and the most vulnerable get priority admission to cyclone shelters, and JoJ has continued to support this approach.

With regard to program staff, JoJ has made efforts to increase the numbers of female staff at the field level. SC has made the greatest progress in this regard: it has recruited more female senior management as well as field staff, instituted gender-friendly policies for female staff that takes their needs for safe travel arrangements into account, has promoted female field staff within the organization.

Program Management: Overall, JoJ appears to have been well managed. Program implementation has gone relatively smoothly despite the different structures, as evidenced by the achievement of program targets and good relations with local government counterparts. New management systems such as McAid have greatly increased commodity accountability and monitoring, and have good potential to support other program interventions.

Monitoring and Evaluation: SC has successfully established a comprehensive system for collecting data and information sharing. After the MTE, SC combined its M&E, MIS, and commodity monitoring, which helped to establish the McAid system and create an integrated approach. The system became fully functional in January 2009. It is being used very effectively in data collection and management for SO2 activities; particularly nutritional status and immunization-related information for children U2 and ANC services.

Main Recommendations

Recommendation 1: To enhance the food security of the most food insecure households, link all sector-specific strategies to all target areas.

It is recommended that future programs use an integrated approach, and that a common group of beneficiaries receive program support to improve food access and utilization. Quantitative and qualitative findings show that JoJ almost achieved its nutritional goals in the 70 program unions in which SO1 and SO2 strategies targeted a common group of beneficiaries, while the nutritional gain in non-SO1 program unions is minimal. These results show that in southern Bangladesh, issues related to food utilization and food access need to be addressed simultaneously to effectively improve food security of the most vulnerable households

Recommendation 2: Integrate risk reduction, risk mitigation and livelihoods recovery strategies with development strategies that will sustainably reduce the vulnerability of the households living in disaster-prone areas. Design interventions to enhance the resilience of the target households to better cope with climate change.

A large proportion of the households in Barisal, Bhola and Patuakhali districts live in areas vulnerable to flooding and cyclones. Therefore, it is critical to integrate risk reduction, risk mitigation, and livelihood recovery strategies with development strategies that will reduce the vulnerability of the target households. Such strategies include identifying and promoting flood tolerant vegetables, promoting flood-proof cultivation techniques, establishing nurseries on suspended beds, and safekeeping of seeds in the event of cyclones. Livelihood recovery activities need to be integrated to help the households to transition from the emergency phase to the development phase as quickly and easily as possible.

Recommendation 3: Emphasize environmental health and diarrheal disease

The quantitative results of the end-line survey clearly indicate that diarrheal disease is a significant problem and strongly linked to malnutrition. The two principle factors contributing to diarrhea are linked to environmental health conditions; sanitation and hygiene. Mothers can identify the causes of diarrhea, which makes it much easier to stimulate action to solve the problem. SC should emphasize environmental health and diarrheal disease in future programming by assisting communities to systematically assess their environment and make plans for improvements.

Recommendation 4: Overcome the barriers to behavior change

JoJ carried out a series of activities over the LOA to address behavior change and was very successful in increasing knowledge and attitudes towards appropriate sanitation and hygiene practices. In order to ensure long-term behavior change, other barriers need to be addressed, including affordability, suitability, convenience, and access.

Recommendation 5: In future programming, there is a strong need to focus disaster preparedness and management activities at the household and community levels.

To build resilient communities, a comprehensive approach is needed that combines risk reduction activities (infrastructure, appropriate seeds, livestock protection activities etc.), early warning and disaster response (strengthening CPP and UMDC), and livelihood recovery. The program may consider reducing the geographical coverage to implement a more comprehensive

approach since resources will need to be more concentrated, while still operating in the wider area in terms of early warning and emergency response.

Recommendation 6: Serious considerations should be given to the continuation of shelter rehabilitation efforts.

Given that only 15 percent of the population has access to a safe shelter, the need is great. One alternative to building or rehabilitating large shelters is to construct a number of micro-shelters that serve multi-functional purposes. For example, a shelter could be built in a village para that holds 40-50 people. Because of its close proximity to people's houses, it is more likely to be used by women and children in the community. The shelter can also serve as a school, a warehouse for storing crops for marketing, a community meeting facility, a crèche, or be used for micro-enterprise activities. It is estimated that one of these shelters could be constructed for less than 10,000 USD. The amount would be even less if the community contributed the labor and some of the materials.

Recommendation 7: Increase the proportion of female staff in future programs.

Where female community members are the main targets of a program, at least 50 percent of staff should be female. It is recognized that recruiting women can be a challenge, especially for field work. SC has instituted some very good gender-sensitive policies to make field work easier for female staff that recognizes the safety concerns of women. These policies should be continued, and continuing feedback sought from female staff to improve and expand them if needed.

1. Introduction

Save the Children USA commissioned TANGO International to conduct a final evaluation of its Title II Development Assistance Program (DAP), *Jibon o Jibika*⁴. This program is being implemented in Bangladesh in collaboration with Helen Keller International, the NGO Forum for Water and Sanitation, the Cyclone Preparedness Programme of the Bangladesh Red Crescent Society and 13 local NGO partners with offices in Barisal Division, Bangladesh. This report presents the finding of this final evaluation.

1.1 Brief description of JoJ program

The *Jibon o Jibika* program is explicitly directed at reducing high levels of food insecurity and malnutrition with the stated goal of ***Decreased household food insecurity in 3 Districts of Bangladesh's Barisal Division***. The program is being implemented in 13 *upazilas*⁵ in three districts of southwest Bangladesh (See Figure 1). The program is designed to achieve three interrelated strategic objectives (SOs) that were envisioned to be operationally integrated in an effort to best serve vulnerable households in the target area, especially those households with children under the age of two years (See Figure 2.).

- SO1: Food availability and purchasing power at the household level will have increased
- SO2: The health and nutrition of pregnant women and children under the age of two will have improved
- SO3: Households will be more resilient to shocks that threaten their livelihoods.

Under SO1, Helen Keller International has responsibility for implementing a homestead horticulture and agro-forestry component. Under SO2, SC has been directly implementing a maternal and child health and nutrition component and the NGO Forum has been implementing a water and sanitation component. Under SO3, SC works with the CPP to implement an emergency preparedness component. JoJ officially began implementation on October 1, 2004, with an expected completion date at

Figure 1: Operational areas of JoJ



⁴ "Life and Livelihood" in Bangla.

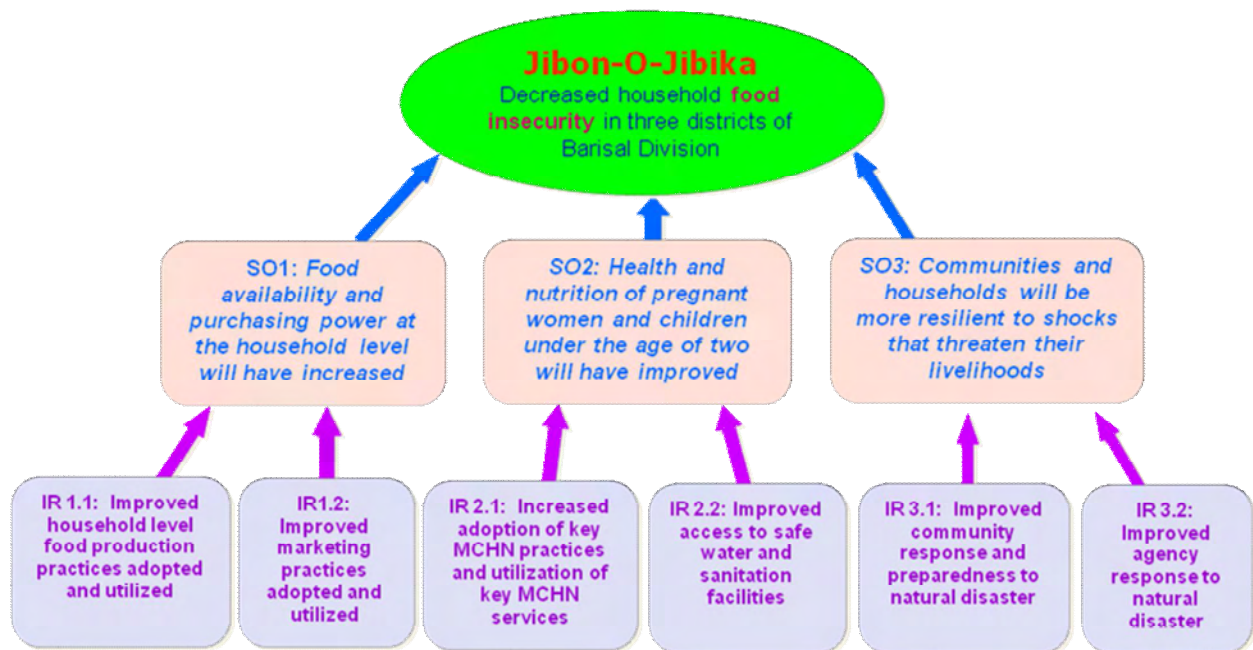
⁵ Two *upazilas* were added following Cyclone Sidr.

that time of September 30, 2009. However following Cyclone Sidr, which traveled directly through a significant part of the JoJ program area, the program was amended in 2008 to include an expansion in the target area for cyclone recovery activities as well as an extension of operations through May 2010.

JoJ is supported by US government P.L. 480 Title II funding amounting to \$20,331,749 in monetization funds, \$4,169,088 in 202(e) funds, and 42,150 MT of food for direct distribution valued at \$18,372,560 (inclusive of freight) along with \$8,504,616 in ITSH. JoJ includes the distribution of an estimated quantity of 27,480 metric tons (MTs) of US government P.L. 480 Title II food commodities consisting of wheat, yellow split peas, and vegetable oil. In addition, a quantity of 93,220 MTs of wheat has been planned under the monetization program. The grant covers the period from October 1, 2004 to May 31, 2010.

Figure 2: Program Goal and Strategic Objectives of JoJ

An integrated program design



1.2 Objectives of the evaluation

The final evaluation aims to: (i) assess the extent to which Save the Children and its partners, have accomplished the stated goals and objectives of the five year program, as amended; (ii) assess the effectiveness of the technical approach by reviewing program activities that have been successful and those that have not, including reasons why (as much as is feasible); (iii) obtain answers to key questions that may contribute to better applying lessons learned, best practices, sustainability, and recommendations for future programming; and (iv) document/summarize the overarching lessons learned from the project to a wider audience including SC, partner organizations, donors, Government of Bangladesh and other stakeholders.

1.3 Evaluation methodology

The evaluation employed both quantitative and qualitative methods, implemented in two phases. The first phase involved the design and implementation of a quantitative household survey, including data analysis and synthesis of findings. The second phase focused on collection of qualitative data followed by analysis of data from all sources to reach final conclusions and recommendations.

Phase I: Quantitative Surveys

The end-line survey provided support to the final evaluation by: (i) providing data for key project outcome indicators; (ii) providing temporal and geographical comparisons of key indicators; and (iii) document conclusions based on quantitative results.

The end-line survey was designed with two overall objectives in mind. The first objective was to obtain information that can be directly compared with the results from the baseline survey (and where possible with the mid-term as well). To address this objective the end-line questionnaire included the same questions and response categories as the baseline survey, to ensure that the same information was captured. Some additional questions were included to measure additional indicators of household food security.

To be consistent with the baseline, a sample of households with children under two years of age was drawn and interviewed. The second, and more general, overall objective of the end-line survey was to quantitatively measure as fully as possible the ways that JoJ program activities have affected beneficiaries (children, mothers, and their households). In order to assess the extent to which each of the program components have provided these longer-term benefits, a second sample was drawn from households that have “graduated” from direct program support. These households had previously participated directly in some or all of the program interventions, but they no longer participated directly in the MCHN component of the program at the time of the survey. Interviews of these households were designed to capture household knowledge, attitudes, practices, and food security status after they have completed their direct participation with the program. This information can be used to assess the long-term and cumulative impacts of the program.

The first sample (U2) is population-based, drawn using systematic random sampling from all households in selected *mouzas* that have children less than two years of age. This sample includes households that currently participate in the program (as well as households that do not participate in any program activities [non-participants]). A total of 2,821 households are included in the U2 sample. The second sample (GB) has been randomly drawn from the list of all graduated beneficiaries. Graduated beneficiaries participated in MCHN and possibly other activities until their children reached two years of age. If they became pregnant again, they could still participate in program activities but would no longer receive any food aid incentives provided for mothers participating for the first time. A total of 897 households were selected for the GB sample.

Phase 2: Qualitative Survey

A participatory evaluation methodology was also employed for the qualitative assessment of the program. The qualitative evaluation team consisted of six members with each focusing on key aspects of the program. The team employed a mixed set of rapid assessment methods to gather qualitative information for gauging program performance, program quality, and management effectiveness. Focus group discussions and key informant interviews were conducted with governmental and non-governmental stakeholders, including extensive discussions with program beneficiaries and participants. In addition other key stakeholders were interviewed such as NGO partners (HKI and NGO Forum), implementing partners such as the Bangladesh Red Crescent Society Cyclone Preparedness Programme, technical partners, donors, and SC Bangladesh program staff in the assessment process. A list of people interviewed can be found in Annex D.

1.4 Program Impact

Change in Food Security Status⁶

The JoJ program seeks to reduce high levels of food insecurity and malnutrition with the stated goal of ***decreased household food insecurity in three districts of Bangladesh's Barisal division.*** Two dimensions of household food security were measured in the JoJ quantitative surveys: measures of the quality of current food consumption (at the time of the survey) in terms of number of different food categories eaten, and ii) measures of longer-term food security conditions, namely vulnerability to food insecurity in times of stress or shock. Comparison of end-line with baseline figures shows that household current diet quality, as measured by household Diet Diversity Score (DDS), has increased. However, the Food Consumption Score (FCS), which weights different food categories based on their nutritional values, did not show a measurable increase from the baseline to the end-line survey rounds. The longer-term food security conditions of households improved somewhat, with the percentage of households categorized as severely food-insecure falling from 44 percent in the baseline to 33 to 40 percent in the end-line samples. (See Table 1).

⁶ The main indicator of program impact was stunting with dietary diversity added later. FCS and CSI were measured at end-line to introduce better food security indicators and to add an additional data point for future analyses.

	Baseline				End-line - U2				End-line GB
	Barisal	Bhola	Patuakhali	All	Barisal	Bhola	Patuakhali	All	
Indicators of Current consumption									
Diet Diversity Score	5.7	5.2	5.5	5.5	6.0	5.5	6.2	5.9***	5.9***
Food Consumption Score	13.6	12.7	13.7	13.3	14.0	12.0	13.6	13.2	13.1
Indicators of Food Security / Vulnerability									
% HH in FAST Food security Categories									
Food Secure	54.4	26.8	57.0	45.4	60.5	49.3	59.8	56.5***	46.9
Moderately Food Insecure	11.3	10.7	11.1	11.0	9.9	9.9	10.9	10.2	12.6
Severely Food Insecure	34.3	62.5	31.9	43.6	29.6	40.8	29.3	33.2***	40.5*

Notes:
 * end-line value different from baseline value at .10 significance level
 ** end-line value different from baseline value at .05 significance level
 *** end-line value different from baseline value at .01 significance level

The baseline and end-line survey rounds collected anthropometric information about children to assess their nutritional status. Three indicators were measured: wasting (low weight for height), which measures the acute, or current undernutrition; stunting (low height for age), which indicates long-term, or chronic undernutrition; and underweight (low weight for age), which indicates both acute and chronic undernutrition. The percentage of under-two children suffering from all three types of undernutrition declined significantly from the end-line to the baseline survey rounds. Comparison of results between SO1 unions (unions where SO1 activities are being supported) and non-SO1 unions shows that the percentages of children suffering from all three dimensions of undernutrition are significantly lower in SO1 unions than non-SO1 unions, suggesting that the SO1 activities have in fact led to improved nutritional status of children, in part as a result of more diverse diets, as described previously. (See Table 2).

Thus the endline survey data indicate that the JoJ project had a very positive effect on the beneficiaries in terms of food security and nutritional status. To understand why this occurred, the next sections of the report focus on the achievements, challenges, and recommendations for each SO of the program. This is followed by a discussion of program processes and planning such as partnerships, gender strategy, management issues, monitoring and evaluation, commodity management, and environmental compliance. The report ends with a discussion of the major conclusions and recommendations.

Table 2: Anthropometric Indicators

	District			Gender of Child		All	Pct change over baseline
	Barisal	Bhola	Patuakhali	Male	Female		
I. Computed based on WHO 2006 Reference Population							
Stunting (height for age) % <-2SD							
Baseline (6-23mo)	38.3	40.3	38.9	42.9	35.2	39.2	7.7
U2 (6-23mo)	33.6 (30.2-37.0)	41 (37.5-44.5)	33.8 (30.3-37.3)	40.6 (37.8-43.5)	31.6 (28.8-34.3)	36.2*** (34.2-38.2)	
GB (6-23mo)	49.7 (42.2-57.2)	67.5 (63.0-71.9)	50.2 (44.5-55.9)	56.8 (52.2-61.3)	59.9 (55.2-64.5)	58.3*** (55.0-61.5)	-48.7
Wasting (weight for height) % <-2SD							
Baseline	25.2	33.7	24.8	30.5	25.1	27.9	38.7
U2	13.8 (11.3-16.3)	21.4 (18.4-24.3)	16.2 (13.5-18.9)	19.4 (17.1-21.8)	14.8 (12.7-16.9)	17.1*** (15.6-18.7)	
GB	13.9 (8.7-19.1)	15.8 (12.3-19.2)	15.1 (11.0-19.1)	15.5 (12.2-18.8)	14.8 (11.5-18.2)	15.2*** (12.8-17.5)	45.5
Underweight (weight for age) % <-2SD							
Baseline	43	51.7	43.8	49.1	43.1	46.2	24.7
U2	31.4 (28.1-34.8)	40.3 (36.8-43.8)	32.4 (29.0-35.8)	39.1 (36.2-42.0)	30.3 (27.6-33.1)	34.8*** (32.8-36.8)	
GB	45.1 (37.6-52.6)	58.1 (53.4-62.8)	45.5 (39.8-51.2)	51 (46.4-55.5)	51.9 (47.1-56.6)	51.4*** (48.1-54.7)	-11.3
II. Computed based on NCHS 1978 Reference Population							
Stunting (height for age) % <-2SD							
Baseline	34 (31.2-36.8)	37.5 (34.7-40.3)	35.1 (32.4-37.8)	37.7 (35.4-39.8)	33.6 (30.5-36.3)	35.6 (34.0-37.2)	11.5
U2	28.9 (25.6-32.2)	35.3 (31.8-38.7)	30.3 (26.9-33.6)	33.5 (30.7-36.3)	29.5 (26.8-32.2)	31.5*** (29.6-33.5)	
Wasting (weight for height) % <-2SD							
Baseline	22.1 (19.6-24.5)	28.4 (25.8-31.0)	24.7 (22.2-27.1)	27.6 (25.5-29.6)	22.3 (20.3-24.3)	25.1 (23.5-26.5)	27.1
U2	14.4 (11.9-17.0)	21.9 (18.9-24.8)	18.5 (15.6-21.3)	20.8 (18.4-23.1)	15.8 (13.6-17.9)	18.3*** (16.7-19.9)	
Underweight (weight for age) % <-2SD							
Baseline	47.6 (44.6-50.5)	56.2 (53.2-59.1)	53.1 (50.2-55.9)	53.1 (50.8-55.4)	51.4 (49.0-53.8)	52.3 (50.6-53.9)	10.3
U2	42.1 (38.5-45.7)	53.3 (49.8-56.9)	45.2 (41.6-48.9)	49.4 (46.5-52.4)	44.4 (41.4-47.3)	46.9*** (44.9-49.0)	

2. SO1: Food Availability and Access

SO1: Food availability and purchasing power at the household level will have increased.

Introduction

The activities under SO1 are implemented in 70 out of the 110 unions in which JoJ operates, targeting 26,400 female participants. The project activities under SO1 are implemented through nine partners, local NGOs (LNGO) with oversight and support from Helen Keller International (HKI). The nine LNGOs are: Grameen Jono Unnayan Songstha (GJUS), Integrated Community Development Association (ICDA), SPEED Trust, South Asia Partnership Bangladesh (SAP-Bd), Social Development Agency (SDA), Chandradip Development Society (CDS), Voluntary Organization for Social Development (VOSD), Dip Unnayan Society (DUS), and Unnayan Shikkha Karmasuchi (USHIK). Except for ICDA, eight of these partner NGOs are also implementing activities under SO2 Water and Sanitation.

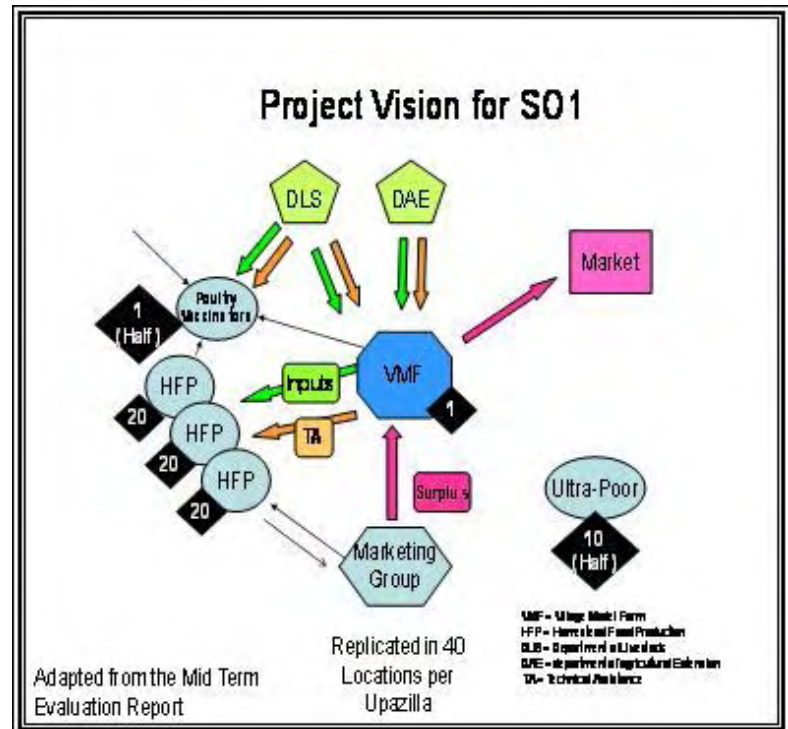
In order to achieve the strategic objective, SC and HKI identified two intermediate results:

IR 1.1: Improved Household Production Practices Adopted and Utilized

IR 1.2: Improved Marketing Practices Adopted and Utilized

The strategy of *Jibon o Jibika* relative to SO 1 is to establish a village model farm (VMF), around which several participant groups are formed. These include three Homestead Food Production (HFP) groups composed of 20 female members each; an ultra-poor group of ten members; and a marketing group of usually five to six persons who are representatives from each of the HFP groups. As part of the original program design, the ultra-poor and small farmer groups were formed around half of the VMFs in an *upazila*. However, per MTR recommendations, this plan was changed and small farmer groups were discontinued and a new group of HFP members was added from the SO2

Figure 3: Illustration of the SO 1 Model



beneficiary lists. JoJ has also identified and trained poultry vaccinators in 18 of the 40 VMF locations in each *upazila*. VMF farmers are linked to the Department of Agricultural Extension

(DAE) offices at the *upazila* level and DAE block supervisors at the union level for inputs and technical assistance. In addition, both the VMF farmers and poultry vaccinators are linked to the Department of Livestock Services (DLS) at the *upazila* level for vaccines and technical assistance. Figure 1 illustrates the SO 1 model.

2.1 Overall Impact

The 70 unions in which SO1 activities were implemented were drawn from the SO2 operational unions. For convenience, these unions are referred to as ‘SO1 unions’ in the remaining part of the section. To investigate the contribution of SO1 strategies to achieving the program goal, the unions were divided into two groups:

- 1) **SO1 unions:** unions in which both SO1 and SO2 activities were implemented, and
- 2) **Non-SO1 unions:** the remaining 40 unions in which SO1 activities were not implemented but activities under SO2 and/or SO3 were implemented.

The data were disaggregated by these two groups to identify the impact of SO1. There are 1560 children from SO1 unions and 649 children from non SO1 unions in the JoJ end-line data that belong to the reference age group. Hence the sample size is large enough to disaggregate the data to perform the analyses. It is important to note that the non-SO1 unions also serve as control groups for SO1 activities.

Figure 4: Prevalence rate of stunting in children aged 6 to 23 months in SO 1 unions

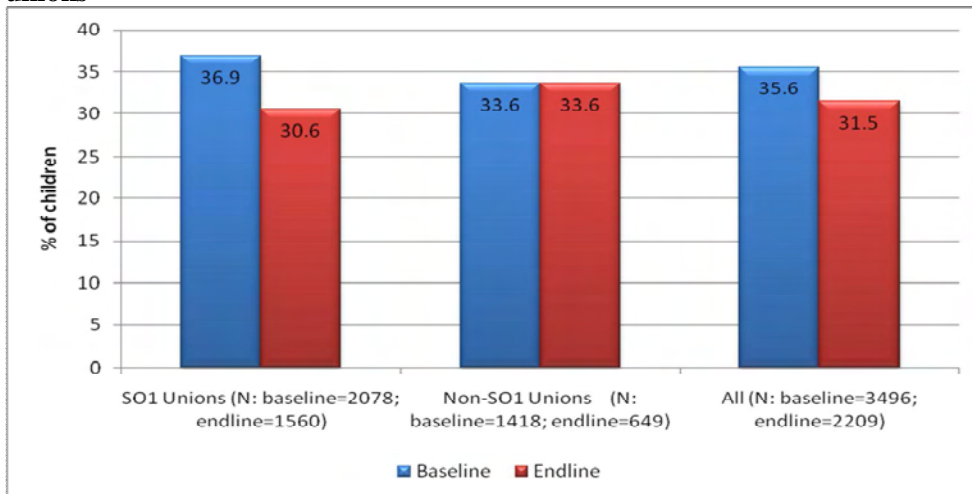
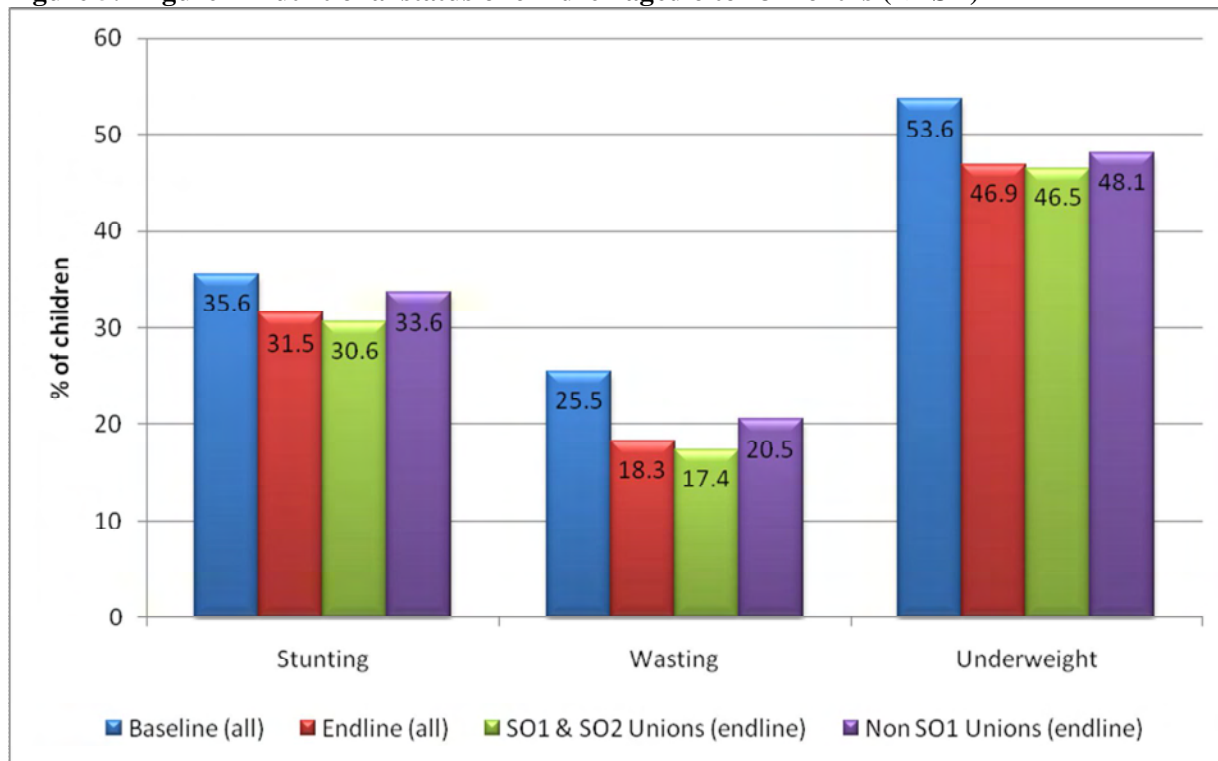


Figure 4 shows that the prevalence rate of stunting in children aged six to 23 months is reduced by almost 17 percent over the program baseline in SO1 unions. This indicates a nutritional gain in SO 1 unions, while there was little change in the prevalence rate in non-SO1 unions.

The results are more encouraging when the data are compared with the baseline value for SO1 unions only. There, 36.8 percent of children aged 6 to 23 months in the baseline were stunted. The endline data showed a 20 percent reduction in stunting from the baseline. Figure 5 provides more detail on stunting.

Figure 5: Figure in nutritional status of children aged 6 to 23 months (<-2SD)



A similar analysis of the dietary diversity data reveals that the median dietary diversity score was increased by one food group from the baseline in the SO1 unions, while it did not increase in non-SO1 unions. The difference in results between the SO1 unions and non-SO1 unions for both of the impact indicators is statistically significant, which clearly establishes the important contribution of SO1 activities in achieving the program goal. These results confirm that, among JoJ beneficiaries, food accessibility and availability at the household level are as important as the proper utilization of food to improving the nutritional status of children.

An analysis of outcome-level indicators also reveals that despite two major natural disasters (Cyclone Sidr and Cyclone Aila), JoJ achieved both of the intermediate results and most of the sub-intermediate results for SO1. Production and consumption of dark green leafy vegetables, pulses, and animal source food (e.g., eggs) have significantly increased over the baseline. In the end line survey, 82 percent of HFP group participants reported producing dark green leafy vegetables and 99 percent reported vegetable consumption (exceeding the target of 90 percent). Sixty-nine percent of households reported consumption of pulses against a target of 55 percent. Ninety percent of households reported egg consumption in the past two months, more than double the target of 40 percent).

2.2 SO 1 Achievements

Achievements in IR 1.1

The HFP Group Members

Sixty HFP households are attached to each VMF, in three groups of 20 members. Each HFP group has a group leader to coordinate activities, organize meetings, and liaise with the program staff and the VMF. All planned women's HFP groups were formed and functioning, with membership that met the target of 26,400 participants. This includes an additional 8,800 households that were added following the recommendation of the MTE.

JoJ promoted year-round vegetable gardening techniques (i.e., planting on raised beds, organic farming) and non-traditional nutrient-rich vegetable varieties such as carrot and yard long beans; provided training on improved poultry management techniques (e.g., creep feeding, nesting bowl), and market information; facilitated the formation of marketing groups to encourage collective marketing, and developed poultry vaccinators to create easy access to vaccination services in the community.

Group members were given seed (seed packs with an average of six varieties of vegetable seeds for summer crops), chickens or ducks (two to three per household depending on bird size), and learned about the new ideas and technologies being promoted by the program related to homestead gardening on small plots. Most participants established gardens in their own small plots. Forty-six percent of the HFP group participants reported establishing developed gardens compared to approximately 15 percent of households in the baseline. The end line survey shows that adoption of sustainable soil and pest management practices has significantly increased over the baseline (see Table 3).

Qualitative interviews with HFP participants suggest that the majority of the members have acquired knowledge about the nutritional qualities of different crops produced in the homestead from the project. Their decisions on what to produce are associated mostly with which varieties they prefer and which varieties they are likely to be able to sell.

Households tend to produce and preserve vegetable seed. Focus group discussions with the HFP members, and interviews with VMFs and project staff revealed that it is easy to produce seeds for some of the vegetables (e.g. yard long beans, country beans), while extremely difficult to produce seeds for some other vegetables (e.g. carrot, cauliflower). The end-line survey shows that 44 percent of HFP participants preserve their own seed; 41 percent of households reported that they also use seed or seedlings from VMF; 60 percent of households buy seeds from local markets; 29 percent of households also get some seed from neighbors, and 13 percent of households mentioned NGOs as their seed source.

HFP participants preserve vegetable seeds that are easy to produce. Some buy tree saplings from VMF or other nurseries and depend on market primarily for the type of seeds that is difficult to produce at home.

Focus group discussions and qualitative interviews suggest that the majority of the households use their own knowledge and skills to address pest problems. For example, sprinkling ash on

vegetable leaves or killing insects by hand are the two most common methods of pest management practiced by the HFP households. Participants learned some of these techniques from their parents and neighbors, and some were learned from the program. A few households mentioned successfully using fruit fly traps which they also learned about from the program.

The first two batches of HFP participants were trained in poultry rearing and received some input support (two to three birds per household). The third batch of households received training; however, because of the Avian Influenza outbreak, the program did not provide poultry chicks to the third batch of beneficiaries. The beneficiary households have learned new management techniques and successfully increased egg production - 72 percent of households in SO1 unions reported successfully increasing egg production in the end line survey, which is 20 percent higher than the baseline. Creep feeding and nesting bowls contributed to this achievement and gained popularity among the HFP group participants. Moreover, vaccination of poultry has substantially increased in the area. The end line survey shows that 45 percent of HFP households vaccinated their poultry stock in the past two months compared to only six percent in the baseline, resulting in a reduction in poultry mortality rate (reported during qualitative interviews) despite two major disasters in the program area.

The outcomes of the activities associated with HFP groups are substantial. The supply of seed, birds, and technical advice by the program has increased food availability in the household, particularly for nutrient-rich vegetables (dietary diversity increased by one food group over the baseline). The sales of surplus production have increased income controlled by women (approximately Tk. 100 per month during the lean season and approximately two to three times more during the winter season), some of which will be used to access additional food. Qualitative interviews suggest that these sales of surplus production have also increased the supply of vegetables in the market.

The Village Model Farm

The program uses a Village Model Farm (VMF) approach to: (1) demonstrate new ideas and technologies being promoted by the program and develop a resident source of technical advice on these; (2) provide inputs such as seeds and seedlings, and (3) ensure sustainability through being profitable. At the time of the final evaluation, all 440 planned VMFs, 40 in each of the 11 upazilas, were in place and functioning. Many of the VMF farmers also have roles as market conduits for village homestead vegetable production and as poultry vaccinators.

Qualitative interviews with the VMF farmers suggest that VMF families have benefited enormously from the project, based on both increased food in the household and substantial

Table 3: Soil and Pest Management Practices in SO1 unions

Practice	SO1 Unions	
	Baseline	Endline
Soil management		
Animal manure	78.1	86.3
Compost	23.5	48.3
Crop rotation	5	11.1
Chemical fertilizer	49.2	49.9
Other	15.4	0.8
Nothing	9.6	5.9
Pest management		
Biological	0.6	1.4
Mechanical	2.4	12.1
Organic	37.8	53.4
Chemical	39.5	48.4
None	36.6	24

income from the sale of production. For many, vegetable farming is now their primary livelihood activity for producing food and income. Increased production from vegetable farms has entered the market. The increased availability, however, is unlikely to have a significant impact on food-insecure households, as they do not have the resources to purchase vegetables from the market. The data suggest that VMFs also received input, training, and technical backstopping support from the program disproportionate to HFP members, and most if not all VMF owners are making a profit from his or her village model farm. When asked, all of the VMFs acknowledged the last function, profitability, very clearly and loudly. The social capital of the VMFs has also improved because of the program, and they have gained enhanced prestige in the community.

Figure 6: VMF Rafikul Islam sold vegetables worth Tk. 15,000 from his demonstration plot (Durgapur, Patuakhali)



Twenty-five VMFs⁷ in each *upazila* received input support from JoJ to demonstrate poultry management practices and new technologies such as nesting bowls, creep feeding, isolation, and confined husbandry. Although the whole demonstration is not being replicated, some parts are – particularly the nesting bowls and creep feeding.

The Ultra poor

The ultra-poor households were targeted in approximately half of the locations where VMFs were established in each *upazila*. Groups of ultra-poor were formed with ten members each. Unlike the HFP groups, the ultra-poor groups were organized primarily to facilitate training in how to care for goats, one of their most valuable household assets. A total of 2,200 households received goats from the program, 100 percent of the target.

The program did a good job identifying the ultra-poor households for goat distribution. The households selected by the program included both chronically food-insecure, destitute households eligible for a safety net, and ultra-poor households affected by disasters (primarily river erosion).

Interviews with recipients during the evaluation indicated that the goats “gave hope” to those households whose goat survived. A small proportion of households reportedly sold the goats and invested in higher value assets (e.g., a cow). This is considered a positive step by some participants; however, many households were hesitant to reveal this to the evaluation team because they did not know how this will be viewed by program staff.

⁷ Initially the program wanted to demonstrate how to rear day-old chicks, and identified 25 VMFs in each *upazila* identified as having the capacity to do this activity. However because of the outbreak of avian flu, the program abandoned the intervention.

The Poultry vaccinators

As part of the strategy to prevent the emergence of avian flu in the project area, JoJ trained 18 women in each *upazila* to become poultry vaccinators. The women are linked with sources of vaccines through the DLS. Most of these vaccinators are drawn from existing participants – either members of the VMF owner's family, HFP group leaders, HFP members or even SO2 Health Volunteers. Some poultry vaccinators were selected from among non-participants because they have an interest and the necessary literacy skills to perform the service. As a result of the improved access to poultry vaccinators and their proactive role in vaccinating poultry, poultry vaccination has significantly increased the end line survey shows that 45 percent of the households that participates in HFP, vaccinated their poultry stock in the past two months, compared to only six percent in the baseline.

The poultry vaccination activity has yielded many benefits. The poultry vaccinators themselves are benefiting from a new source of income. They make a profit from their service, generally charging around one *taka* for one or two birds. Both participating and non-participating poultry owners (almost all women) are benefiting from higher survival rates of birds as a result of the vaccination. As long as vaccinators can obtain vaccine, which appears possible at the moment, and demand remains high, this intervention will have a sustained and sustainable impact.

Achievements in IR 1.2

Collective marketing has become popular among HFP group members due to the creation of easy market access, and more importantly, the sale of surplus production. An important achievement is that this has increased income controlled by women, some of which is used to access additional food.

Focus group discussions revealed that the collective marketing approach is working reasonably well. Households living within close proximity of VMFs' homes are taking advantage of the system. This approach allows HFP participants to sell vegetables in small quantities and saves time required to transport goods to market. Through the collective marketing approach, the proceeds go to the HFP participants. Generally, either the VMF or someone on his/her behalf takes the produce to market. During qualitative interviews, the HFP participants did not report any major problem with the current system. Typically, produce is collected from the neighboring households by one of the HFP members and then either a man or a boy from one of the HFP households takes it to the VMF. The VMF or his or her representative markets the produces. Often the transport costs are shared by the participating households. The decision to take produce to a particular market is often determined by proximity to the market, opportunity, and transport costs rather than by market prices.

The quantitative survey did not ask questions about marketing channels and most of the VMFs visited by the final evaluation team do not consistently keep records of collective marketing. Hence it is difficult to quantify the benefits of collective marketing. Moreover, collective marketing is not the only way that HFP households market their produce.

Other interventions related to marketing (e.g. price information, timing of the vegetable varieties) were not as well-utilized by the participants. Moreover, non-HFP members have yet to

take advantage of collective marketing. The focus group discussions suggest that HFP group members continue to make production decisions based on what they prefer to consume, rather than what they can sell in the local market based on timing and price.

2.3 Program Challenges

As the component achieved its strategic objective, intermediate results and most of the sub intermediate results, like any other development program, it also faced a number of challenges. Some of the challenges were posed by the design of the program and the natural and environmental context in which the program operates, while other challenges are related to methodologies and the way the strategies were implemented.

Cyclone Sidr was a major challenge to the operation of the program. A large number of HFP group members lost their gardens and poultry stock to the cyclone (for detailed information please see the section below entitled *Shocks and Stresses*).

The HFP group members

Based on the end-line survey, qualitative discussions and field observations, it appears that a large proportion of HFP group participants come from food-secure households. One in every five households comes from households that are chronically food insecure. End-line survey data show that 56 percent of HFP participant households is year round food secure. Another 24 percent of households are food secure for most of the year. Approximately 20 percent of the HFP participants come from chronically food-insecure households (food-insecure for more than six months in a year). The qualitative interviews and focus group discussions found similar results.

As designed, HFP group participants were selected from the list of households that participate in the health and nutrition component (SO2 activities) of JoJ. Although a number of criteria were used to select the participants, “having access to a sizeable homestead land” (approximately 800 square meter or more) topped the list of selection criteria. A majority of the chronically food-insecure households often do not have sizeable homestead land and were left off the beneficiary list. As a result, 80 percent of HFP participants come from relatively food-secure households. Considering the context of Bangladesh (according to JOJ baseline data, over half of the surveyed households in the baseline survey had no land and an additional 20 percent had 50 decimals or less of cultivable land), the land holding criteria (up to an acre) set for target households allowed a large proportion of food secure households to become members of HFP groups. Another reason that the participation of more food-insecure households was limited is that the program used the SO2 beneficiary list to select HFP group participants. As the SO2 registered participant lists include only women who are pregnant or who have children under the age of two, there are significant numbers of food-insecure households around VMFs that are not participating in project activities because they do not meet these criteria.

As stated above, 20 percent of the HFP group members come from chronically food insecure households whose food insecurity issues are different from those of relatively food secure members. During focus group discussions, chronically food-insecure households informed the

evaluation team that, although they are participating in home gardening and consuming vegetables, often they go hungry as they can manage only one meal a day. They added that although they understand the value of better quality diet, they are more concerned about food adequacy (a quantitative aspect of food security) than dietary diversity (a qualitative aspect).

The project provided half-day training on vegetable land preparation, intercultural management, and pest management to the HFP group members. The participants reported that they found the topics interesting and useful, but that one half-day training on a wide range of topics was not adequate. Moreover, most of the training provided to HFP group participants by the program appears to be lecture format with some visual aids. Except for poultry rearing, the visual aids used in the training sessions are poorly developed and often could not be seen by all of the participants in the session.

The Ultra poor

As planned, 2200 ultra-poor households received a goat from the program. As the JoJ program installed and/ or repaired water points, a portion of these households gained access to safe water; some received emergency support from JoJ after the natural disasters. Although it appears that these households are eligible for government safety net programs such as the Vulnerable Group Development (VGD) program, the anecdotal evidence suggest that many of these households do not have VGD cards.

According to HKI monitoring data, approximately 25 percent to 35 percent of goats either died from illness or were lost in Cyclone Sidr. HKI technical staff believes that the manner in which the goats were purchased could be one of the causes of the high mortality. The goats were bought at one time from a single, distant market and transported to distribution sites. The technical people suggested that in the future, if goats are to be distributed, the program should buy them from the local markets. This will allow time to carefully select the goats, which are also better suited to local conditions, avoid the stress of long distance transport, and thereby help reduce the mortality rate. The households that received a goat from the program only to have it die later on are very upset by their loss.

Goats provided to the ultra poor households have the potential to reduce vulnerability to food insecurity over the long term, but they did not improve food access in the short term. Anecdotal evidence suggests that a small proportion of households sold the goat and bought a cow or other asset but the majority of the recipient households kept the goat and its offspring. None of the chronically food insecure households that received a goat from the program had a VGD card at the time they were interviewed by the final evaluation team. Without access to a safety net program, the potential to sell the goats to meet immediate food needs is high.

In the future, in targeting ultra-poor households, it is critical to design strategies that help these households improve food access in the short-term while creating opportunities to sustain access to food and improve the quality of diet in the long term.

The VMF

The VMF approach used by the program was designed based on the principle of “extension through demonstration.” HKI in Bangladesh has developed and used this extension model over the past 10 years in various parts of Bangladesh. This model requires: 1) identifying a farmer in the community who has the necessary land to demonstrate the technologies to transfer and is willing to take the risk associated with the new technology (there is always a chance that the new technology may not work in that particular agro-ecological environment); 2) willingness of the farmer to develop a nursery in or around the demonstration plot that can meet his or her own seed/seedling needs as well as provide a source of seed/seedlings in the community; 3) willingness of the farmer to actively assist a large group (60 households at the moment) of homestead producers and, 4) the willingness of the farmer to provide technical advice to the community members if someone seeks support from the VMF farmer.

Based on the four years of experience in JoJ, a number of challenges have been identified that limit the effectiveness of the VMF model in promoting active learning, developing human capacities, and sustaining innovation that would continue to provide the community with a purpose to collectively engage in sharing knowledge to improve production. A number of key challenges are outlined below:

a) Forty-one percent of the households reported that they get seed and or seedlings from the VMF. This can be considered a success, though 59 percent of the households do not depend on a VMF for its seed and seedlings needs. The focus group discussions suggest that households mostly go to the VMF for tree seedlings. They do not depend on the VMF for vegetable seeds. Households either produce their own seeds, or go to the market for the types of seeds that are difficult to produce at the household level.

b) When external technical assistance is needed, households typically seek advice from a knowledgeable neighbor. If this does not help, instead of going to the VMF, a majority of the households ask for help from the local fertilizer and pesticide vendor in the local market. The VMFs also seek support from pesticide dealers. However, fertilizer and pesticide vendors often do not have the right kind of knowledge and information to assist the households, so their advice does not always work.

c) The capacity of DAE to improve the human capital of small holders or functionally landless households is extremely limited. The private sector and most NGOs do not assist communities to improve farming skills, introduce techniques or crops with higher income potential, or assess crop varieties suitable for small holders and functionally landless households. Nor do they bring new ideas into the community. In JoJ operational areas, VMFs could not fill the gap because the VMF model was focused on extension through demonstration and did not promote active learning.

Table 4: Source of Seed and Saplings for HFP Participants

Source	HFP Participants	
	Baseline	Endline
Own seed	72.4	44.4
VMF	0.2	41
Other nursery	0.9	2.7
Neighbors	29.4	28.5
Market	52.3	60
GoB Office (BADC, BARI)	1	0.3
NGO	1.2	13.9
Seed company	0.2	1

d) Based on the MTR recommendation, HKI reorganized the VMFs to support 60 households per VMF. The final evaluation team found it challenging for some of the VMFs to provide support to that many households. This was a major issue, particularly in those areas where some of the households are miles apart.

e) Access to a demonstration plot was a major challenge to identifying VMFs with appropriate resources, attitudes and skills. Many of the demonstration plots visited by the evaluation team were found unsuitable for demonstration because they are not easily accessible, and are far from the homesteads.

f) Interviews with the VMFs revealed that their focus is to increase vegetable production and make a profit to sustain their own business, rather than serve as a community resource person, a hub to introduce new ideas, or to establish itself as an input supplier. Even though the amendment proposal stated that the “*focus of the VMF will be more on innovation and input supply*” in the remainder of the project, the final evaluation team did not find evidence of new innovations or ideas coming into the project operational areas.

g) Poultry demonstrations are visible but do not clearly demonstrate technologies replicable by others in the community. The technologies demonstrated are housed in relatively large and somewhat expensive multi-level pens. As the program provided half of the cost of the material for the pens, and most VMFs tend to have more resources than most (if not all) homestead producers targeted by the program, the demonstration is not being replicated in its entirety.

h) HKI ranked all of the VMFs in January 2009 based on production, income, planning, and linkages with service providers, market channels, and VMF status as a community service center. According to HKI, 39 percent of VMFs met all of the criteria and were identified as ‘excellent’ through the ranking exercise. The evaluation team found that the VMFs whose primary livelihood is other than agriculture have not been implementing project recommendations well, and also ranked as ‘poor’ or ‘fair’ in the ranking exercise.

i) The VMFs are making production decisions based on what they can sell in the local markets, rather than on an assessment of the demand for seed and seedlings in the village. The other functions are less important to them. This is not unexpected as the village model farm runs as a business and it is logical for a business to make decisions to maximize its profit. This does, however, raise questions about the purpose of supporting a relatively wealthier group of households as VMFs.

Shocks and Stresses

In addition to monsoon floods and minor cyclones, two major cyclones – Cyclone Sidr (November 2007) and Cyclone Aila (May 2009) – devastated the JoJ program areas. Assessments done by HKI show that more than half of all HFP group member households completely lost their gardens in Cyclone Sidr, and another third partially lost their home gardens. In addition, 12,786 poultry birds died in the Cyclone Sidr. Most of the HFP member households did not receive recovery support either from SCF or HKI, as the unions where these households were located did not suffer as much damage as some of the other vulnerable unions. The HFP group members sustained major damage again in Cyclone Aila. According to an assessment

conducted by HKI, approximately 36 percent of HFP group members completely lost their home gardens, and another 40 percent of households sustained partial damage to their home gardens. In addition, the HFP group members lost 13,468 poultry birds in the cyclone. According to the information provided by HFP group members, partner NGO staff and HKI field staff, none of the affected households received any recovery support.

It should be noted that, based on an assessment carried out by Save the Children, HKI undertook livelihood recovery activities including seed stock replacement in the 14 most affected unions of Kalapara and Galachipa *upazilas* in Patuakhali District. Out of the 14 unions, four unions were targeted from JoJ operational areas; however the JOJ beneficiaries were not targeted for this support.

Despite the location of JoJ operational areas in disaster-prone areas of the country, preparedness activities that can potentially reduce the impact of cyclones on the livelihoods of the beneficiary households were not integrated into the intervention package.

2.4 Sustainability

The benefits of collective marketing have good potential to continue after the project ends because a proportion of the beneficiaries involved are profiting from the activity. The HFP groups themselves will dissolve after the project ends unless their working agenda changes. Moreover, without the JoJ lecturer/facilitator to encourage meetings, there are presently few reasons to take time to meet. The program did not equip the beneficiaries with analytical tools and processes that could have facilitated new ideas, new crop varieties or beneficial techniques.

Some of the new poultry management techniques promoted by the program will possibly continue; creep feeding and nesting bowls in particular are easy to adopt, less expensive techniques that many HFP group members have already benefited from.

VMFs have the potential to remain in production since the farms are profitable. However, in the near future the farms may become mostly oriented toward production for selling vegetables and fruits in the local market. This is good for the VMFs, but it might not benefit the immediate community, which was the purpose behind supporting these better off households.

The VMFs may play a passive role in providing technical assistance and input to the homestead producers, and the relationship will get even weaker over time unless new ideas or technologies appear in the VMF. This appears unlikely at the moment unless the program expands linkages to the private sector and other sources of inputs and advice. VMF owners are being linked to the DAE and DLS, but these are not strong sources of new ideas or technologies.

A proportion of ultra-poor households whose goats survived have an asset that can eventually help them to earn income if they can keep the goats healthy and avoid having to sell the nannies. It is possible that many will sell goats to meet the basic food needs unless they gain access to safety net programs or other income-generating activities.

The majority of the poultry vaccinators will possibly continue after the project ends as long as they can still obtain vaccine, which appears likely at the moment. As long as demand remains high, vaccinators will be able to earn some additional income.

HKI developed a phase-out strategy in June 2009 that is currently under implementation. A series of activities has been planned to facilitate the phasing-out process. It includes information-sharing with the communities, establishing linkages with government extension departments, providing additional support to poor-performing VMFs, and linking the HFP households with micro-finance institutions and safety net programs.

2.5 Char Fasson Pilot

The MTE recommended that each SO pilot integrated approaches in the most vulnerable unions, as these unions have fewer services and poor infrastructure.

SC and HKI carried out a livelihood assessment in January 2009 in two unions under Char Fasson *upazila*. The purpose was to better understand the livelihood issues of people living in the active flood plains, their vulnerabilities, the context, and the dominant livelihood strategies. HKI, SC and NGO Forum staff participated in the assessment and subsequent design of the pilot project. Since March 2009 the pilot project strategies have been implemented in two villages in Char Fasson through a partnership with two local NGOs, Grameen Jono Unnayan Songstha (GJUS), and Dip Unnayan Society (DUS).

The goal of the pilot project is to reduce food insecurity of chronically food-insecure households in Hamidpur and Char Fakira villages of Char Fasson *upazila* by March 2010. The pilot project has several purposes, including gaining experience in and knowledge of the chars; developing organizational capacity to work with highly vulnerable char communities, and testing potential strategies appropriate to the target households, including seasonal fishing laborers, who have highly diversified livelihood strategies. In the pilot, SC is overseeing the implementation of Community Asset Creation through Cash for Work (CFW); HKI is responsible for the income-generating activities (IGAs), asset transfer and training, and NGO Forum is responsible for the water and sanitation component.

The final evaluation team did not visit the project villages in Char Fasson, as the project activities begun in March 2009 need more time to demonstrate impact. Therefore this section is based on the secondary information and discussion with the various stakeholders of the pilot project.

The program documents and staff interviews indicate that the participatory approaches used by the project to identify target beneficiaries worked well. A total of 1,000 participants were selected for the project activities. Of these, 300 were for CFW activities and 700 for Income Generating Activities (IGA). The water and sanitation component includes all people in the target area.

The project has so far generated 4,807 days of work for 300 CFW participants. Approximately 700 IGA participants have received training on 13 different types of IGAs. The project has also

identified 12 resource persons from the locality who were contracted to provide skills training to the participants. To date, asset grant packages⁸ were provided to the 409 IGA participants who completed the basic training. The pilot project has also completed the selection of 650 households that will benefit from WASH activities, selected sites to establish 15 deep tubewells, established two village sanitation centers, and trained staff and caretakers.

Based on discussions with various stakeholders and staff, it seems that the pilot project created new learning opportunities for all of the organizations participating in the pilot. It appears that the pilot project is able to target and identify the chronically food-insecure households, and the organizations participating in the project are gaining experiences that will equip them to improve future project management.

Village Development Committees were formed in each of the project villages and, unlike the approach followed in JOJ, are supposed to take responsibility for all activities implemented in the pilot project areas. This is a good step towards developing a multi-sectoral, community-based institution which may eventually assume responsibility for maintaining some of the project activities. It is important to mention that in order to achieve this objective; these VDCs need substantial capacity-building support from the project. If capacitated, a VDC has the potential to take responsibility to continue activities that are critical to sustaining the benefits realized from the program.

3. SO 2: Maternal and Child Health and Nutrition and Water, Sanitation and Hygiene

SO2: Health and nutrition of pregnant women and children under the age of two will have improved

SC developed two components, or intermediate results – Maternal Child Health and Nutrition (MCHN) and Water, Sanitation and Hygiene (WASH) – to implement activities aimed at improving the health and nutrition of pregnant women and children under the age of two. SO 2 has two Intermediate Results:

- IR 2.1: Increased adoption of key MCHN practices and utilization of key MCHN services
- IR 2.2: Improved access to safe water and sanitation facilities

The MCHN component targeted all pregnant and lactating women and children less than 2 years old throughout the 110 unions of the program area in hopes of enrolling 72,000 pregnant women and 180,000 children less than 2 years old. In return for their participation in ante-natal check-ups (ANC) and/or growth monitoring promotion (GMP) activities, mothers received an incentive ration (based on the opportunity cost to the participant) composed of 3 kilograms (kg) wheat, .5 kg yellow peas, and .5 kg vegetable oil.

⁸ 205 households received goats, 54 received poultry, 20 households received sewing machine, 16 households received shallow engine repair kits, 40 received small business support, 19 received Hogla mat production support, 19 households received input support for Amon paddy, 19 households received input support for aquaculture.

The second component, WASH, was implemented through NGO Forum and its partners. This component targeted all households in the 110 unions. It included community mobilization and education interventions and the provision of 'hardware', i.e., deep tubewells, latrines, and other water systems. This component relied on a network of Village Development Committees (VDCs) to assist in the identification of water and sanitation needs in the communities. NGO Forum and its partners employed a cadre of Extension Workers (EW) who were responsible for the identification, training and monitoring of VDCs and the facilitation of community courtyard educational sessions.

Activities under the MCHN component of SO2 are implemented entirely by Save the Children. Activities under the WASH component of SO2 are implemented by 13 partners under the oversight and supervision of the NGO Forum for Drinking Water and Sanitation. These local partners include Chandradip Development Society (CDS), Community Service Centre (CSC), Saint-Bangladesh, Rural Development Organization (RDO), Grammen Jono Unnyan Sanstha (GJUS), Unnyan Shikha Karmosuchi (USHIK), Social Welfare Organization (SWO), Voluntary Organization of Social Development (VOSD), Deep Unnyan Society (DUS), Village Development Organization (VDO), SPEED Trust, South Asia Partnership (SAP)-Bangladesh, and Social Development Agency (SDA). Eight of these are also partners implementing activities under SO1.

3.1 Maternal and child health and nutrition

3.1.1 Overall Impact

JoJ MCHN activities have contributed to preventing malnutrition in children under the age of two. MCHN impacts are measured by the changes in the percentage of underweight children under the age of two and the percentage of cases of diarrhea. The endline survey results indicate that the percentage of moderately underweight children less than two years of age in JoJ has decreased by 10.3 percent. This is a very good result considering the situation throughout the program area. This is less than the projected target of reducing the percentage by 20 percent, but the evaluators consider this target to have been set too high. JoJ also reduced the percentage of severely underweight by 27.6 percent, exceeding the program goal by 17.6 percent. The impact on girls were much higher than the average for all children for both severely underweight (13.8 percent) and moderately (35.1 percent) underweight.⁹

The program set out to reduce the incidence of diarrhea in children under two by 20 percent. At the baseline, the percentage of children under two with diarrhea in the two weeks before was 29.8 percent. At the mid-term this had increased to 43.4 percent, and at end-line survey it had decreased to 21.8 percent. The large spike in the incidence of diarrhea in children under two at mid-term may be due to the aftershocks of Cyclone Sidr. Nevertheless the end-line results

⁹ These figures were calculated using the 1978 NCHS reference population. The results can be found in Annex 6 of the endline survey report. The endline survey reports also presents anthropometric indicators based on the 2006 WHO reference population.

demonstrate that the program did meet its objective to reduce the incidence of diarrhea in children under two by 20 percent over the life of the program.

3.1.2 SO 2 Achievements

Achievements in IR 2.1

The program team organized its MCHN activities around the Community-Integrated Management of Childhood Illnesses (C-IMCI) framework. Theoretically, C-IMCI is the optimization of a multi-sectoral platform for child health and nutrition that includes three linked requisite elements:

- Element 1: Partnerships between health facilities or services and the communities they serve.
- Element 2: Appropriate and accessible care and information from community-based providers.
- Element 3: Integrated promotion of key family practices critical for child health and nutrition.

The C-IMCI framework is designed to enable SC and its partners to better communicate and plan events, services, and activities aimed at improving the health and nutrition of pregnant women and mothers and their children less than two years of age.

The principal channel of communication is through the approximately 3,200 CHVs. The CHVs provide information and educate pregnant women on appropriate reproductive health practices such as ANC, and danger signs during pregnancy. Pregnant women and mothers also received education on preventative practices such as: optimal breastfeeding, immunization, complementary feeding, growth monitoring, and promotion, seeking timely care and treatment, and normal feeding during illness. The CHVs are extremely motivated, have become well-respected members of the community, and play a vital role in the MCHN program.

Figure 7: Courtyard session with mothers and their children >6 months discussing complementary foods



JoJ has been very successful in developing a strong partnership with the GoB MoHFW. As a result of JoJ's partnership effort, satellite clinics and EPI centers now offer their services on the same day and at the same place in the majority of the 110 unions. This is where ANC check-ups are performed and immunizations administered.

Throughout the life of JoJ, 177,676 pregnant women – 247 percent of the target of 72,000 – received ANC check-ups at GoB satellite clinics. The program increased the service utilization rate of women who sought

three or more ANC check-ups during their pregnancy from 13 percent at the baseline to over 84 percent five years later. Pregnant women also received iron and vitamin C tablets during these check-ups.

During the combined services health days, CHV organized growth monitoring and promotion (GMP) sessions. After five years, the program had enrolled 413,642 children under two years of age against a target of 180,000, or 230 percent of the target. This represents 88 percent of the total estimated population of children under two years of age, an impressive amount of coverage.

3.1.3 Program Challenges

Behavior Change Communications Tools

The behavioral change strategy focused on the following key MCHN practices and services:

- Exclusive breastfeeding for babies up to six months of age;
- Starting appropriate complementary feeding at six months and continuation of breastfeeding for two years;
- Full vaccination coverage of one-year-olds, as per the national expanded program for immunization (EPI) schedule;
- Monthly growth monitoring and promotion sessions for all children under two years old;
- Caregivers seek timely care from appropriate providers when children are sick;
- Caregivers give more fluids and continue normal feeding during illness;
- Pregnant mothers go for ANC each month, take iron tablets during pregnancy and rest for two hours per day and eight hours per night;
- Men actively participate in childcare and in reproductive health care, and
- Communities recognize and respond to any of the five danger signs for a pregnant woman.

To reinforce the information and education of mothers, the program developed a BCC strategy and several tools. The tools included counseling cards and posters to inform and educate pregnant women and mothers in the key family practices that JoJ was promoting. More recently, the program introduced a “Promise Sheet,” which was intended to guide the CHV during individual counseling of mothers on child feeding practices. The promise sheet is based on the successful CB-GMP model used in Central America – AIN-C. The cards are intended to serve as a quick reference for mothers and reminder about the ideal behaviors to be practiced. Promise sheets observed in households were not used nor well understood by mothers. The ones who understood best were mothers who could read, which is required to fully comprehend the messages on the sheets.

Early diagnosis and treatment (Community Case Management)

Appropriate and accessible care is an essential element to achieving the objectives promoted through the C-IMCI framework. Early diagnosis and treatment for diarrhea (dehydration) and symptoms of pneumonia are critical for preventing and decreasing the incidence of these illnesses.

It has been challenging for SC to provide complete coverage of CCM activities despite the success of the pilot. Only 27 unions out of 110 have CHVs trained and equipped to provide the CCM service. Another 10 unions have village doctors and pharmacists who have been trained and provide the CCM services. This represents fewer than 35 percent of the unions participating in the program.

The low coverage is partly due to cyclone Sidr, and that CCM services are dependent on the GoB MoHFW to provide training, equipment, and supplies (ORS and Cotrim) to CHV and village doctors.

After considerable lobbying by JoJ, the GoB has agreed to support 60 new unions, which will increase coverage to about 88 percent (97 out of 110 unions). However, it is not clear when this will occur.

There was a missed opportunity to increase coverage through partnering with BRAC, whose health workers provide treatment for a small fee throughout Bhola district. (CCM is only active in 12 of the 37 unions of Bhola).

In the future SC should ensure that CCM services are included in the MCHN package of services.

Effects and benefits of the ration

JoJ has been very successful in motivating mothers to participate in ANC check-ups and in enrolling their children in the GMP program. These are popular initiatives; they have achieved, respectively, 247 percent and 230 percent of their targets. It raises a very important question though; what role did the ration play in obtaining these results and what benefits were gained?

Each expectant mother who entered the program in their second trimester was eligible to receive 30 monthly food baskets, beginning from six months before the child is born until the child is 24 months old. The food basket included 3 kg wheat, .5 kg split peas, and .5 kg (1/2 liter) of oil. The total value is about 140 *taka*, or two US dollars.

According to the JoJ *Report on Analysis of the Use of Food Ration in the JoJ Programme*, oil is the most preferred commodity among beneficiaries. It is perceived as pure because it is of foreign origin, and thought to be nutritious for babies and children. Most of the respondents surveyed for the report on the use of food rations state that wheat is the second most preferred item because they can use it to make bread to have as breakfast. Split peas is the least preferred item among the ration commodities for various perceived reasons: i.e., people are used to eating *Mosur Dal* or locally produced pulse; it takes too much time to boil; it tastes sweet; it is less nutritious; it causes gastric problems; it causes indigestion in children; it “makes dull”, or “this is for cows”. Conversely, all respondents mentioned that they use split peas to make various types of curry, and that they like the taste. Depending on the number of family members, 1/2 kg of peas can serve a poor family for two to four days and a well-off family one to two days. Very few mothers mentioned using the split peas for making *Khichuri* and instead make a mixed powder of fried wheat, fried peas, oil, and sugar for their children.

The preference of food items in the ration among the respondents of a well-off group in Bhola reportedly changes with the price of the commodity. When oil is expensive they preferred oil, but when wheat prices rose they changed their preference to wheat. All the respondents stated that they consume all the ration items and never sell any of it. A very few well-off respondents mentioned occasional donations of wheat and peas to poor neighbors.

Survey respondents in JoJ's study on the use of food rations did not directly talk about the nutritional aspects of the ration, but expressed its benefits in other ways. Poor people mentioned that in absence of any food in the house they can make bread out of wheat and cook peas with oil as curry; instead of being hungry they have some food which gives them energy, and for mothers, increases the amount of breast milk.¹⁰

It is obvious that the food basket was the principal factor that motivated the expectant mothers to join the program and continue in it. This is common in food assisted programming and implementing agencies always need to take care that food does not become the main focus of the program. One promising sign, although there is no formal measurement of this, is that CHV and SC staff report that many mothers who have graduated a child already are continuing to participate in ANC check-ups and enrolling their children in the GMP program even though they aren't receiving a ration. Mothers (and fathers) see the difference the new practices make, such as improvements in their child's health and strength, and are motivated by these results rather than the food ration.

It is not possible to determine the impact the ration has on the nutritional status of the child in the program. It was mentioned several times by mothers interviewed that the oil was used only for the child and that the wheat provided an alternative to 'rice water' (a common morning meal) for breakfast. This is impressive and indicates that there was a successful transfer of messages about how to target and use the food in the home for the child. It is all the more impressive because of the relatively small size of the ration. A more in-depth review on the use of rations is recommended to take place before designing the future program.¹¹ It would be possible to monitor the participation rates in ANC and GMP services after the ration is terminated. Also, nutritionists could evaluate how the ration contributes to the nutrition of the child; e.g., would a larger ration or incentive improve the nutritional status?

3.1.4 Sustainability

While it is clear that the CHVs successfully developed important capacities that led to improved health and nutrition practices and outcomes, it is unlikely that the CHV will continue to inform, educate, encourage, and motivate pregnant women and mothers to go to ANC and GMP sessions without the stipend they receive from SC. However they will continue to be resource persons in the community and be called upon during various national and international health campaigns, such as vitamin A, de-worming, EPI days and the like. They may be provided a small stipend from whichever organization is funding the event. Some CHVs will continue for years to come,

¹⁰ Begum, Dr. Hashina, *Report on Analysis of the Use of Food Ration in the JoJ Programme*, (April 2009), Dr. Hashina Begum, MBBS, MPH.

¹¹ For further analysis and discussion of the use of ration, see *Analysis of the use of food ration in the JoJ Programme* (April 2009), Dr. Hashina Begum, MBBS, MPH.

but the majority will likely become too busy with household requirements, employment or just become less motivated to continue.

This will have a dramatic and negative effect on the level of participation in ANC check-ups. It is not known who will plan for, organize, and conduct GMP sessions when the CHV is no longer on the payroll. Without the CHVs, the GMP program will most probably cease to exist.

It should be noted here that JoJ is not walking away from the CHVs. It has taken action to ensure the activities of the CHV will continue in some of the unions where they are currently working through PepsiCo Foundation funding, but will not include a food incentive/ration. This, however, does not address the important issue of sustainability; eventually PepsiCo funds will also run out.

SC has thought a lot about the question of how to sustain the CHV. Some work has taken place to integrate the CHV into existing systems. There have also been discussions on instituting a fee for service, but no clear directions have developed yet. It's not an easy question to answer. There are a host of examples to learn from within and outside of the country. BRAC and Smiling Sun Centers seem to be doing a good job at covering costs over a long period, but are still not 100 percent self-sufficient or sustainable without subsidies.

In addition, over the final nine months of the program (which ends in May 2010), field officers began conducting union-based community meetings with key community stakeholders such as imams, union chairmen, teachers, community leaders and CHVs. The objective of the meetings is to introduce the importance of nutrition. According to the *JoJ Community Meeting Strategy and Guidelines*, 'It's not intended to answer all the questions about nutrition but instead to inspire collective community action for positive infant and young child feeding behaviors in the home. It is meant to garner support so that health and nutrition are not viewed as the exclusive role of the mother. It is hoped that the meeting will spark an interest in community leaders to learn more about nutrition and promote community action to prevent malnutrition.'

The idea of the community meetings was a good one and well intentioned; however, it began too late in the program and was seen more as an 'exit meeting', or transfer of responsibilities over to the community at large. It is unlikely that this 'one-time' meeting will spark much interest in community leaders to learn more about nutrition and promote community action.

3.2 Water, sanitation and hygiene

Access to a clean, protected water supply and appropriate sanitation facilities is part of the foundation of a healthy household. JoJ has used a multi-pronged strategy to increase access to safe water and sanitation. The strategy includes rehabilitating existing tubewells, sinking new tubewells where there are no safe water sources in the vicinity, establishing Village Sanitation Centers (VSCs) to increase the availability of low-cost latrines at the union level, forming Village Development Committees (VDCs) in each ward to carry out water, sanitation and hygiene (WASH) activities, and using a set of behavioral change communication strategies to raise awareness of the communities on safe water, sanitation and personal hygiene practices.

3.2.1 Program Impact

Sanitation facilities

Ownership of latrines¹² has not changed much between the baseline and end-line rounds. In the endline, 16.5 percent of households owned hygienic latrines (i.e. ring slab/offset latrines with an intact water seal, covered pit latrines, and septic latrines), a slight increase over the baseline (13.4 percent). Only minimal percentages of households in the endline survey owned pit or septic latrines.

Figure 8: Toilet with a broken water seal, middle class house

The biggest change was the increase in ownership of ring slab latrines (with intact or broken water seal), from 36 percent of all facilities in the baseline to 74 percent in the end-line. It is important to note that the program provided households with ring slab latrines at a highly subsidized rate. In addition, 4,500 latrines were distributed freely to ultra poor in collaboration with the GoB. An additional 34,200 latrines were sold through 45 VSC which produce approximately 600 latrines a year. JoJ provided the initial start up costs (USD 2000 per VSC), which are being repaid. The VSCs make a profit on the sale of the latrines in order to ensure the viability of the enterprise. However, in the end-line round, 80 percent of the ring slab latrines had broken water seals, compared to about 65 percent of households in the baseline.



Hygiene practices

There have been substantial improvements in reported hygienic practices regarding latrines. The percentage of women in the baseline survey who reported using hygienic practices (e.g. flushing latrines) was less than five percent for households with any type of latrine, and 30 percent for households with hygienic latrines. By the end-line survey round, essentially all women having latrines of any kind were employing hygienic practices.

There was a dramatic increase in the percentage of women that demonstrated awareness of appropriate hand washing behavior in the end-line survey. The percentage of women who achieved scores of eight or higher on hand washing behavior¹³ increased from less than 20 percent in the baseline to 74 percent in the end-line U2 sample and 97 percent in the GB sample.

¹² Types of latrines included in the survey are: ring-slab/offset latrines (regardless of whether the water seal is intact or broken), septic latrines, and both covered and uncovered pit latrines.

¹³ The hand washing behavior score is the sum of the number of critical times for hand washing and the number of appropriate hand washing techniques correctly identified by the respondents.

3.2.2. Program Achievements

Hardware installation

JoJ has achieved the planned targets for hardware activities related to water and sanitation. The following table highlights the achievements in installing hardware facilities:

Deep tubewells installed	Pond sand filter installed	Community-based rain water harvesting system	Rehabilitation of water points	No. of latrines installed with water seal for ultra-poor HHs
438	11	1	2877	4500

Testing of tubewells

The most significant change has been the increase in the percentage of tubewells tested for arsenic, from about 50 percent in the baseline to about 80 percent in the end-line. However, the end line survey found very little change in the sources of water from the time of the baseline survey.

NGO Forum extension workers conducted multiple courtyard sessions that provided information on appropriate sanitation and hygiene practices to a broad audience of union-based community members. This activity complemented the objectives set out in the C-IMCI strategy. The WASH component of the program is discussed in more detail in the following section.

3.2.3 Program Challenges

False sense of security – drinking water

Potable water is water that can be consumed or used without risk of immediate or long-term harm. Water contaminants can be classified into four broad categories, namely, chemical contaminants, physical contaminants, total dissolved solids and pathogens. If the presence of these contaminants is below a certain level, water is deemed safe for drinking.¹⁴

While the program only tested for chemical properties, not pathogens, results indicated that the tubewell water is not potable. Several studies over the years in Bangladesh support this statement. The results of one study in Matlab¹⁵ in particular showed that all tubewell water samples contained zooplankton (small flagellates and amoebae) and bacteria (coliform and E. coli.). Results for some of the parameters were outside the accepted limits recommended by the World Health Organization for drinking water, suggesting that water from tubewells should be treated if used as drinking water.

It's not surprising that tubewell water is contaminated, considering there are a host of contamination risks. Tubewells are primarily bored manually by a team of about 12 men, using

¹⁴ Reference the World Health Organization's (WHO) standards for safe drinking water for further detail.

¹⁵ The study can be found at: www.pubmedcentral.nih.gov/articlerender.fcgi?artid=93023

metal tubing, a tripod, and pulleys. It takes between 15 to 25 days to tap the underground aquifer, which can be from 300 to 1000 feet underground. Fresh cow manure is often used to lubricate the metal tubes while boring, and the hole is open and exposed during drilling. This leads to high exposure to contamination. There is no means of verification that the tubewell water is potable, though villagers are cautioned that before drinking the water, “they must first pump the well for one to two hours a day for six days, and then it will be potable.” While this is an effective method to expel certain physical contaminants and solids, ultimately decreasing the turbidity of the water, it does not clear out disease-bearing pathogens.

Formation of Village Development Committees

The Village Development Committees (VDCs) were formed as WASH committees. Had the VDCs been formed as conduits to all village development activities, they could have provided a basis to integrate the three SOs through VDCs. Also, the CHVs were not integrated in the VDCs, thus there was some duplication of effort in terms of hygiene education in the community.

Working the two components of SO2 in unison

The two components of SO2, MCHN and WASH, were designed and implemented as separate activities and there was little effort to pull these two together. As a result, there was duplication of effort as well as some opportunities missed to have greater impact of the program activities at the community level.

Barriers to Behavior Change

The program was very successful in increasing the knowledge and awareness of the population on the importance of hand washing and using a latrine with a water seal. However, knowledge and a good attitude alone towards the practice of appropriate sanitation and hygiene do not necessarily lead to behavior change. There are many barriers; e.g., the household cannot afford the latrine, the model offered doesn't work at their home, or there is no space for it. With hand washing, there are additional barriers, such as the cost of soap, inconvenience, or limited access to clean water. The barriers are not always obvious or easily overcome.

The program adopted a traditional top-down, one-size-fits-all approach to sanitation, and made access to a tubewell conditional upon having a latrine with a water seal. The emphasis on short term outputs as opposed to the sustainable supply of affordable and appropriate sanitation products generally leads to low toilet usage and wasted investments; in short, a very low impact at a high cost.

Despite the sound technology of the water seal, which reduces the transmission of pathogens, most households had broken the seal by the time of the end-line survey. Access and storage of sufficient water are barriers to the proper use of the water seal: households break the water seal because it requires too much water (two to three liters) to flush properly; that is, they choose to break the seal to avoid carrying water to the toilet for every flush.

A dramatic increase in the awareness of appropriate hand washing techniques was achieved. However, this only represents the respondents' awareness of appropriate practice, not actual

practice. It is very difficult to verify the actual practice of hand washing. There are effective methods to evaluate the presence of soap on people's hands to validate hand washing and the effects on diarrhea but they are time-consuming, costly, and invasive.

During the evaluation, multiple houses were visited and observations made for visible signs of hand washing, such as soap near the latrine, a washbasin and soap, or designated place for these items. Soap was rarely observed, but would appear when asked for, usually from a special place within the cupboard or shelf in the house, not at all in a convenient place. To many, soap was considered to be expensive, almost as a luxury product that is rarely used and saved for special occasions. In some cases, it was used almost like a medication: when someone in the house was sick with diarrhea, members of the family would wash their hands with soap. Also, hand washing during the appropriate times seemed to be very inconvenient, almost a chore. Access to clean water and the lack of convenient devices (water container with spigot, basin with spigot, etc.) were other barriers that were observed.

3.2.4 Sustainability

There is little hope for the program's traditional approach to sanitation and hygiene in terms of growth and sustainability unless the public sector is prepared to supply the enormous demand with free or subsidized products. Subsidies are normally only given to a few because such resources are not boundless.

Many believe that a sustained change in behavior is most likely to occur when a person purchases something that they need or desire. The knowledge and desire that persists in the population can be converted into a demand for sanitation and hygiene products that can be tapped.

4. SO3 Disaster Risk Reduction

SO3: Communities and households will be more resilient to shocks that threaten their livelihoods

JoJ sought to decrease community and household vulnerabilities to natural shocks through increased community preparedness and improved organizational response capacity. The exposure to natural disasters such as cyclones, tidal surges, and storms in the Barisal region is one of the key factors contributing to household susceptibility to food and livelihood insecurity. In order to accomplish this objective, SC has identified two intermediate results:

IR 3.1 Improved community preparedness to respond to natural disasters

IR 3.2 Improved agency capacity to respond to natural disasters

The approach used under SO3 is premised on the principle that by focusing implementation activities and tool introduction at the union level to increase institutional capacity in disaster preparedness, community engagement in disaster preparedness and awareness would increase. Through preparedness planning and awareness activities, communities and households would

more likely take measures such as evacuating their families to the nearest cyclone shelters, which would save lives.

To improve community preparedness and response to natural disasters, IR 3.1 implemented four interrelated strategies. First it focused on supporting and/or updating local vulnerability maps and union *parishad* preparedness plans. Second, the project provided support to the Bangladesh Red Crescent Society (BRCS) Cyclone Preparedness Program (CPP) volunteers to establish or strengthen an early warning and response system. Third, it rehabilitated local evacuation structures; and fourth, it focused on improving community awareness for disaster preparedness.

To improve SC's capacity to respond more effectively to natural disasters, activities implemented under IR 3.2 focused on establishing a well-trained team of emergency responders; improving access to key emergency response supplies and logistics; and improving linkages and coordination between key stakeholders involved in disaster preparedness.

4.1 Overall Impact

Despite key resource and staff constraints in the beginning of the project, the SO3 team managed to complete almost all of its targeted activities. Union Disaster Management Committees have been reactivated, CPP and Union Disaster Management Committee (UDMC) volunteers have received basic training in disaster management, significant BCC materials have been distributed, some cyclone shelters have been rehabilitated, and mass awareness activities such as cyclone response simulation exercises have been carried out.

Cyclone warning awareness has increased substantially throughout the three JoJ districts. Before the project only 32.7 percent of the population received a warning before a cyclone. Now over 90 percent receive a warning that a cyclone is coming.¹⁶ Communities in the project area also have observed significantly improved signal dissemination during cyclones Sidr and Aila. Before the project only 40.5 percent of the population that did receive a warning received it from a CPP volunteer. Now 72.6 percent of the people that receive warnings get them from CPP volunteers (in unions where CPPs are active).

As a result of this improved awareness, many households evacuated from their vulnerable houses, and some were able to access and use cyclone shelters in the vicinity. From interviews conducted in several communities, it is evident that the early warning measures contributed to reduced losses of productive assets and resources.

Another substantial impact of the SO3 strategy has been a significant improvement in disaster response capacity of the SC emergency program. Responding to the emergency needs of households in the Barisal division, the SC emergency program successfully protected assets and provided households with food and other essential items in response to cyclones Sidr and Aila. SC staff conducted rapid emergency assessments immediately after the cyclones that provided

¹⁶ This change in awareness is also related to two major cyclones having hit the region during the implementation of this program. Before the project started, it had been a long time period since the last major cyclone hit the area. This could also help explain the difference.

useful information for targeting and prioritizing regional programming. As a result, SC Bangladesh has gained a reputation as a leading NGO in the field of emergency programming.

4.2 SO 3 Achievements

Achievements in IR 3.1

One of the main achievements carried out under this IR was the reactivation of dormant UDMCs in 75 unions. SC staff also helped strengthen the collaboration and interaction of government counterparts. Training was provided in collaboration with CPP-BDRCS staff in disaster preparedness. The training modules and materials are considered very appropriate, and the content includes an hour session on gender awareness.

Aside from the basic training in disaster preparedness, the UDMC was assisted by JoJ staff in preparing risk and resource maps and action plans in 75 unions. Some of these maps have also been disaggregated to the ward level (178 wards). In addition, despite serious staff and resource constraints, near the end of the project a one-day refresher training for UDMC members was provided on risk and resource maps and community preparedness plans.

Training was also provided to CPP and UDMC volunteers on disaster preparedness. In addition to basic training for 2,618 CPP volunteers and 918 UDMC volunteers, technical training was also provided to CPP volunteers in first aid (276 volunteers trained), and search and rescue (484). As a result of this training, JoJ has successfully promoted disaster preparedness volunteerism.

In addition to training, 69 sets of equipment were provided to 1,035 volunteers. The equipment distributed included transistor radios, flashlights, megaphones, hand sirens, and signal flags. SC also developed a data base on CPP equipment and capacity.

Disaster awareness sessions were also provided to fishermen groups and their families and fishing boat owners. Thirty-five awareness sessions were conducted.

With regard to rehabilitating local evacuation structures, 25 cyclone structures and 1 *killa* were rehabilitated. Most of these were done in the last two years of the project. This was primarily because shelter rehabilitation was not given a high priority at the beginning of the project. Twenty-six shelter management committees were also established to ensure ongoing maintenance. JoJ staff also conducted assessments of all cyclone shelters and *killas*¹⁷ in the most vulnerable unions (367). The information from these assessments can be used by SC, the GoB or other organizations in the future to determine where structure rehabilitation should be focused.

To enhance community disaster awareness, numerous activities were conducted. These included six large- and 15 small-scale simulations, 78 folk songs events, popular theatre, more than 2,000 posters), six billboards and 1,000 pocket signal books. JoJ staff also promoted special day

¹⁷ A *killa* is a raised earthen mound with a hollowed-out enclosure at the top where animals are placed to protect them from flooding and high winds. *Killas* can be quite large; the JoJ-supported *killa* in Patuakhali is approximately 100 meters high.

observations such as National Disaster Preparation Day and International Day for Disaster Risk Reduction. Thousands of posters were distributed for these events as well.

Another disaster preparedness awareness activity carried out under IR 3.1 included awareness campaigns carried out in 69 schools. Secondary school teachers were trained to provide awareness training to students in their class. Some of these trainings were co-facilitated with JoJ staff.

After Cyclone Sidr, JoJ staff also assisted communities with reforestation activities. This involved the distribution of 29,400 saplings (9,400 bamboo, 10,000 coconut, 5,000 *nim* and 5,000 *mehogani*). Reforestation was considered key to protecting households from future wind damage.¹⁸

Achievements in IR 3.2

JoJ instituted IR 3.2 activities in order to improve the natural disaster response capacity of SC program staff as well as that of other partner organizations, including the SC Alliance operating in Bangladesh. As stated earlier, activities under this IR focused on staff training to improve emergency response capacity of SC and partner staff, strengthen linkages and coordination between SC and other agencies, and effectively and efficiently manage key supplies and logistics to improve emergency response.

After UN World Food Programme (WFP) training in conducting rapid emergency needs assessments, JoJ staff members were later deployed to successfully respond to cyclones Sidr and Aila. SC performed well in mobilizing field assessment teams to assess response needs and target resources within 48 hours of Cyclone Sidr hitting landfall. They also effectively mobilized rapid assessments for Cyclone Aila. The ability to mobilize and respond so quickly illustrates that the training JoJ staff received was one of the most useful capacity building activities provided to staff under SO3.

In addition to the rapid emergency needs assessment training, several JoJ staff members were provided training in a number of other areas. These included disaster management foundation training, search and rescue training, disaster management training for sustainable development, WASH cluster training facilitated by UNICEF, water purification plant management and zodiac operation, first aid training, monitoring and evaluation training, gender analysis, urban earthquake vulnerability training, torque aid training, and training-of-trainers on psychosocial protection.

Although a wide variety of trainings have occurred, very few staff has actually participated in many of the training events. Most of the SO3 staff have only come on board in the past two years and were not exposed to the various training events.

In terms of managing key supplies and logistics for emergency response, JoJ maintains several well-managed warehouses in the city of Barisal. These warehouses serve all of their programs operating throughout the Barisal division. SC stores food and non-food items in the warehouses such as 10,000 NFI kits, five water purification plants, three zodiac boats donated by the US Office of Federal Disaster Assistance (OFDA), two fiberglass boats donated by the UK

¹⁸ Most of these reforestation activities were done with Emergency Program money and were not officially part of JoJ.

Department of International Development (DFID), 60 children recreation kits locally made by UNICEF, five tents, 100 staff kits to be used during disaster recovery operations, and 53 water tanks of 1,000 liter capacity and 11 of 500 liter capacity. In addition, JoJ has three water ambulances moored on a river next to the warehouses. The evaluation team was impressed with the conditions of the warehouse and the commodity management standards used.

JoJ has done a good job strengthening its coordination and collaboration with essential stakeholders at the national and local levels. At the national level, JoJ participates in several key networks such as the Disaster Emergency Response Secretariat, which is the emergency working group of USAID PL480 cooperating sponsors consisting of SC, CARE, and World Vision, and the Bangladesh Emergency Liaison Team (BELT) which is made up of representatives of the Save the Children Alliance. At the local level JoJ works very effectively with the GoB at the union *parishad*, *upazila*, and national levels. Government officials at all levels expressed their appreciation for the work that SC has done. SC also has a very effective working relationship with the CPP/BDRCS staff at all levels.

From the previous discussion it is obvious that SO3 has had a number of positive achievements over the past five years. The next section identifies some of the challenges that occurred in the implementation of SO3.

4.3 Program challenges

A major challenge facing the staff implementing SO3 was the severe staff and resource constraints that characterized the first three years of the project, due to the reprogramming of resources into higher priority activities. SO3 activities were hindered by budget cuts from the beginning. However, annual activity plans were virtually unchanged despite these budget constraints. Despite these challenges, a well-defined Detailed Implementation Plan (DIP) has been highly instrumental in guiding project implementation and organizing project activities on a priority basis. Because JoJ established efficient and effective office and logistics support and strong communication facilities in remote project offices, there was smooth project implementation. In addition, the project was able to expand its staff considerably (from four to 27) after the MTE and two successive cyclones. For this reason the SO3 project staff was able to achieve almost all of their targets.

Challenges to IR 3.1

One of the consequences of being under-staffed and under-resourced is that there were few opportunities for follow-up training for the UDMC members or the volunteers. Similarly the JoJ staff implementing SO3 did not have time to be able to track whether UDMC and CPP volunteers shared their knowledge with other community members.

A second challenge had to do with the sharing of risk and resource maps and action plans with communities located in unions where the maps and plans were drawn up. Most people in the communities did not know that these maps and plans existed. JoJ staff did try to share these maps at the ward level in some locations, but this was not a common practice across all unions.

In addition, most of the UDMC action plans were too general. To be more useful they needed much more context-specific details on how to respond to risks.

A third challenge facing the JoJ staff was that they had little control over the UDMC in terms of performance. In several unions the UDMC did not function well and were not accountable to all of their community members in implementing disaster plans.

A fourth challenge facing the SO3 staff was that SO3 did not promote disaster management interventions and activities directly at the community and household level. It primarily operated at the union level. The BCC activities it did carry out in targeted communities were not sufficiently intensive enough to bring about substantial community change in disaster preparedness. This should be a major focus in follow-up programs.

A fifth challenge facing the program revolved around adequate access to cyclone or evacuation shelters. It does little good to encourage people to go to shelters when they are not available. Currently only 15 percent of the population in the program area have access to one. Although the project did rehabilitate 25 cyclone shelters and one killa, a lot more could have been done. This should be a major focus in the program area.

A sixth challenge facing the program related to the limited linkages being established to local NGOs engaged in disaster preparedness activities. Based on field visits, the evaluation team found several organizations that were operating in the area that could represent good partners for strengthening community disaster preparedness planning.

Challenges to IR 3.2

As stated above, although JoJ staff has established good links with other organizations involved in disaster preparedness activities, more could be done with the active local NGO players working in the three districts. In addition it is still difficult for SO3 staff to participate in all of the disaster planning forums on a continuous basis due to staff time constraints.

A second challenge involves making sure that newly hired staff receive adequate emergency response training. Many of the new staff has not received the same training as those involved in the project from the beginning. Staff training should be an ongoing activity throughout the life of the program.

A third challenge facing the SO3 staff is that program targets are not adjusted when staff is pulled off to respond to emergencies. For example, the staff were engaged in two cyclones during the life of JoJ, and responded to flooding elsewhere in 2007. One of the consequences is that staff is stretched to the limit trying to make up the targets, making follow-up activities more difficult. Some consideration should be made to adjust the targeted activities if there are multiple disaster events, to ensure that the quality of the program does not suffer. Despite these constraints, the staff should be commended for doing an excellent job of responding to two cyclones while still meeting their targets.

Program design

Unfortunately, SO3 and the other SO activities of JoJ were not integrated, missing opportunities for a synergistic effect. SO3 staff did try to train SO2 staff in basic issues in disaster preparedness, but were not able to train CHVs that operated at the community level. Senior staff managing SO2 felt that the CHV were already overburdened doing the health-related tasks expected of them. Essentially, SO3 was designed to operate virtually independently from the rest of the program.

Moreover, the program did not promote disaster preparedness activities directly at the community or household level. This is understandable given the limited resources and staff available to implement SO3. However, since the other program activities (SO1 and SO2) were operating at the community and household level, opportunities' mainstreaming disaster preparedness activities at the community level were missed.

A third program design issue concerns the minimal attention given to shelter rehabilitation until the last two years of the project. Senior staff felt that this activity should not be a priority in the beginning of the project and very little was done on it. Given that only 15 percent of the population has access to a safe shelter during a cyclone, there is a disconnect between promoting disaster awareness and response, and having access to a shelter to act upon the new knowledge. Although there was a lack of resources in the project to provide shelters for a large number of people, more resources should be made available for shelter rehabilitation.

Targeting

In terms of geographical targeting, JoJ is working in one of the most disaster-prone regions in Bangladesh. The SO3 team developed risk and vulnerability criteria, allowing the project to differentiate the most vulnerable and moderately vulnerable unions in the program area. Eight additional vulnerable unions were added later in the project to ensure that the most vulnerable areas were targeted.

In terms of beneficiary targeting, SO3 targeted the UMDC and CPP as the main local institutions responsible for disaster preparedness. The indirect beneficiaries were the households at the community level. As stated earlier, the project did not actively engage the community or households in disaster planning.

Monitoring and evaluation

According to the results framework used for SO3, the IRs are primarily output and activity focused. Field staff member routinely collect information to feed into the reporting cycle geared to output achievements. Output indicators by definition do not measure behavioral or systemic change. As a result we do not have a measure for the behavioral changes or system changes at the community level brought about by the project.

Although an annual monitoring questionnaire is used to track changes in UMDC activities, it does not effectively capture lessons learned. In addition, the score card that is used by the SO3 staff does not effectively capture UMDC functionality. Furthermore the process of sharing and

utilizing monitoring data with project staff rarely lead to lessons learned being applied to program implementation. There appears to be a strong need for further monitoring and evaluation (M&E) training for project staff to ensure that M&E is used as a learning tool.

SO3 has incorporated several useful gender-disaggregated indicators at the output level, such as percent trained by gender of volunteers and percent of actively working members in UDMC by gender. However, the project did not systematically monitor the training process, outcome and utilization at the community level.

There is a need for a tool that captures what information is transferred from the CPP and UDMC volunteer to the community members. This would capture what types of information are more likely retained so follow up work can focus on critical information that is not being absorbed by the households. A second tool could be developed to be applied after a disaster to see what information is being used in practice during a disaster. In this way behavioral change can be captured.

4.4 Sustainability

Organizational sustainability

Because UDMC is the legitimate representative body mandated to prepare for and manage natural disasters, JoJ reactivating this body for potential long-term disaster management will lead to the presence of institutions that are sustainable. In addition, focusing on building capacity of CPP/BDRCS volunteers is also a sustainable approach since this group has been operating in the coastal region performing an early warning function since the 1970s. However, ensuring organizational sustainability will require continuous attention to the cooperation between CPP, BDRCS, UDMC, and other UDMC departments.

The effectiveness of the CPP/BDRCS early warning system has been negatively affected by lack of financial resources and equipment. There is still a significant shortage of early warning equipment available to CPP volunteers, reducing their effectiveness. Adequate allocation of resources for supporting early warning activities needs to be a GoB priority for this disaster prone region.

Program sustainability

More effort is needed to promote sustainable disaster preparedness at the household and community level. Although the UDMC and CPP/BDRCS have been reactivated and strengthened, there is still a need to have a coherent exit strategy that focuses on empowering communities to engage more proactively in disaster preparedness activities.

Building the capacity of households to do disaster preparedness planning, these plans can then be harmonized at the community level through the VDC¹⁹ to create a community plan. Community

¹⁹ Village development committees would be more inclusive and representative of the community than those being promoted through the water and sanitation component in SO2.

plans can then be rolled up into ward plans and union plans. Finally these plans can be consolidated at the *upazila* level, making it a truly bottom-up participatory approach to disaster planning.

To achieve program sustainability that engages households and communities more effectively, the program may need to focus more resources in a smaller geographical area. By doing so the program can focus on building resilient communities through a comprehensive approach that combines risk reduction (which is mainstreamed into each sector activity), early warning and disaster response (much of the work that JoJ is already doing) and livelihood recovery (work that builds on the lessons learned from the Cyclone Sidr response).

5. Program Processes

5.1 Partnership

Partnership has been a key principle in the design and implementation of JoJ. In addition to the four main partners, JoJ has relied on 13 local non-governmental organization (LNGO) partners to implement much of its program. JoJ's LNGO partners are:

Barisal District: SAINT-Bangladesh, Rural Development Organization, Chandradip Development Society, and Community Service Centre;

Bhola District: Grammen Jono Unnyan Sanstha, Deep Unnyan Society, Voluntary Organization of Social Development, Unnayan Shikha Karmosuchi, and Social Welfare Organization;

Patuakhali District: Social Development Agency (SDA), Village Development Organization (VDO), South Asia Partnership (SAP) Bangladesh, and SPEED Trust (which also works with JoJ in Barisal).

JoJ's implementation strategy combines capacity building of LNGOs' technical expertise with implementation by these LNGOs. Many of the LNGO partners have increased their capacity by working in JoJ. This has been brought about by a combination of the experience gained in implementation, in working with larger organizations, and through the training given by JoJ. In turn, the LNGOs have contributed their local knowledge and expertise to the program.

5.1.1 Program Achievements

At the beginning of the DAP, SC Bangladesh, the lead member, was a small organization that recognized it did not have the institutional capacity or range of expertise required to implement the program alone. The partners recruited by SC – HKI, NGO Forum, and BRCS/CPP – have brought strong technical expertise to JoJ beyond SC's initial organizational capacity. Implementation through LNGOs has facilitated wide program coverage and extended the reach of the program to remote, underserved areas. The partners have also benefited; for example, JoJ revitalized the CPP activities in Barisal district, which had largely ceased due to lack of funding.

The JoJ partnership allowed CPP to carry out its mandate to recruit volunteers and conduct community-level training in disaster early warning and response.

The relationship between the main partners has been largely characterized by a professional and collegial working relationship, shared information on planning and activities, good communication, and the ability to discuss and resolve problems together. Mechanisms for coordinated planning and frequent communication were instituted at the outset of the program, primarily through regular meetings at the sub-district, district, and division levels. These meetings have allowed discussion of work progress and issues in an open setting. In addition, the Quarterly Program Review Meetings (QPRM) with headquarters (HQ) and divisional staff were cited by senior staff as a valuable forum for critiques and problem solving at the management level. One test of a workable partnership is the partners' ability to honestly and openly discuss issues of importance to them; the acknowledgement of the value of these meetings by virtually all staff is an indicator that a good level of communication and sharing was maintained by the program. There have been no major conflicts between partners.

JoJ has sought to keep local government officials informed, and to some extent, involved in its activities where possible. JoJ has a Steering Committee composed of 22 stakeholder representatives, including high level government officials. The Steering Committee meets quarterly to review issues. SC developed a strong partnership with the MoHFW and integrated its MCHN activities with MoHFW clinical services and schedules to provide an array of services for women at the same time and place. HKI used government research institutions as technical resources and suppliers, and is forging linkages between government service providers and VMFs. NGO Forum brought ward members in as chairs of the village water and sanitation committees. SC strengthened government capacity in disaster preparedness and planning through support for UDMCs and supported greater interaction among government counterparts.

5.1.2 Program Challenges

Overall, relations with USAID and among partners and LNGOs appear to be good. Many staff commented that all parties conduct themselves in a professional manner even when differences arise. However, different structures, varying degrees of internal hierarchy, and attitudes have worked against program integration at the field level.

Structure

Creating organizational partnerships to achieve program objectives is a valuable approach for many reasons; in the case of JoJ it has allowed SC to expand the coverage, impact, and sustainability of its efforts to reduce food insecurity and vulnerability. Along with its benefits, partnership brings more challenges than does direct implementation, requiring extra effort in coordination and communication, and in appreciating other operational approaches. Partnerships can be hampered by miscommunication and slow decision-making, and different systems can create inefficiencies. In JoJ's case, multiple levels of partners have multiplied the challenges. While JoJ has achieved impact under all the SOs, it may have better realized its full potential for impact had there been more integrated activities supported by a shared management structure and common systems.

Partnership implies a certain degree of interdependence to achieve goals, and the recognition that no one organization can achieve the desired results alone. This does not mean that partners are by definition equal, only that they are different, and some aspects of partner relations may be quite unequal. The responsibilities and range of activities by SC, HKI, and NGO Forum are very different within JoJ, and are reflected in different levels of program resources and equipment. Unfortunately, this has created some perception of unequal status among partners, particularly among the field staff where the difference in resource levels are readily apparent.

The program design and contractual agreements set up a compartmentalized structure where each organization works towards its own targets but there is no joint ownership of program outcomes. Partners feel responsibility for and ownership of their component, but do not consider themselves accountable for the program as a whole. Many partner staff and the LNGOs they work with are aware of JoJ's goal and have a sense of how they are contributing toward it, but the implementing partners have largely worked in their separate programming niches.

The effect of this compartmentalized structure is that the JoJ program has operated more as separate sets of activities under each SO rather than as a complementary, coherent, integrated set of interventions. This is in large part due to the decision to have each partner assume responsibility for implementing a particular SO or set of activities. This may have been the correct decision at the beginning of the DAP, and is based on a sound premise that by combining skills and experience, a partnership could accomplish more than SC Bangladesh could have done alone at the time, given its size and resources. Over time, the reality of three distinctly different organizations carrying out activities based on their own institutional frameworks contributed to tubular programming and greatly hampered integration. The JoJ managers did make some changes following the MTE recommendations, such as increasing the number of common beneficiaries in SO 1 and SO 2 and ensuring that water and sanitation activities were supported in villages where both SO 1 and SO 2 were being implemented. The program also added an SC liaison position to coordinate with NGO Forum on WASH activities.

The JoJ Steering Committee is a large formal body. Meetings are brief and it is not a forum suited to addressing strategic program issues. SC has no control over the composition of the Steering Committee, but in future Multi Year Assistance Programs (MYAPs) it should consider establishing a smaller, internal steering committee of key program partners at the Country Representative and Program Manager level who can oversee strategy and address management issues that require attention at the national level.

Supervision

JoJ's partnership structure is one in which SC, HKI, and NGO Forum operate essentially as co-equal implementers. SC as the grant holder does not have a direct supervisory role over partners' field work, nor do SC division and district offices see the budgets and work plans of partners. For example, there is a SC staff member in Barisal designated to provide technical planning, coordination, and guidance for SO1. However, this is not an oversight role, and partners resist field input from SC as they feel they are competent to implement the activities – although SC is responsible to USAID for overall JoJ performance. No matter how good partner performance, this arrangement creates a contractual risk for SC.

JoJ has partners at multiple levels. At the highest level, there is SC's relationship with the USAID donor. At the next level, there is SC and its primary partners (HKI, NGO Forum, and BRCS/CPP). At the third level, there are the LNGO partners (who are partners of the lead member's partners). Among these layers, implementation strategies vary. For example, HKI implements and also manages LNGOs, who in turn implement activities. NGO Forum does not implement but is an umbrella organization for the LNGOs who carry out the water and sanitation activities. CPP is a direct implementer but relies on a volunteer force. Finally, supervisory structures of field activities and partners differ greatly. HKI and NGO Forum have centralized structures where field staff is managed by HQ Dhaka, whereas SC has senior managers at the division and district levels. In general the closer the supervisors are to the field, the better able they are to monitor program progress, support staff, and identify problems early. USAID observed that the multiple layers sometimes make it difficult to know who is implementing an activity, and may require going through an intermediary, such as HKI, to address an SO 1 issue with SC. While this was logical for the DAP, for the next MYAP, it is recommended that fewer partners be used and the layers reduced. Fewer partners, employing a common set of approaches and consistent supervisory approaches would improve efficiency, make responsibilities more transparent to external parties, and streamline implementation.

Different resource levels

There are very different levels of resources available to the three partners in terms of equipment and vehicles. SC, as the lead member and a direct implementer, has a large field staff with vehicles and other equipment. HKI is a partner but does not have a JoJ budget for vehicles, and is housed with SC in the field with limited office space and equipment. Since HKI is an international NGO, its staff considers it to be equal in standing to SC. The arrangement contributes to perceptions of unequal treatment in terms of equipment, office space, and salaries. However, HKI JoJ activities appear to receive all of their funding from the program budget and HKI does not bring independent financial resources to JoJ, and salaries are set according to internal organizational norms. NGO Forum has a different structure as an umbrella organization for a network of groups that focus on water and sanitation. It is also housed in SC field offices (except in Barisal) and has few field staff of its own, primarily working through LNGOs. As a national NGO body, its salaries are considerably lower than its partners, making it difficult for NGO Forum to retain staff.

Among field staff working in close quarters, the distribution of different levels of resources and salaries for what are perceived as the same jobs with the same level of responsibility is a sensitive point. Many partner field staff feel they have inadequate support for their logistic needs. This engenders some frustration and likely makes it more difficult to conduct field work. This is a budget matter that, in the future, should be better negotiated between partners with SC, followed by a communication about the rationale behind the distribution of resources to field staff.

The difference in resources contributes to a perception of hierarchy among partners that staff feel is picked up at the community level; staff feel that the community perceives the partner with more resources as more important. These feelings may have been reinforced when, after Cyclone Aila, many SO1 participants suffered extensive crop losses due to water logging. HKI

assessed beneficiary needs, which created expectations, but received assistance for only 150 out of 2,500 households from JoJ because most SO1 participants were not in the most affected areas.

All staff continues to carry out their responsibilities in a professional manner in spite of this. The different resource levels do not appear to be as much of an issue at the HQ level, though NGO Forum says it has requested budget increases, largely unsuccessfully, and feels this has affected its ability to ensure quality.

Working with Local Non Governmental Organizations (LNGOs)

While LNGOs have expanded the reach of JoJ, working with a large number of local partners of varying capacity has posed challenges. Stronger LNGOs are able to carry out work with little supervision or direction and bring the benefit of their experience to the work. However, they may also have multiple projects to manage and so do not devote full attention to JoJ; in addition they may be more resistant to input from JoJ program management. Smaller LNGOs may have capacity in only a few areas and very limited equipment and resources. Many have no additional capacity to independently organize meetings and workshops that are often key to organizational and programmatic learning.

JoJ partners stated that they could not always find LNGOs that fulfilled all of the selection criteria and so had to make some compromises with regard to the quality of partners that were accepted. Some LNGOs were later found to have misrepresented their capacity or experience. For example, according to NGO Forum in Barisal, 20 to 30 percent of its 13 local partners are not satisfactory because they have no extra capacity to implement the JoJ work without NGO Forum support. Partners found that not all of the LNGO field staff hired for the program has the appropriate background to carry out JoJ activities, which can hinder program performance. This underscores the need for careful vetting and monitoring, and argues for limiting the number and type of LNGO partners.

NGO Forum has had to fill gaps in an LNGO partner's work at times to ensure that the work gets done. This was most evident during the emergency response to Cyclone Sidr. Some quality issues arose with implementation of water and sanitation activities by NGO Forum's LNGO partners and the oversight and monitoring provided by NGO Forum. NGO Forum addressed the issues after they were brought to its attention by JoJ managers. Even though NGO Forum added one extension worker per union after the MTE, it found that this does not provide enough coverage.

LNGOs often feel that they have little negotiating power when an international NGO seeks a partnership, and may accept what is offered rather than lose the opportunity. Thus the resources and the ability to implement activities may vary significantly from one program to another, which in turn may result in one program receiving greater attention from the LNGO than another. The inherent inequity in resources between a large international NGO and a LNGO requires that an open and honest dialogue take place at the outset of partnership negotiations. It is not the purpose of the better-endowed partner to support the other, but it is in the interests of both parties to ensure that both parties are adequately equipped to achieve the results they mutually seek. From their side, LNGOs pointed out that some of the program arrangements that made implementation difficult but over which they felt they should not or could not negotiate to

change. For example, in JoJ, LNGOs pointed out that while the provision of equipment to LNGOs was not part of the JoJ agreement, the program targets were not adjusted for those LNGOs working in very remote areas even though the time and effort involved in reaching the areas was greater.

Differences in partners' organizational procedures and the consequent absence of a single program-wide system created some difficulties for LNGOs. For example, HKI gives a three-month advance based on a submitted budget while NGO Forum funds LNGO partner activities on a monthly reimbursement basis. Some of the smaller LNGOs have found it hard to work on a reimbursement basis. NGO Forum initially did not provide any overhead costs. HKI provided a small amount of overhead by HKI, though it was not based on the budget. This led to a difference in the priority given to HKI and NGO Forum needs and how their staff was received. To JoJ's credit, this was recognized and corrected after the MTE.

5.2 Gender strategy

5.2.1 Program Achievements

JoJ has assisted its female beneficiaries to attain a greater measure of status and decision-making responsibility within their households through sensitization and selected activities. For example, in SO1, there has been some empowerment benefit for women due to the income earned from their home vegetable gardens. Female beneficiaries report that they have gained a slight improvement in household status and better relationships with their husbands because of the extra income they are earning, which is used for household needs and the children's education. In addition, female beneficiaries like the group marketing scheme because they can sell despite limited mobility, and because the money goes directly to them.

In SO2, according to the endline survey, there was a significant increase in awareness among husbands, mothers-in-law, and mothers about appropriate practices during pregnancy. Information on taking rest shows the same pattern, with substantial increases from the baseline to the end-line. The awareness of husbands and mothers-in-law about appropriate pregnancy practices has also improved from the baseline. Female JoJ staff report that now some husbands are sharing responsibilities for child care and are better informed about balanced diets for children. Some husbands bring the child to the growth monitoring session when the wife cannot attend.

An important contributor to this change was the CHV. CHVs were able to sensitize male household members to the importance of antenatal care, so that pregnant women were permitted to go outside the house for antenatal care.

In places where women have had little community-wide influence CHVs, are now respected female community members because of the services they provide under JoJ. CHVs and male JoJ field staff have facilitated greater freedom of movement by women in the community to attend courtyard sessions, and there is greater tolerance for women to speak to men (associated with JoJ) who are not related to them. Women are able to receive health counseling from male as well as women staff.

In SO3, there has been a commendable effort by CPP to recruit more female volunteers so that the male to female ratio is equal. This is an important advantage to reaching women with early warning and disaster preparedness information, especially women who may be isolated in the house if their husbands are away. It is customary in Bangladesh that women, children and the most vulnerable get priority admission to cyclone shelters, and JoJ has continued to support this approach.

With regard to program staff, JoJ has made efforts to increase the numbers of female staff at the field level. SC has made the greatest progress in this regard: it has recruited more female senior management as well as field staff, instituted gender-friendly policies for female staff that takes their needs for safe travel arrangements into account, has promoted female field staff within the organization. SC's female field staff perceives that they have opportunities to advance in the organization. Other positive advances in gender equity among JoJ staff are reflected in NGO Forum's staffing, where of 110 JoJ staff, 30 percent are women. A number of the LNGOs interviewed have a number of female staff. Among the LNGO partners, two organizations are female-headed.

5.2.2 Program Challenges

JoJ had no articulated gender strategy at the beginning of the program, and much of what has been achieved has been through the process of addressing the needs of the female beneficiaries.

The achievements in gender equity in JoJ have been limited in some instances. In SO1, the income earned by women from the garden activities is small – Tk. 200 per month according to the estimates of several female beneficiaries – and this confers a small empowerment benefit. When the amount of money earned is small, the women decide how to use it, but men still make the decisions if there is a lot of money involved. Women still need the permission of their husbands to go outside of the house for child care.

JoJ has made impressive gains in ANC practices and ANC access for pregnant women under SO 2. Overall there has been a very large increase in the percentage of mothers receiving antenatal checkups from the baseline to the end-line, and a substantial increase in awareness of appropriate practices by mothers, husbands, and mothers-in-law. For example, in the endline survey, 88.4 percent of women currently enrolled in the program (the U2 sample) received three or more antenatal checkups. This falls to 70.2 percent among the graduated beneficiaries (GB), though still impressive considering that the baseline percent was 53 percent. The endline survey shows that the percentage of mothers who are aware that they should eat more food during pregnancy increased from 77 percent in the baseline to over 90 percent in the end-line (specifically, to 96 percent in U2 and 93 percent in GB). The actual pattern of food consumption during pregnancy also increased, from 18 percent in the baseline to over 60 percent in the end-line U2 sample.

However, endline data suggests that maintaining some of these gains may be a challenge. According to the endline survey, the percentage of women eating more food during pregnancy in the GB sample, while higher than the baseline, is only 38 percent, or about 60 percent of the U2 sample. Information on taking rest shows the same pattern, with substantial increases from the baseline to the end-line, but the percentage of mothers taking more rest in the GB sample is much lower than in the U2 sample. While the reported awareness of husbands and mothers-in-

law about appropriate pregnancy practices has also improved from the baseline, the percentages reporting the appropriate responses (antenatal visits, more food, more rest) are much higher in the U2 sample than the GB sample.²⁰ Some decline in positive behaviors once program participation concludes is to be expected. However, the data suggests that graduated beneficiaries and their families need to continue receiving messages about the importance of good ANC practices to help ensure sustained changes in the knowledge and attitudes within households that support better care for pregnant women.

In the water and sanitation activities under SO 2, all the VDCs have female members, which is an accomplishment for JoJ. It was observed that some female VDC members were not actively contributing to committee discussions, underscoring the need to ensure that VDCs choose capable female members and that the program supports their active participation.

In SO3, JoJ successfully recruited a number of female staff for cyclone response activities, and ensured that they were able to work securely in a risky environment.

Recruiting adequate numbers of female staff is recognized as a challenge by all the partners. SC has recruited women for JoJ and has especially tried to recruit women for senior management. However, senior female staff is mostly posted in Dhaka and prefer Dhaka because there are more career opportunities there. The majority of the HKI staff are male, while the program works with female members of the household. Currently all three of the MCHN field coordinators are male.

6. Program Management

6.1 General management

6.1.1 Program Achievements

Overall, JoJ appears to have been well managed. Program implementation has gone relatively smoothly despite the different structures, as evidenced by the achievement of program targets and good relations with local government counterparts.

JoJ developed software for an integrated information management system for its Maternal and Child Aid Program (McAid). McAid is a relational database management system that tracks registration of eligible beneficiaries, and services received by those beneficiaries, on an individual basis. All program beneficiaries are registered through this system, which registers data on laptop computers and personal digital assistants (PDAs) in the field. MCHN service records for individual beneficiaries along with commodity storage and transaction records are accounted for. McAid allows the tracking of individual level data so that cases needing specific attention can be followed up on by Field Officers, and can aggregate data to assist program managers to make strategic decisions. The McAid system became fully operational in early 2009.

²⁰ Jibon o Jibika Program Endline Survey Report, TANGO International, Sept. 2009, P. 45, Tables 7.23 – 7.26.

New management systems such as McAid have greatly increased commodity accountability and monitoring, and have good potential to support other program interventions. The integration of MCHN activities has allowed increased efficiencies and permitted tracking of ration distributions, nutritional status, and ANC coverage of a large group of beneficiaries. Incorporating the MCHN program into McAid took a long time to develop due to programming issues and initial MCHN staff resistance to using PDAs. Though the benefit is being realized only at the end of the program, it is expected that the support that JoJ has given to the development of McAid will greatly benefit future programs.

Program management has worked to involve field staff in the QPRM and annual planning, and to incorporate the opinions of field staff and partners. Staff views these as valuable venues for coordination, problem resolution, and information. The cyclones disrupted regular activities and created a lot of pressure to catch up. As a result, the QPRM planning and coordination meetings ceased to be held on a regular basis, which created an information gap. The QPRMs are valuable venues for senior staff and should be reinstated on a regular basis.

SC staff in particular expressed their appreciation of its strong human resources (HR) department, which provides good support to the field and visits field offices frequently. SC has an annual process to nominate and recognize three “best performers,” which is an important motivator for staff. HR has instituted good communication policies, such as a directive to ensure that all staff receives organizational communications – including those who do not have email access. HR initiated a special recognition for Cyclone Sidr staff, and the country director came personally to Barisal to present an appreciation letter to staff, a gesture that was much appreciated. As mentioned, there are gender-sensitive procedures regarding travel of female field staff, office conduct towards women, and prompt action on complaints by female staff. These procedures have helped create a positive working environment, and staff turnover is very low (around seven to eight percent annually); the procedures have likely helped SC to recruit and retain many new staff experienced in Title II programming and made it possible to implement JoJ successfully. During Cyclone Sidr SC also recognized that the program manager job in Barisal had grown too large for one person, and needed additional support.

The senior management and technical staff for the JoJ partners are based in Dhaka. Field offices receive good support at the district level from senior management, though it was noted that senior staff need to visit the field offices in Bhola and Patuakhali more frequently and for longer periods of time. Such visits are important for staff morale and to ensure that HQ staff are fully apprised of specific issues in the field.

6.1.2 Program Challenges

As noted in the discussion on partnership, the presence of three different organizational structures created some obstacles to integration, timely information sharing, and efficiency. Efficient program management in the form of unified systems and structures will become more important as future programs expand to more remote areas, which carry higher implementation costs. Due to the multi-partner structure and limited funds, HKI and NGO Forum do not have divisional or district-level support functions and do not use those of SC; instead they rely on Dhaka for financial and other services. Some important information flows upward to Dhaka before it goes laterally to field, and program-wide information from all partners is not available

to everyone. The parallel systems also have their own staff structures, resulting in partner organizations having field officers and extension workers doing similar jobs. Working in more remote areas in the future will increase program management costs, and make the need to find efficient management structures more critical.

A number of stakeholders found that coordination is not adequate. For example, in Bhola, partner staff pointed out that there is no formal mechanism to introduce staff working under different SOs in the same union to one another. It was suggested that SC bring together all JoJ staff and partners for a comprehensive orientation to their activities in each union. In other cases opportunities for coordination were overlooked: for example, CPP volunteers are willing to assist with disaster relief activities but only a few were asked to participate in a limited manner in the Cyclone Sidr response. There is no integration of the SO3 volunteers with SO1 or SO2 activities. Furthermore, SC and LNGOs have no coordination mechanism; if SC field staff identifies a problem with an LNGO, they cannot give feedback directly to LNGO field staff – they must communicate it to the SC office, which communicates it to the partner. While unfettered feedback in a situation where SC does not have immediate oversight responsibilities might be counterproductive, it is an example of the inefficiency caused by multiple partners and organizational layers.

While relations between partners and LNGOs are good, the program design has allowed multiple parallel management structures that seldom interact on a formal level, extending from Dhaka HQ to field staff. While field and HQ relations are cordial, staff noted that there are few formal mechanisms for coordination in the field.

In addition, some LNGOs noted that because of the multi-tiered system they sometimes have to wait for decisions from their JoJ partner, which slows down planning and implementation. NGO Forum pays on a reimbursement basis; however, their payment system is slow and staff salaries are sometimes delayed, causing problems for the LNGO. As yet, SC district offices do not have a separate budget, but give a fund request to the district office based on a monthly plan. This is planned for the future and should be instituted in future programs.

New non-program staff is not always given a comprehensive orientation to the entire program they are working for. For example, a new finance person in one of the field offices was given training related to his job responsibilities but not oriented to the JoJ program; this learning was to be done on-the-job. This is a common mistake made in bringing on program support staff. However, providing a basic orientation to incoming staff would increase knowledge of the program, save the staff person time in collecting information, and thus enable new staff to be more efficient in his or her work. With regard to technical training, LNGO partners in particular found the training provided under JoJ to be insufficient. Training in SO1 in particular was in found to be inadequate in duration, content, and methodology. JoJ did provide technical training for partner staff geared towards those with a basic understanding of their fields, but it was limited in duration and few refresher courses or trainings with new content were provided over the course of the program.

In terms of organizational learning, capacity building also requires mechanisms for partners to share experiences and provide feedback so that learning and reflection can be done in a systematic way. An example of this under JoJ was the lessons learned workshop conducted to

capture experience and learning from the Cyclone Sidr response. JoJ is to be commended for its lessons learned review of the Cyclone Sidr experience and the contribution that made to organizational learning. Such efforts should continue in the future. A similar workshop should be held for the Cyclone Aila response and take place before staff departs, so that all can benefit from the experience of mutual learning and reflection. However, the absence of QPRMs after Cyclone Sidr has created a gap in information flow and hampered ability to solve some operational problems (e.g. resolution of friction between SC and HKI over use of HKI LNCO staff for MCHN implementation).

6.2 Monitoring and Evaluation

6.2.1 Program Achievements

SC has successfully established a comprehensive system for collecting data and information sharing. After the MTE, SC combined its M&E, MIS, and commodity monitoring, which helped to establish the McAid system and create an integrated approach. The system became fully functional in January 2009. It is being used very effectively in data collection and management for SO2 activities; particularly nutritional status and immunization-related information for children U2 and ANC services. McAid provides nutrition information at the individual level, which JoJ did not have before. It has speeded up the former manual compilation of this data for generating monthly performance report and service recipient list for commodity distribution. The advantage of McAid is that statistics on the MCHN activities can be monitored from the office. This is a great benefit, as one can see the performance of one individual child out of 150,000 children, over the course of the program.

For example, as of June 2009, JoJ is using McAid to follow up on individual cases of malnutrition by alerting extension workers to follow up with the individual CHVs who provide services to the mothers. JoJ is also using the individual data to identify cases of positive and negative deviance. In addition, JoJ has introduced a GIS system to map levels of malnutrition and to ensure sampling was done correctly for the endline survey. GIS is also using for mapping shelter centers, village model farms and installed water points.

JoJ evaluations have been carried out in a timely manner and partners have worked to apply the recommendations from the MTE. Special studies have been carried out when needed; for example, SC conducted an evaluation to help guide disaster risk-reduction activities and modify the SO3 strategy based on what did and didn't work well. Part of its purpose was to provide information to design Cyclone Sidr recovery activities, as well as to provide information to design future programs, including pilots with the ultra-poor. M&E data has been used for monitoring and management decisions for all SOs. For example, JoJ doubled the number of UDMCs trained in 2007 after seeing data that indicated coverage was inadequate. It also collaborated with BRAC and the Smiling Sun clinic to ensure the availability of ANC services, which helped to increase ANC coverage from 52 percent to 82 percent. The program took action to strengthen NGO Forum's monitoring system after the MTE and again after the Cyclone Sidr response.

6.2.2 Program Challenges

Like other aspects of JoJ, the M&E is characterized by different organizational structures and systems. At the program level, JoJ conducted baseline and endline surveys, and special studies such as the gender study and the June 2008 nutrition survey, along with the MTE. Under SO1, HKI Dhaka staff conducts semi-annual surveys and HKI field staff does monthly monitoring. SO2 monitors MCHN and commodities with the McAid system, and tracks water and sanitation activities through an annual participatory survey with VDCs by NGO Forum. In SO3, there is annual monitoring and a Score Card exercise to monitor UDMC performance action plans, maps, and the number of trained volunteers. Each JoJ partner has its own M&E system and though SC has developed some very good M&E systems, they are not yet being used by partners or local NGOs, with the limited exception of an MCHN pilot monitoring function through HKI.

In the current system, the M&E data provide copious information on problems but do not adequately explain their causes. Previously, when the data was compiled manually, each field officer noted why a union was performing well or not; the district and division monthly reports collected some data and produced an analysis with causal explanations. This was discontinued after McAid was instituted. The system should find a way to incorporate qualitative information to supplement and help explain the quantitative data. This issue has been raised with the M&E people, who are working on how to incorporate qualitative feedback in the future. In addition, while a lot of data is available, quantitative, and qualitative information needs to be analyzed and put in a summary form that is useful to senior managers, who do not have the time to sort through and interpret large amounts of quantitative data. Currently, it is not clear that all the information generated is analyzed and used. This is not uncommon with new M&E systems, and achieving a balance between what is desirable to know and what is necessary to know to implement the program is an issue that JoJ staff and future programs will need to work out. Finally, with the different systems in use and the large amounts of information generated, it is not clear how issues identified by one partner about another partner's activities are communicated, and whether or not such findings trigger follow-up actions. An example of this is the June 2009 Nutrition Survey by HKI, which indicated that 43 percent of children under two had suffered diarrheal episodes in the two weeks previous to the survey. Follow-up for this information would be under the purview of SC, which implements SO 2. Information is shared, it is up to the responsible partner to take action, but what is done, and how this is communicated to the original data collector to close the information loop does not appear to be formalized in any way.

There have been some oversights in the M&E systems of JoJ. JoJ did not include key indicators on SO3 in the baseline. Consequently, the range of indicators necessary to measure these objectives was not built into the M&E system from the beginning; for example, SO3 has all output indicators and no effect level indicators, which has made it more difficult to assess long-term changes in systems and behaviors. The section on SO 3 contains some suggestions for indicators that can be used in future MYAPs. In SO 1, HKI used random sampling for the monitoring surveys it conducts every six months, but did not use a statistical sampling method, so the information sets are not directly comparable.

In the near term, it will be critical for JoJ to strengthen the capacity of NGO Forum and HKI to fully develop and implement their exit strategies. For example, the monitoring and evaluation

system of HKI does not address steps related to their exit strategies, which limits the ability of HKI and its partners to track their progress.

6.3 Commodity Management

SC Bangladesh was awarded a grant by USAID for the distribution of an estimated quantity of 27,480 metric tons (MTs) of Title II food commodities consisting of wheat, yellow split peas, and vegetable oil to be programmed through JoJ. In addition, a quantity of 93,220 MTs of wheat has been planned under the monetization program. The grant covers the period from October 1, 2004 to May 31, 2010.

6.3.1 Program Achievements

Management of the Program

JoJ established a commodity management team that is headed by a program manager stationed at SC headquarters in Dhaka, while the field team is headed by a deputy manager stationed at the impact area office in Barisal. There are 32 field officers who are primarily responsible for distribution and 11 *upazila* commodity point persons who track records, update the database, and manage logistics. Warehouse in-charges are responsible for warehouse management and supported by assistant warehouse keepers. Six commodity monitors check inventory, monitor distributions, and conduct end-use monitoring. A Management Information Systems (MIS) unit has also been established within the commodity management unit to manage information related to registration, coverage, distribution, warehouse inventory, commodity loss, and nutritional status of children. A manager responsible for MIS based at the headquarters in Dhaka develops software, maintains the database, and facilitates the registration process.

The commodity management of SC is staff heavy. A total of 55 staff members work for commodity management directly, and an additional four MIS staff, six M&E staff, and 11 *upazila* point persons assist them in data management. It was observed that a large number of field staff is underutilized. While they are busy the first few weeks of every month, after that they are not fully occupied, suggesting that the efficiency of the unit could be improved.

SC-BD has invested considerable resources to design the McAid commodity management software. This software has been introduced into the Bangladesh program and has proved to be an effective tool in commodity management, allowing greater efficiencies in the management of commodities and in reporting. It is hoped that not only SC Bangladesh but other country offices managing Title II food commodities will continue to use this software for the efficient management of food distribution programs.

Commodity Summary

Against a targeted quantity of 27,480 MTs of food commodities planned for distribution by JoJ over the life of the project, a quantity of 21,748 MTs of food commodities has been distributed to the targeted population.

Table 4 is a summary of commodities for distribution during the LOA of JoJ. The balance of quantities being held at the warehouses has been planned for distribution during October 2009.

Table 6: Summary of Commodity Receipts and Distribution (metric tons)

Item #	Description	Wheat	Yellow split pea	Vegetable oil
1	Total targeted quantities as per AER	16,688.000	2,521.000	2,539.000
2	Quantities as per B/Ls	16,619.917	2,531.750	2,529.907
3	Short / excess landed cargo	19.158	-	0.301
4	LESS: marine losses	163.296	2.780	0.160
5	Total quantity available for distribution	16,437.463	2,528.970	2,529.446
6	LESS: qty. distributed to beneficiaries	15,844.061	2,445.875	2,447.116
7	LESS: transit and internal losses	0.596	0.500	0.132
8	LESS: loans to other agencies	-	-	-
9	Total reductions from inventory	15,844.657	2,446.375	2,447.248
10	Balance available at warehouses	592.806	82.595	82.198

Commodity Logistics

Commodities earmarked for the program first arrive at the port of Chittagong, where they undergo surveys (hatch, ex-tackle, and shed surveys) conducted daily. All sound commodities are then transported to the eight warehouses located in Barisal, Bhola and Patuakhali districts by land transport and by boat.

Commodities from the eight warehouses are then transported to the 337 distribution points by truck and at times, by boat.

Commodity Distribution

Phase-I – Preparation and approvals: JoJ has a rather long process for commodity distribution. Detailed below is the series of steps taken:

- 1) Based on beneficiary attendance at ANC and GMP sessions, a list is drawn up by the MCHN staff.
- 2) Recipients are given a nutrition card after they are registered. Eligibility for food rations is ensured by cross-checking the data already entered in McAid software against the attendance at GMP and ANC sessions.

- 3) This list is used to prepare a commodity distribution plan for distribution at the *upazila* level, which is sent to the district. The list is updated and generated through the McAid system but the commodity distribution plan is done manually.
- 4) The district team leader approves this list, which is sent to the impact area office at Barisal.
- 5) The deputy program manager of the SC commodity unit compiles this list, which is then sent to the impact area manager for approval.
- 6) The impact area manager then sends this plan to the Dhaka office of SC.
- 7) At the SC/HQ level, based on the information in the distribution plan, a delivery plan is prepared (containing information similar to the distribution plan), which is approved by the commodity manager/DAP manager.
- 8) Based on the delivery plan, a dispatch authorization memo (DAM) is produced and approved in Dhaka by the commodity manager. This is then sent directly to the warehouses.
- 9) Based on the DAM, the warehouse manager issues commodities to different distribution points through waybills which are prepared manually.

Phase-II – Distributions:

- 1) Each distribution point has been equipped with a weighing scale. Anyone can weigh out the total quantity of commodities given to beneficiaries at the time of distribution, which supports a transparent process.
- 2) The distributions are organized based on EPI centers, and thus the recipients come in batches to take their rations.
- 3) A complaint box has also been kept in front of each distribution point, where recipients may submit grievances, complaints, and/or concerns. There is also a banner prominently displaying the size of the ration the beneficiary is supposed to receive.
- 4) JoJ has instituted a mechanism whereby all complaints are reviewed. Feedback is provided and/or action taken to the communities.
- 5) JoJ staff also conducts post-distribution monitoring on a random basis.

SC Bangladesh has done an excellent job managing a large quantity of food commodities, considering that this is their first experience in managing Title II food commodities and the complexities of receiving, storing, and transporting commodities to various distribution points. All these processes have been handled efficiently.

There was a break in the pipeline (for yellow split pea and vegetable oil) during September 2008 that continued until February 2009. SC did a good job in remedying this by bringing food from the emergency program to distribute to the most vulnerable MCHN beneficiaries. SC also

distributed a higher quantity of wheat (5 kg instead of 3.5 kg per month) to compensate for the pea and vegetable oil.

The distributions were well managed, as they were done in batches. The CHVs notified the communities in advance about the distribution dates and times and hence, the communities did not have to wait for long to get their rations. The distribution points were also suitably located so that the recipients did not have to travel a long distance.

The warehouses were found to be clean, neatly painted and well maintained. All necessary equipment (e.g. weighing scales, fire extinguishers, etc.) were in place, commodities were neatly stacked, and stack cards were maintained and updated on a regular basis. Fumigations were also conducted on a regular basis and there were no signs of leakage and/or infestation.

Choice of commodities:

Beneficiaries' preferences also should be taken into consideration in the selection of commodities, e.g., a preference or custom of eating wheat-based *versus* rice-based foods. According to the JoJ *Report on Analysis of the Use of Food Ration in the JoJ Programme*, oil is the most preferred commodity. It is perceived as pure because it is of foreign origin, and thought to be nutritious for babies and children. Most of the respondents surveyed for the report on the use of food rations state that wheat is the second most preferred item because they can use it to make bread to have as breakfast. Split peas is the least preferred item among the ration commodities for various perceived reasons: i.e., people are used to eating *Mosur Dal* or locally produced pulse; it takes too much time to boil; it tastes sweet; it is less nutritious; it causes gastric problems; it causes indigestion in children; it "makes dull", or "this is for cows". Conversely, all respondents mentioned that they use split peas to make various types of curry, and that they like the taste. Depending on the number of family members, ½ kg of peas can serve a poor family for two to four days and a well-off family one to two days. Very few mothers mentioned using the split peas for making *Khichuri* and instead make a mixed powder of fried wheat, fried peas, oil, and sugar for their children.

The preference of food items in the ration among the respondents of a well-off group in Bhola reportedly changes with the price of the commodity. When oil is expensive they preferred oil, but when wheat prices rose they changed their preference to wheat. All the respondents stated that they consume all the ration items and never sell any of it. A very few well-off respondents mentioned occasional donations of wheat and peas to poor neighbors.

Survey respondents did not directly talk about the nutritional aspects of the ration, but expressed its benefits in other ways. Poor people mentioned that in absence of any food in the house they can make bread out of wheat and cook peas with oil as curry; instead of being hungry they have some food which gives them energy, and for mothers, increases the amount of breast milk.²¹

²¹ Begum, Dr. Hashina, *Report on Analysis of the Use of Food Ration in the JoJ Programme*, April 2009.

Commodity Losses

The losses of distributed commodities are very low (0.15 percent), and well within the acceptable limit. The table below summarizes commodity losses for JoJ. Although there were ocean losses, the Government of Bangladesh monetizes commodities based on the bill of lading and thus there is no effect on SC for the ocean losses for monetized commodities.

Table 7: Commodity Loss Summary

FY	Amount purchased	Ocean losses	Inland losses	Amount received in country	Percent loss ²²
Monetized Commodities					
FY-05	16460.00	+47.82	0.0	16507.82	+0.29%
FY-06	19610.00	-162.96	0.0	19447.036	-0.83%
FY-07	19460.00	+3.678	0.0	19463.678	+0.018%
FY-08	8000.00	+2.355	0.0	8002.355	+0.029%
FY-09	16260.00	+1.709	0.0	16261.709	+0.011%
Distributed Commodities					
FY-05	4042.041	+7.0433	-1.1841	4047.9002	+0.15%
FY-06	4561.151	-0.5851	-16.2673	4544.2986	-0.37%
FY-07	5260.700	-11.1152	+2.4653	5252.0501	-0.16%
FY-08	5758.290	-159.6506	-3.3225	5595.3169	-2.83%
FY-09	2059.392	-1.9283	-1.1498	2056.3139	-0.15%
Grand Total	21681.574	166.2359	19.4584	21495.8797	

6.3.2. Program Challenges

The planning and approval process detailed above under *Commodity Distribution* is lengthy, involving many steps. SC should consider shortening the process of registration and the preparation and final approval of the two plans to be approved by the impact area office, i.e., the distribution plan and the delivery plan, by merging these two forms. This will capacitate SC field staff as well. The DAM should also be approved at the impact area level.

At present, the warehouse manager is the only person who holds keys to the warehouses. This procedure is inadequate and could compromise the safety and security of the commodities. As an additional control mechanism, it is suggested that two locks be put on the doors of each warehouse, with two different persons holding keys for only one of the locks. One of these persons could be the warehouse manager while the second could be the assistant warehouse manager or any other senior warehouse staff. This procedure will require both persons to be present at the time of opening and closing of the warehouse each day.

²² Percent loss is the percent variance from the amount purchased.

As an improvement upon the current procedures to conduct end-use monitoring, SC should consider modifying the current format to include (a) an acknowledgement from the beneficiary verifying the actual quantity and quality of food commodities received, and (b) an area for the beneficiary to sign this form.

Ration Size

SC provided an incentive ration consisting of 3 kgs of wheat, .5 kg of yellow split pea and .5 kg of vegetable oil distributed to each participant monthly. All participants who receive antenatal checks or growth monitoring, regardless of their economic status, receive the ration. There are many considerations that have to be made by SC-BD in the future to determine ration size:

- a. What are the coping mechanisms of the target group?
- b. Is there an emergency situation? If the beneficiaries have been relocated or uprooted from their home base and do not have any recourse to food or shelter, then the ration scale should be the full one based on a daily intake of 2,100 kilocalories (kcal) per person per day (pppd).
- c. In drought or temporary situations, there is a need to factor in coping mechanisms beneficiaries may employ. In such cases it may be warranted to reduce the rations to 70 or 80 percent of the daily kcal intake.
- d. Again, depending on the nutritional status, which has also to be taken into consideration, blended foods, beans, and oil rations may be increased.
- e. As sugar and salt are not normally provided, there could be a reasonable amount of bartering that could be taking place, which would reduce the intake of commodities by the beneficiaries. Consequently, even in a normal situation, SC may at times want to consider providing a full ration of 2100 kcal pppd, and so, if they barter a certain quantity, they can still be able to get about 70 to 80 percent of their daily needs.

6.4 Environmental Compliance and Monitoring

6.4.1 Program Achievements

The Initial Environmental Examination (IEE) was completed correctly and in a satisfactory manner, and updated for the Char Fasson project. The Environmental Status Report for JoJ updated in August 2008, determined 20 activities as *categorical exclusions*, 16 activities as *negative determinations* and three activities as *negative determinations with conditions*. The three latter activities are:

- Rehabilitate nonfunctioning safe water sources and install new water points;
- Implement demand-driven sanitation programs, and
- Rehabilitate local evacuation structures.

The conditions to address activities that carried negative determinations were adequately met by the program. During its field visits, the evaluation team observed that SC has taken adequate measures to meet the conditions highlighted in the Environmental Screening Form (ESF). However, the assumption of installing new tubewells at a depth of 900 to 1000 feet to prevent arsenic contamination is not always correct. Also, there is a good potential for deep tubewells to be contaminated with bacteria and zooplankton, as discussed under SO 2.

Another environmental issue associated with JoJ activities has been identified that was not covered by the IEE. The issue was the fumigation of warehouses. This was conducted by a certified agency using chemicals deemed acceptable within US government guidelines. The program dealt with the issue appropriately, following US government guidelines.

6.4.2. Program Challenges

Although JoJ updates the IEE every year during submission of the Pipeline and Resource Estimate Proposal, it lacks proper documentation of the efforts that it made in the field. In addition, there is a lack of monitoring visits to review different environmental parameters for different activities that may cause negative environmental impacts.

7. Recommendations for Future Programming

7.1 Recommendations for SO 1

SO1 Recommendation 1 (SO1 R1): To enhance the food security of the most food insecure households; link all sector-specific strategies to all target areas.

It is recommended that future programs use an integrated approach, and that a common group of beneficiaries receive program support to improve food access and utilization. Quantitative and qualitative findings show that JoJ almost achieved its nutritional goals in the 70 program unions in which SO1 and SO2 strategies targeted a common group of beneficiaries, while the nutritional gain in non-SO1 program unions is minimal. These results show that in southern Bangladesh, issues related to food utilization and food access need to be addressed simultaneously to effectively improve food security of the most vulnerable households

SO1 R2: Target a greater proportion of chronically food-insecure households with an expanded menu of intervention options.

A livelihood approach that integrates interventions from different sectors (agriculture, health, nutrition, infrastructure, economic development, safety net, etc.) based on the needs of the households will allow the program to target a greater proportion of chronically food-insecure households. A significant number of chronically-food insecure households in JoJ target areas did

not participate in the program because they did not meet very specific participation criteria. Access to food is critical to these households; hence a livelihood approach, rather than a sectoral approach, can more effectively address their needs. The valuable experience gained by SC, HKI, NGO Forum, and partner organizations in working with chronically food-insecure households in Char Fasson should be used when designing the interventions.

SO1 R3: Redesign the VMF model to shift focus from technology transfer to building knowledge systems based on problem solving (rather than information transfer).

The current program model requires establishing a model farm that cannot be replicated by most of the target households. It also poses enormous challenges to select the right individual as the lead farmer based on that person's skills, interest, and genuine motivation to help others, rather than on his or her physical assets. The sustainability of VMFs as community-based technical advisers and input vendors is questionable. Moreover, increasing the complexity not only of the technology but also of the life situation of poor rural households in remote areas demands new skills. With the help of these skills, rural women and men can acquire a better insight into the network of problems and recognize the alternative solutions available. Hence a shift of focus from technology transfer to the building of knowledge systems based on problem solving rather than information transfer²³ is necessary.

In the future, implementing agencies may consider using elements of the “farmer field school” model to redesign the VMF model based on the principles of action learning methodologies and participatory research. Instead of investing in one farmer to support a large number of households, developing the capacity of small group leaders to facilitate action learning and participatory research has greater potential to improve the critical thinking of the beneficiaries and bring new ideas to the community. The farmer field school model has been used successfully in Bangladesh and elsewhere to help rural women learn about vegetable crop management.

SO1 R4: Continue to develop interventions that better integrate with the market.

Even though the VMFs live within the village, HFP households interact with the market more frequently than with the VMF because people go to market regularly to buy and to sell. Markets are also common social gathering places for men. The most common source of agriculture-related information and technical advice is the fertilizer and pesticide vendors in the market. Similarly, the most common source of technical advice for poultry disease management is the veterinary medicine store. These vendors often provide advice without knowing the subject matter. Interventions to develop the capacity of these vendors can have a large impact on vegetable and poultry production in the area.

SO1 R5: Continue to redesign the training sessions based on principles of adult learning.

The midterm review team identified this issue and the current HKI project management is taking steps to improve the training. The management should continue what it has been doing and

²³ *Improving agricultural extension: a reference manual* was prepared under a contract between FAO and the International Program for Agricultural Knowledge System (INTERPAKS) and the College of Agricultural, Consumer, and Environmental Sciences, University of Illinois at Urbana-Champaign, United States.

further strengthen the need for appropriate content, methodologies, tools and processes. In future programs, the training need to provide group members with the required skills and confidence to continue the activity. The learning-by-doing (process facilitation) approach is proven to be highly effective in developing the capacities of participants. This approach empowers participants to learn effectively, and also ensures that the capacitation is empowering and therefore assumed to be more sustainable. A ‘learning plot’ (instead of a large demonstration plot) is central to this approach, and serves as the training venue. The plot needs to be located in a convenient spot easily accessible to women, such as the homestead, if the program targets women. The size of the plot could be much smaller, and it could be owned by someone else via a share-in arrangement by which the owner of the plot receives half of the harvest. Participants will learn soil management, intercultural management, and pest and disease management by practicing them in the learning plot. This action learning technique improves the critical thinking process of the participants and helps them to address other problems in their daily life. The same principle could be applied to training in poultry management. The process would allow the testing and scaling up of practical approaches to address food insecurity and poverty.

SO1 R6: Integrate risk reduction, risk mitigation and livelihoods recovery strategies with development strategies that will sustainably reduce the vulnerability of the households living in disaster-prone areas. Design interventions to enhance the resilience of the target households to better cope with climate change.

A large proportion of the households in Barisal, Bhola, and Patuakhali districts live in areas vulnerable to flooding and cyclones. Therefore, it is critical to integrate risk reduction, risk mitigation, and livelihood recovery strategies with development strategies that will reduce the vulnerability of the target households. Such strategies include identifying and promoting flood tolerant vegetables, promoting flood-proof cultivation techniques, establishing nurseries on suspended beds, and safekeeping of seeds in the event of cyclones. Livelihood recovery activities need to be integrated to help the households to transition from the emergency phase to the development phase as quickly and easily as possible.

SO1 R7: Invest in developing the capacity of DAE and DLS rather than just establishing linkages.

The DAE and DLS have limited capacity. While these organizations are ultimately responsible to provide extension support to the community, future programs should seek opportunities to establish partnerships with the DAE, the DLS, and the Department of Fisheries (DoF) so that all organizations can mutually benefit from the partnership. DAE, DLS, and DoF can play vital roles in supporting the communities if capacitated based on assessed need.

7.2 Recommendations for SO 2

SO2 R1: Emphasize environmental health and diarrheal disease

The quantitative results of the end-line survey clearly indicate that diarrheal disease is a significant problem and strongly linked to malnutrition. The two principle factors contributing to

diarrhea are linked to environmental health conditions; sanitation and hygiene. During the course of the evaluation, a few dozen mothers were interviewed in their compounds. When asked about the cause of their child's most recent episode of diarrhea, the majority of the respondents pointed to the ground. They went on to describe the transmission process: that the child crawls and plays in the compound and puts things in his or her mouth. Others attributed the cause of diarrhea to food purchased at the market.

The fact that mothers can already identify the cause of diarrhea makes it that much easier to stimulate action to solve the problem. SC should emphasize environmental health and diarrheal disease in future programming. One way is to help communities to systematically assess their environment and make plans for improvements. These could be construction and/or rehabilitation of drainage canals, walkways, or improving solid waste management. These types of programs could be implemented through food-for-work activities.

SO2 R2: Invest in program staff

All of the JoJ SO2 staff (CHV, Field Officers, Program Officers, and Program Managers) should be congratulated on an excellent job. Their commitment, motivation, and skills have been clearly demonstrated by the results, despite the two cyclones that occurred during the time period. The program staff is very valuable assets to future programming.

In the future, management will need to reinforce and strengthen skills such as participatory facilitation and training methods, problem analysis, and cause and effect logic. These skills are critical in BCC programs, and need to be learned through practice over time.

It would be helpful to include Field Officers and CHVs in the conceptualization and design of activities and to encourage them to take more ownership of program activities. Emphasis should be placed on creating an atmosphere that empowers staff to be creative and take charge of their own activities. This sort of flexibility and empowerment, within the framework of principles, is essential for success in the field. Capable field agents who know the realities of community conditions are almost always better able than management to handle particular situations that arise at the community level.

SO2 R3: Develop a water quality and hygiene program

Poor access to safe drinking water is a major cause of diarrheal disease, one of the leading killers of children under two in Bangladesh. SC should do an exhaustive review of the different options available to ensure drinking water is potable. Water quality testing should also analyze for zooplankton and bacteria. Options SC might review should include Aquatabs (effervescent chlorine-release tablets) being tested in Old Dhaka by the Asian Institute of Technology²⁴, and the Centers for Disease Control and Prevention's Safe Water System (SWS)²⁵. Ceramic and clay filters that have been inlaid with silver, a natural combatant of harmful bacteria, are another option.²⁶

²⁴ www.library.ait.ac.th/ThesisSearch/summary/Tanveer%20Ferdous%20Saeed.pdf

²⁵ For more information, see www.cdc.com/safewater/.

²⁶ For more information, see www.filterpurefilters.org.

SO2 R4: Overcome the barriers to behavior change

JoJ carried out a series of activities over the LOA to address behavior change and was very successful in increasing knowledge and attitudes towards appropriate sanitation and hygiene practices. In order to ensure long-term behavior change, other barriers need to be addressed, including affordability, suitability, convenience, and access.

SC should work with the suppliers of sanitation and hygiene products and services to market creative, convenient, and affordable products and services. Empirical evidence from around the world demonstrates that increased access to sanitation has been achieved through the market, in particular by small and medium scale enterprises (SMSEs) from the informal sector, masons, plumbers, and small-scale hardware and construction material suppliers.

Successful approaches emphasize creating demand, and a market for sanitation and hygiene products and services, within the context of a pro-business environment. The public sector can be an important catalyst in making the products and services ‘visible’ and creating demand through social mobilization, education campaigns, and similar activities. There are many cases where NGOs have successfully opened up markets for the private sector in this way.

The multiple segments (socio-economic groups) within the market each require and desire different products and services. If the customer is poor, then products/services should be affordable and adjusted to their ability to pay. Poor people should be seen as customers representing a quantifiable demand, and not just as beneficiaries having to accept whatever they can get. If the customer is wealthier, then the product/service may be of a higher quality and better design. Still, accessing the product/service may be difficult, either due to affordability, or because the perceived value of the product/service does not meet the priorities of a better-off customer.

However, market forces alone will not guarantee the interest and participation of the private sector. Before entrepreneurs will take the risks required to energize the sector, they first need to know that the market is viable, and see proof that sanitation and hygiene products/services is a good business opportunity. Structured marketing research can help to answer the difficult questions that SMSEs must answer before deciding whether to enter the business of sanitation and hygiene, such as: What products and services are most in demand and profitable? How many services and/or products can be sold, and at what price? Which is the best way to promote the services or products? How many users or sales will be required to break even and turn a profit? Can demand for additional products/services be economically created?

SO2 R5: Monitor and evaluate BCC strategies and materials.

BCC has played a central role in achieving the objectives of JoJ. All the objectives of the MCHN and WASH components work to increase knowledge and awareness, in order to bring about a sustained change in behavior or practices. JoJ employs a range of behavior change techniques to promote voluntary and internally motivated behavior change in the target population. These techniques include motivational interviewing, positive deviance, household-level counseling, social mobilization, social marketing, and participatory community action planning. When target populations have access to adequate information to make informed

decisions about their own behavior and practices, they are more likely to internalize behavior change in a permanent fashion.

Future programs will need to systematically monitor and evaluate BCC strategies, messages, and materials so that the program can make judgments about the performance, effects, and impact of the campaign and/or communications material. Communications campaigns and materials can be expensive, and should be held accountable for their cost-effectiveness. The type of monitoring and evaluation recommended is different from a 'check-list' or a tabulation of numbers of activities and outputs. Rather it examines the processes and effects of a campaign and/or material and analyzes characteristics of the audience and environment, the appropriateness of the material's content, and its reliability, effectiveness, efficiency and impact. This can be done through numerous means including KAP surveys that track knowledge, attitudes, and adoption of practices.

7.3 Recommendations for SO 3

In general, given that the exposure to natural disasters such as cyclones, tidal surges and storms in the Barisal region is one of the key factors contributing to household susceptibility to food and livelihood insecurity, there is a strong need to horizontally integrate disaster preparedness and management in all of the sector activities being carried out by SC in its Title II programming. Each sector strategy needs to identify the key risks to be taken into consideration in program planning so that any gains brought about by the project are not lost or minimized during a disaster.

A number of other specific recommendations are provided below:

SO3 R1: If there is a next phase of the program, there is a strong need to focus disaster preparedness and management activities at the household and community levels.

To build resilient communities, a comprehensive approach is needed that combines risk reduction activities (infrastructure, appropriate seeds, livestock protection activities etc.), early warning and disaster response (strengthening CPP and UMDC), and livelihood recovery. The program may consider reducing the geographical coverage to implement a more comprehensive approach since resources will need to be more concentrated, while still operating in the wider area in terms of early warning and emergency response.

SO3 R2: One focus for the community disaster preparedness and management activities would be the Village Development Committees.

VDCs should be strengthened to be intermediary organizations that engage in community risk reduction and disaster planning activities. SC staff can facilitate participatory DRR planning with the VDC, helping them to define community problems and develop action plans.

SO3 R3: To strengthen community disaster planning activities, SC can work more closely with other local NGOs and CBOs already engaged in disaster preparedness and response, such as Heed Bangladesh and Coast.

By strengthening these local NGOs, program sustainability is more likely to be achieved. Exit strategies could be designed from the beginning to ensure local empowerment of program activities.

SO3 R4: In terms of vertical linkages in disaster planning, community disaster plans that have been created by VDCs would be aggregated at the ward and union level to make them more consistent with what resources are available and what is feasible on the ground.

The union plans would then be aggregated at the *upazila* level. In this way disaster planning would truly be a bottom-up approach.

SO3 R5: In terms of promoting risk-reduction activities at the union level, SC could assist the UDMC to create income-generating activities that could generate financial resources for constructing infrastructure aimed at reducing risk.

Such activities could include fish ponds, coconut tree plantations, livestock sales or other income-generating opportunities. This could build on the model that SC has already implemented in association with the rehabilitated *killa* in Patuakhali.

SO3 R6: To improve early warning, SC should also continue to support CPP/BDRCS to secure early warning equipment to improve their effectiveness.

Consideration should be given to seeking opportunities to engage CPP and UDMC volunteers in community disaster planning.

SO3 R7: Training for CPP volunteers and UDMC should be ongoing.

Such training should also continue for teachers, religious leaders, and fishermen groups. In addition, there is a strong need to intensify disaster management training for SC staff. This training should be continuous throughout the life of the project.

SO3 R8: Serious considerations should be given to the continuation of shelter rehabilitation efforts.

Given that only 15 percent of the population has access to a safe shelter, the need is great. One alternative to building or rehabilitating large shelters is to construct a number of micro-shelters that serve multi-functional purposes. For example, a shelter could be built in a village para that holds 40-50 people. Because of its close proximity to people's houses, it is more likely to be used by women and children in the community. The shelter can also serve as a school, a warehouse for storing crops for marketing, a community meeting facility, a crèche, or be used for micro-enterprise activities. It is estimated that one of these shelters could be constructed for less than 10,000 USD. The amount would be even less if the community contributed the labor and some of the materials.

7.4 Recommendations for Program Processes

Recommendations for Partnership

PP R1: SC as the lead member should hold overall responsibility and maintain oversight for all program activities.

Over the course of JoJ, SC has significantly expanded its staff capacity within the DAP as well as its overall organizational resources. It is a much larger and more experienced organization than it was in 2004. In order to ensure integration, maintain accountability, reduce contractual risk, and better coordinate the work of partners, SC should hold clear oversight and is in a position to take a strong lead member role.

This will require SC to work intensively with partners to establish a joint sense of ownership of the entire program. Each partner should understand not only its role but how synergies among different activities can achieve greater impact than merely the sum of individual activities carried out independently. This can be done through regular program review meetings, communications, shared systems and information (such as for monitoring and evaluation). JoJ has already instituted use of many of these methods, and SC can draw on what are considered to be the most effective means of coordination. This will also require SC to be more consultative on decisions, and to ensure that the rationale for decisions taken by senior management is fully communicated.

PP R2: Restructure partnership roles.

SC should discontinue subcontracting program responsibilities to partners and develop a new partnership structure in its future programs. It should be noted that subcontracting is a legitimate form of partnership; it is simply not the right kind of partnership for a JoJ type of program. Partnership is a process, and in the future, SC should start to define and build partnership roles and responsibilities at the outset and continue to do so, making adjustments when necessary, as the program progresses. Roles and responsibilities should be negotiated and clearly laid out at the beginning, with honest communication encouraged. The results and the rationale for decisions should then be communicated to all stakeholders. Finally, it is helpful to remember that no amount of communication is too much when there are multiple stakeholders involved.

PP R3: Partner directly with LNGOs.

A more direct relationship between SC as the grant holder and LNGOs as the implementing organizations would streamline operations, reduce costs, and enhance accountability. Other international or national organizations like the JoJ partners can still play a role, where appropriate, in the provision of technical resources. This would entail careful selection and vetting of LNGOs, strong supervision, strategic support, and careful monitoring.

It is also recommended that future programs have fewer local partners in order to reap the benefits of a more direct relationship. One way to do this would be to choose one local partner

to cover two to three upazilas. If a partner's work is not of a satisfactory standard then the partnership agreement can be altered or abrogated.

PP R4: SC should support partner LNGOs' ability to develop their internal capacity in financial, management, and program skills (including M&E) in a comprehensive manner.

Capacity building is an ongoing, internal process that combines training, internal reflection, and learning through experience that is undertaken by an organization. This process can be facilitated by another organization or by outside experts. Partnering with a local NGO to achieve a set of objectives is a different set of activities from facilitating capacity building within that organization. Partnership does not automatically guarantee that an organization's capacity will be enhanced unless there is a clear objective to do so. Partnering combined with institutional capacity building can lead to stronger and more sustainable local organizations. However, capacity building should not be considered an end in itself without a specific objective. Enhanced capacity within LNGOs will assist SC to achieve its program objectives, maintain accountability, and contribute to national development. For the MYAP, it is recommended that a capacity-building plan be developed with the selected LNGOs based on an assessment of capacities and needs relevant to the new program.

PP R5: Ensure more local government involvement.

It is acknowledged that this is easier said than done. The capacity, resources, and interest of local government officials vary greatly, and frequent transfers make efforts to ensure locally sustainable government support difficult. JoJ has involved government officials in a number of discrete activities and has sought to keep local officials informed about the program, but their involvement in the different SOs varies significantly.

If SC is to employ a community-driven development (CDD) approach in the future, as is suggested under SO2, an important aspect is that government services have the willingness and capacity to respond to community demands. This will require SC to more actively engage with the government and go beyond just establishing linkages to develop a partnership. One way of doing this, as mentioned under SO 1, is to help build the capacity of key local government partners such as the DAE and DOL.

Recommendations for Gender

GS R1: Create more income-generating opportunities for women.

Since poverty and not lack of knowledge is often one of the greatest obstacles to female empowerment, future programs should create more income-generating opportunities in and around the home for women. This will allow women to contribute cash to the household when the husband is unemployed, helping to improve their status, and increasing their decision-making power. While the relationship between income-earning ability and increased status is not a linear one for all women in rural Bangladesh, it has been shown to make a difference in women's status in JoJ households.

Programs could leverage the community acceptance of the CHV to conduct awareness training for women, do IGA training, and establish self-help organizations. This would expand the role of the CHV.

GS R2: Include adolescent girls as well as boys in gender awareness activities.

Changes in social norms and attitudes often evolve slowly and can take decades, or generations. Adults may be less receptive to modifying cultural norms (such as the belief that a woman should not leave the house without the permission of her husband), or may be unable to challenge their social environment without severe consequences. Development organizations will continue to confront the issue of how to create an enabling environment that includes sensitization of extended family and stakeholders to support mothers. Including adolescents in gender awareness activities can facilitate their ability to more critically examine the advantages and disadvantages of certain social and cultural norms and help bring about positive changes among future generations. In addition, children can often influence their parents' outlook and help introduce new ideas that the household, especially the women, might otherwise not be exposed to. Needless to say, it is as important to include male youth as the future heads of household.

GS R3: Increase the proportion of female staff in future programs.

Where female community members are the main targets of a program, at least 50 percent of staff should be female. SC has instituted some very good gender-sensitive policies to make field work easier for female staff that recognizes the safety concerns of women. These policies should be continued, and continuing feedback sought from female staff to improve and expand them if needed.

One way to attract more female staff would be to ensure that female staff has opportunities to develop their skills in order to qualify for promotion to higher grades. Already female staff in SC sees opportunities to move to higher level positions and would like to improve their qualifications to do so. This should not necessarily be done in isolation from training for male field staff, but it would be useful for SC and partner organizations to survey their female staff on what type of training they believe is needed to help them advance their careers.

Locating more senior management and technical staff in the field, closer to the program activities, as recommended above, would also provide greater opportunities for female staff to advance in their careers without leaving the field for assignments in Dhaka.

7.5 Recommendations for Program Management

Recommendations for General Management

GM R1: Create more opportunities for internal learning.

Staff at all levels desire more technical training and career development opportunities. Some SC staff noted that there are staff development recommendations in the annual performance plan but

they are not followed up systematically. They also feel that there are more career development opportunities available to senior staff and that more such opportunities need to be made available to field staff.

Staff reported that the technical working groups have been an excellent resource. However, they felt that there should be more opportunity for deputy managers, who have technical responsibilities in the field, to participate along with HQ staff. In addition, the outcomes of their meetings should be communicated to the field in a comprehensive and timelier manner.

In addition, the reflective learning forums that have been organized to analyze the Cyclone Sidr response should be done for JoJ as a whole.

GM R2: Ensure that all new staff receives orientation to the entire program.

This should include program support staff as well as regular field staff. Ideally, all the staff, including drivers and office attendants, should understand the purpose of the program they are working for and their contribution to it. The orientation should include the activities of partners and other stakeholders.

GM R3: Ensure that adequate technical training is built into the program.

Part of a rigorous selection process for new local partners should include verification that their staff possesses the requisite skills. Future programs should then seek to help develop skills relevant to the program by providing training that is adequate in duration, depth, and frequency. This will support the sustainability of local development organizations and efforts.

GM R4: Ensure greater coordination.

JoJ instituted good information-sharing mechanisms. However, the cyclones disrupted regular activities, and QPRM planning and coordination meetings ceased to be held on a regular basis. Senior managers consider these valuable venues for coordination, problem resolution, and information, and they should be reinstated on a regular basis. It is assumed that in the future, a different management structure with a clear leadership role for the lead member will enhance coordination.

Recommendations for Monitoring and Evaluation

ME R1: Adopt a unified approach to M&E data collection, analysis and monitoring.

Again, establishing clear leadership and partner roles will support the development and application of a unified M&E system. Indicators should be carefully crafted and checked to ensure that they are able to measure changes in systems and behaviors and impact at the appropriate levels.

ME R2: Present information in a more user-friendly format.

JoJ is collecting a lot of valuable M&E information. However, not all staff has the time to sift through and interpret all the quantitative data, especially senior management staff. Senior managers need combined quantitative and qualitative information in a format that is readily useful for decision-making. JoJ staff should work with senior managers to determine what their key information needs are, then compile monthly summaries with key quantitative and qualitative data for management use.

ME R3: Institute a strong monitoring component at the outset of the program.

Due to the design and division of partner responsibilities under JoJ, the lead member has had limited oversight of partner M&E. This was corrected to some extent after the MTE. Future programs should include a strong monitoring component by the lead member, with a mechanism for feeding back information and ensuring that action is taken.

Recommendations for Commodity Management

CM R1: Simplify the commodity distribution planning and approval process.

SC should consider eliminating some steps to shorten the process of registration and the preparation and final approval of the distribution plan and the delivery plan to be approved by the impact area office by merging these two forms. The DAM should also be approved at the impact area level.

CM R2: Institute additional controls over access to the warehouses.

The warehouse manager is the only person who holds keys to the warehouses, which potentially compromises the safety and security of the commodities. As an additional control mechanism, a second locks can be put on the doors of each warehouse, with the warehouse manager holding one key while the second key is held by the assistant warehouse manager or any other senior warehouse staff.

CM R3: Modify the current format for end-use monitoring.

SC should consider modifying the current format for end-use monitoring to include (a) an acknowledgement from the beneficiary verifying the actual quantity and quality of food commodities received, and (b) an area for the beneficiary to sign this form.

Recommendations for Environmental Compliance and Monitoring

Based on the observations, SC and its partners should take the following steps for the current and future program:

ENV R1: Continue testing the tubewells for arsenic contamination, and plan to test water quality for bacteria.

JoJ should continue its successful strategy of promoting the testing of tubewells for arsenic contamination, and ensure that new tubewells are tested as well, rather than allow people to make assumptions about tubewell water purity based on the depth of the tubewell. JoJ should test water quality not only for chemical properties but for zooplankton and bacteria as well, to determine whether the water is potable. If tubewell water is not potable, JoJ should work with users to determine how best to treat tubewell water used for drinking, such as chlorine tablets and ceramic filters, as suggested in the recommendations for SO 2.

ENV R2: Develop a specific strategy to deal with the environmental issues rather than just comply with regulations.

JoJ has responded to environmental compliance requirements but would benefit from developing a strategy that goes beyond mere compliance, to identify and respond to potential environment issues. A strategy would also support improved monitoring of environmental issues.

ENV R3: Develop a field handbook for conducting activity-specific IEE/EIA.

Many staff is familiar with IEE and EIA regulations but do not have specific guidance to help them conduct environmental assessments. The development of a basic field handbook to provide guidance and specific formats on how to conduct IEE and EIA assessments would facilitate JoJ's ability to fulfill environmental regulations and guidelines.

ENV R4: Build staff capacity to address environmental issues (e.g. conducting IEE/EIA; environmental monitoring).

JoJ staff needs to more consistently monitor environmental issues, and in particular need to ensure that environmental monitoring activities are well documented. Many staff already have knowledge of environmental compliance issues but the organization would benefit from additional training and refresher courses for staff in conducting IEEs and EIAs as well as environmental monitoring. A focal person to deal with environmental issues, including training, monitoring, and strategy development would help the organization maintain a focus on this sector.

8. Conclusion

JoJ is a successful program that has achieved most of its targets and made some impressive gains in all three SOs. It improved food security, reduced malnutrition, improved community access to health services and improved water and sanitation, and strengthened cyclone preparedness and response in the Barisal region (undertaking a large-scale cyclone response and recovery program for two cyclones in the midst of program implementation). Recognizing that resource constraints prevented JoJ from achieving full integration of the three SOs at the household level, future programs are likely to have a larger impact if: a) the components are better integrated; b) if there is a greater focus on targeting the poorest households in agriculture and livelihood interventions;

c) if environmental health and prevention of diarrheal disease are emphasized within to MCHN; d) if underlying obstacles to improved sanitation and hygiene are addressed, and e) if disaster risk reduction is focused on the household and community level.

JoJ has achieved impressive impact in reducing malnutrition. It has reduced stunting among moderately malnourished children from 35.7 percent to 31.5 percent representing an 11.8% reduction over baseline in stunting. Among severely malnourished children (<-3SD) JoJ has reduced stunting from 11 percent to 7.9 percent, representing a 28.2 percent reduction over baseline in severe stunting. Though the change in moderately malnourished (stunted) children fell short of the program target, the evaluation team finds that the target was too ambitious, as most Title II programs expect to achieve an overall change of 10 percent. Nonetheless if one reviews when the reductions occurred it is evident that the program design changes after the MTR and the Cyclone Sidr response (i.e., the focus on IYCF and development/improvement of materials and messages, and an increased focus on synergies among all program elements) were effective as the impact was documented in the last 12 months.

Severe acute malnutrition (SAM) is the severest form of malnutrition and is associated with very high rates of morbidity and mortality. Bangladesh has the fourth highest number of children suffering from SAM in the world. Although not a required indicator, JOJ also tracked wasting (low weight-for-height), given its relevance in Bangladesh. Here results were also impressive. The JOJ program reduced wasting from 25.5% to 18.3% representing a 28.2% reduction over baseline. Severe wasting (<-3SD) was reduced from 3.7% to 1.2% or 67.6% reduction over baseline. This is of particular note because the level of acute malnutrition considered “normal” in Bangladesh exceeds the threshold for emergency operations in most other countries and has been mostly overlooked by the Ministry of Health and Family Welfare.²⁷

²⁷ A national protocol for the treatment of SAM in Bangladesh has very recently (in October 2008) been approved by the Institute of Public Health & Nutrition (IPHN), the Director General of Health Services (DGHS) and UNICEF.

9. Annexes

Annex 1: IPTT

Annex 2: TOR

Annex 3: Evaluation schedule

Annex 4: List of key resource people

Annex 5: Documents consulted

Annex 6: Jibon O Jibika Program: End-line Survey Report



JIBON O JIBIKA

(LIFE AND LIVELIHOODS)

A TITLE II PROGRAM OF USAID

Final Evaluation Report

Annexure

November 2009



USAID
FROM THE AMERICAN PEOPLE

TANGO
TECHNICAL ASSISTANCE TO N.G.O.'S



Save the Children
USA

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Annex 1: Indicator Performance Tracking Table

Jibon-O-Jibika
IPTT Indicator Results

Goal: Decreased household food insecurity in 3 Districts of Bangladesh's Barisal Division					
			Baseline (May-Jul05)	Endline (Jun-Jul09)	LOA Target*
1. % children between 6 and 23.9 months stunted (WHO/NCHS 1978 old growth reference)	<-2SD	Male	37.7%	33.5%	30.2%
		Female	33.6%	29.5%	26.9%
		Total	35.6%	31.5%	28.6%
	<-3SD	Male	11.2%	9.1%	10.1%
		Female	10.9%	6.6%	9.8%
		Total	11.0%	7.9%	9.9%
1. % children between 6 and 23.9 months stunted (WHO/CDC 2006 new growth reference)	<-2SD	Male	42.9%	40.7%	34.3%
		Female	35.2%	31.9%	28.2%
		Total	39.2%	36.2%	31.4%
	<-3SD	Male	17.2%	12.9%	15.5%
		Female	13.1%	7.9%	11.8%
		Total	15.2%	10.5%	13.7%
2. Increase in dietary diversity per household			5.5	5.9	6.0
SO1: By September 30, 2009, food availability and purchasing power at the household level will have increased					
			Baseline	Endline	LOA Target*
1. % of the population groups (reproductive-age women and children <2 yrs) of participating HHs that consume the following foods regularly:	DGLV	Children U2	27.1%	78.7%	75%
		Women (15-49)	44.7%	89.5%	90%
	Pulses	Children U2	18.5%	59.0%	45%
		Women (15-49)	29.2%	50.6%	55%
	Animal sources of food	Children U2	15.4%	57.4%	45%
		Women (15-49)	14.7%	39.2%	45%
2. Average household net production from leafy vegetables (in kg during last 2 months)			3kg	60kg	40kg
3. % of eligible households with productive homestead gardens			0.1%	89.4%	65%
4. % poultry-raising HHs successfully increasing egg production			38.1%	90.1%	70%
5. % of households adopting improved production practices			0.1%	72.5%	70%
6. % HHs knowing where and when to obtain technical guidance for food production			0%	98.1%	90%
7. % HHs with poultry knowing when and how to vaccinate			4.4%	38.6%	55%
8. % program communities with functioning Village Model Farms			0%	84.8%	70%
9. % program communities served by competent PNGO agricultural extensionists at End line			0%	-	90%
10. % program communities with a consistent local supply of improved variety seeds			41.1%	100%	99%
11. % program participants using production practices based on up to date knowledge of market opportunities			0%	71.3%	85%
12. % marketing groups selling products directly to local or regional markets			0%	65.6%	50%
13. % HH knowing how to use market price and demand information			0%	92.4%	80%

14. % communities with functioning marketing groups			0%	70.4%	50%
SO2: By September 30, 2009, the health and nutrition of pregnant women and children under the age of two will have improved					
			Baseline (May-Jul05)	Endline (Jun-Jul09)	LOA Target*
1. % children between 6 and 23.9 months underweight (WHO/NCHS 1978 old growth reference)	<-2SD	Male	53.0%	49.4%	42.4%
		Female	51.5%	44.4%	41.2%
		Total	52.3%	46.9%	41.8%
	<-3SD	Male	16.9%	13.2%	15.2%
		Female	13.4%	8.7%	12.1%
		Total	15.2%	11.0%	13.7%
1. % children between 6 and 23.9 months underweight (WHO/CDC 2006 new growth reference)	<-2SD	Male	49.1%	39.2%	39.3%
		Female	43.1%	30.3%	34.5%
		Total	46.2%	34.8%	37.0%
	<-3SD	Male	18.9%	11.7%	17.0%
		Female	15.6%	7.2%	14.0%
		Total	17.3%	9.5%	15.6%
2. % children under the age of 2 years with diarrhea in past two weeks			29.8%	21.8%	23.8%
3. % children 6-23.9 months being fed complementary foods in addition to breastmilk at age 6 months			46.9%	98.4%	61.0%
4. % child caregivers with children <2 with appropriate hand washing behavior			18.5%	72.8%	24.1%
5. % children <2 continuously fed during diarrhea			57.2%	80.0%	71.5%
6. % children <2 years ill with ARI who were served by an IMCI competent CHV or provider			18.7%	23.2%	23.4%
7. % children 9-23.9 months immunized for measles at 12 months			64.4%	78.2%	90.0%
8. % women with children <2 years who received at least 3 antenatal checkups by a qualified provider during pregnancy			12.7%	83.6%	15.9%
9. % children <6 months given only breast milk			29.5%	64.4%	50%
10. % union level health facilities competent for providing IMCI services			0%	25%	75%
11. % program communities served by CHVs/GOB or NGO HW following appropriate C-IMCI protocols			0%	85%	80%
12. % HHs with year round access to safe water sources			33.5%	47.6%	60%
13. % of households using (access) hygienic sanitation facilities			4.4%	16.5%	50%
14. % program communities receiving GMP, EPI and Antenatal services on a monthly basis over the previous three months		GMP	0%	99.9%	98%
		ANC	0%	89.1%	80%
		EPI	0%	98.0%	88%
SO3: By September 30, 2009, target communities and households will be more resilient to shocks that threaten their livelihoods.					
			Baseline	Endline	LOA Target*
1. # of target unions/wards actively using disaster preparedness and response tools and processes			0	74	75
2. % cyclone prone program village served by one competent CPP volunteers units			0%	68.0%	75%
3. % of people in target areas with access to emergency relief supplies			0%	95.3%	100%
4. Existence of an updated annual emergency contingency plan			10%	100%	100%

5. Presence of updated emergency supply distribution plan in place with clear roles and responsibilities amongst stakeholders and population identified for assistance.	0%	100%	NA
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***Life of Achievement Target**
****CDC/WHO 2006 reference**

Annex 2: Terms of Reference, Final Evaluation

Jibon o Jibika Program Save the Children USA in Bangladesh FY 2004-2009 Title II Development Assistance Program (DAP)

I. INTRODUCTION

Save the Children USA (SC) is commissioning a Final Evaluation of its Title II Development Assistance Program, called *Jibon o Jibika* (JoJ)¹, being implemented in Bangladesh in collaboration with Helen Keller International (HKI), the NGO Forum for Drinking Water Supply and Sanitation, the Cyclone Preparedness Programme (CPP) of the Bangladesh Red Crescent Society and 14 local NGO partners with offices in Barisal Division, Bangladesh. These Terms of Reference provide background information and expectations for an evaluation of the program, using both quantitative and qualitative methods.

II. PROGRAM BACKGROUND:

The JoJ Program seeks to reduce high levels of food insecurity and malnutrition with the stated goal of ***Decreased household food insecurity in 3 Districts of Bangladesh's Barisal Division***. The program is being implemented in 13 upazilas in three districts of southwest Bangladesh with three interrelated strategic objectives (SOs) that were envisioned to be operationally integrated in an effort to best serve vulnerable households in the target area, especially those households with children under the age of 2 years.

- SO1: Food availability and purchasing power at the household level will have increased
- SO2: The health and nutrition of pregnant women and children under the age of two will have improved
- SO3: Households will be more resilient to shocks that threaten their livelihoods.

Under SO1, HKI has responsibility for implementing a homestead horticulture and agro-forestry component. Under SO2, SC has been directly implementing a maternal and child health and nutrition (MCHN) component and the NGO Forum has been implementing a water and sanitation (WASH) component. Under SO3, SC works with the CPP to implement an emergency preparedness component. JoJ officially began operations on October 1, 2004, with an expected completion date at that time of September 30, 2009. However following Cyclone Sidr, which traveled directly through a significant part of the JoJ program area, the program was amended to include an expansion in target area for cyclone recovery activities as well as an extension of operations through May 2010.

III. PURPOSE OF THE EVALUATION

The final evaluation aims to: (i) assess the extent to which JoJ accomplished its stated goals and objectives; (ii) assess the effectiveness of program activities; (iii) obtain answers to key questions related to lessons learned, best practices, sustainability, and recommendations for future programming; and (iv) document/summarize the overarching lessons learned to a wider audience including partner organizations, donors, Government of Bangladesh (GOB) and other stakeholders. More specifically, the evaluation report will:

1. Describe overall program performance during the DAP period in terms of producing the outputs proposed, analyzing both the technical approaches and project processes used (e.g. partnership, integration, resource management systems and other program support).
2. Assess the program logic in terms of the project results achieved and the impact these had on intended target groups (and others) compared to specific program objectives and goals.
3. Formulate recommendations for complementary program activities that build on, leverage or strengthen the impact of JoJ.
4. Describe overall Regulation 216 compliance and implementation of environmental mitigation actions described in JoJ's approved IEE.
5. Answer key questions related to targeting, gender, cost-effectiveness, partnership, commodity management, sustainability, etc.
6. Compile best practices and lessons learned

¹ "Life and Livelihood" in Bangla.

IV. STATEMENT OF WORK

The following sections provide further detail on specific areas of investigation. (It should be noted that the questions posed here are indicative. Evaluators may propose additional lines of inquiry to allow full achievement of evaluation objectives.)

A. Program Achievement of Impact

Relative to the program outcomes and impact, the following questions should be addressed:

1. What have been the outcomes produced under each SO from the outputs produced by the JoJ program both on intended as well as unintended beneficiaries?
2. What has been the overall impact of the JoJ on household food security and nutrition during the period of implementation (including analysis of change since baseline)?
3. Has there been differential impact on different economic classes? Have all households with children under 2 years benefited in the same way from the support?
4. How effective have exit strategies and other measures been in ensuring sustainability of JoJ processes and outcomes? How can barriers to sustainability be addressed more effectively?

B. Program Outputs/Results

The evaluation team will review planned outputs by component; summarizing achievements or shortcomings; assessing the quality of technical approaches, analyzing resource allocations; and reviewing situations and causes where achievements differed significantly from initial targets. Key questions under each SO are provided below.

FOOD AVAILABILITY AND ACCESS (SO1)

1. To what extent were proposed SO1 program targets achieved? How have food production and marketing activities contributed to improved food security?
2. How effective has the Village Model Farm model been in assuring that poor women have access to services and inputs required for profitable garden production? Are the VMFs sustainable? How might these activities be improved?
3. Are there clear, sustainable linkages to services required to maintain homestead garden and poultry activities provided by the Ministry of Agriculture, private sector or others?
4. What is the breadth and depth of women's participation in marketing of homestead production and how could this have been increased? How does increased household income affect women's standing in the household/community? To what extent has this improved the nutritional status of children?

MATERNAL CHILD HEALTH AND NUTRITION (SO2)

1. Which MCHN activities have been most effective in improving the health and nutrition practices of mothers/families in the targeted communities? How could this be improved? Which activities were not successful and why? How might these activities be improved?
2. To what extent is JoJ complying with MOH norms, priorities, and policies, and have integrated MCHN activities with MOH health services? Is there evidence of effective coordination with local MOH staff at the targeted MCHN communities? Is there evidence of duplication of efforts in the targeted communities?
3. To what extent has the program assured the sustainability of Community Health Workers?
4. How effective has the incentive ration been in inducing participation, especially for different economic classes of participants? How has the food been used? Was participation maintained after the distribution of the incentive ration ended?
5. What is the average quantity, quality and caloric intake of children aged 6-24 months disaggregated as possible by economic class and/or livelihood group.

WATER AND SANITATION (SO2)

1. To what extent were proposed program output targets achieved? Which WASH activities have been most effective in addressing assessed needs? Which activities were not successful and why? How might these activities be improved?
2. Who has benefited from the program's WASH activities? Who were excluded?
3. How effective have the Village Development Committees (VDC) been in implementing program activities? What kinds of activities are they likely to continue after the program has ended? How could the program have improved work with/through VDCs?

4. Has the program facilitated linkages between communities and government service providers for mobilizing additional resources or technical support?

DISASTER RISK REDUCTION (SO3)

1. To what extent were proposed program output targets were achieved? Which activities have been most effective? Which activities were not successful and why? How might these activities be improved?
2. How well did JoJ integrate SO3 interventions into other JoJ activities and with upazila and union emergency preparedness or disaster risk reduction activities? What roles did the communities and individuals have in the development of the SO3 activities?
3. Are government and community stakeholders aware of the project activities and outputs? How successful has the program been in assuring government buy-in/support?
4. What evidence, if any, exists to indicate improved community preparedness for response to and recovery from cyclones?
5. Did the JoJ team respond appropriately to the needs of the Sidr affected populations? How effectively did SC manage the shift to Sidr response then back to its core programming? What could be done differently in the future?

PROJECT PROCESSES

1. Planning How effective has program strategic/operational planning been conducted in JoJ? How effective have been efforts to address implementation problems?
2. Targeting How successful was the program in reaching appropriate geographic and demographic targets. Were the beneficiary selection criteria appropriate? Are there any lessons to be learned for future targeting approaches?
3. Integration To what extent do agriculture, income generation, health and nutrition and disaster preparedness activities benefit the same households or communities? What were the program's successes and shortcomings related to sectoral integration?
4. Behavioral Change Communication How valuable was the program's investment in developing and deploying a BCC strategy.
5. Gender Strategy Did the program properly address issues of gender in the program?
6. Commodity Management How effective have food and other resources been managed?
7. Partnership How effective have the various levels of partnership been in the program, including selection, capacity building and incorporation in planning, monitoring, etc? What should be done differently in the future?
8. Exit Strategies and Sustainability Assess the program's attention to sustainability and the quality/appropriateness of its exit strategy. How could the program of assured greater sustainability of its outcomes and the systems it put in place?
9. Monitoring and Evaluation Analyze the quality of M&E systems including the integration of partners in M&E, appropriateness of indicators and the validity of data produced, the dissemination and use of findings to influence programming decisions, etc.

C. Lessons Learned and Recommendations for Future Programming

The evaluation team should provide recommendations for the design of new program strategies to achieve greater and more sustainable impact building on the JoJ foundation, solidifying the impact of JoJ and/or replicating best practices. These recommendations should be prioritized and limited in number. They could also be segregated between recommendations specifically for future Title II programming and for other types of donor funding.

D. Regulation 216 Compliance

The evaluation team will also review compliance of the program with Regulation 216, including to what extent JoJ successfully implemented environmental monitoring and mitigation activities described in the approved IEE.

V. COMPOSITION OF THE TEAM

It is recommended that the evaluation team should be composed of the following members. The level of effort for each team member may vary based on the workplan developed.

Quantitative Survey Team Leader

The survey consultant will lead the design the end-line survey, select and train a team of enumerators, and analyze/present the data collected. S/he may also be a member of the qualitative team but this is not a requirement.

Evaluation Team Leader

The Team Leader will be responsible for coordinating all evaluation activities, supervising the team, meeting all specified objectives, evaluating and monitoring systems, collaborating with each partner and SC, presenting the evaluation results, and submitting drafts and final reports according to the defined timeline. The Team Leader should also provide sectoral expertise in at least one of the sectoral components promoted under JoJ.

Sector Specialists (Three)

In addition to the team leader, the evaluation team should include three additional sector specialists, to be able to address the three sectoral components not being covered by the team leader. The MCHN sector specialist should be someone with international expertise. The other sector specialists may be either from Bangladesh or from the international market.

SC and Partner Staff Representatives

Representatives of SC and partner institutions will serve as information sources during the evaluation and may be asked to facilitate interaction of evaluation team members with communities, local partners and key informants and beneficiaries. A member of SC's M&E team will assist with accessing information and data relevant to the evaluation. Finally, JoJ institutional stakeholders will be expected to participate in debriefings and comment on drafts of the final evaluation report.

VI. METHODOLOGY

The evaluation will employ both quantitative and qualitative methods, implemented in two phases. The first phase corresponds to the design and implementation of a quantitative household survey, including data analysis and synthesis of findings. The second phase focuses on collection of qualitative data followed by analysis of data from all sources to reach final conclusions and recommendations. It is anticipated that a single evaluation team member will lead Phase 1, with enumerators and other necessary staff recruited locally.

Phase I: April - June 2009

- *Design Quantitative Population-based Survey*
The survey team leader will review background documentation and conduct interviews with SC, partners as well as with other key stakeholders to develop and refine quantitative survey instruments, sampling frame and sample size², while outlining a plan and time line for team recruitment and training, data collection and analysis³. Data should be comparable with baseline data where feasible and/or analyzed by other appropriate methods. The survey will include the collection of anthropometric data, generated from a survey of children under 5 years within the JoJ program area gathering height, weight and age data. A survey design document will be shared for comment with SC and others (approx 10 days).
- *Form and Train Team of Enumerators*
The survey team leader will recruit a team of enumerators and field supervisors adequate to collect the required data within the time allotted. S/he will design and deliver training to enumerators, as needed. Pre-testing of data collection should be part of the training schedule (approx 8 days)
- *Coordinate Quantitative Population-based Survey*
The survey team leader will be present at the beginning of data collection only, assuring that appropriate data collection and management methods are used and that the local field supervisors are able to lead the process. Data entry and cleaning will be conducted as needed using selected analysis software (approx 10 days for team leader; overall survey will take approx 3 weeks).
- *Quantitative Survey Reporting*
Data analysis and preliminary interpretation of the findings will be done by the survey team leader. S/he will prepare a draft survey report summarizing analysis and interpretation of quantitative data, including comparisons to baseline. The survey team leader may be asked to hold a half-day meeting with SC and partners to present findings and discuss lessons learned and recommendations (approx 9 days for analysis and writing, 1 day for stakeholder debriefings).

² The sampling methodology and sample size should allow comparisons among the three program districts.

³ The use of Personal Digital Assistants (PDAs) for data collection and management is highly encouraged. SC-Bangladesh can make up to 30 PDAs available to the survey team.

Phase II – August to Mid-September 2009

- *Review of secondary documentation, program reports, monitoring data*
Prior to starting field work, the evaluation team leader will coordinate with SC and partners to identify necessary materials and distribute to the team. Team members will review project documents, results and documentation from the baseline survey, the mid-term evaluation and existing data from project monitoring (approx 3 days).
- *Qualitative Assessment Design/Preparation* The evaluation team will review information from the quantitative survey and other sources and will develop topical outlines and process guidelines for a series of focus group discussions and key informant interviews with governmental and non-governmental stakeholders, including extensive discussions with program beneficiaries and participants. A schedule for data collection will be prepared and shared with SC (approx 4 days).
- *Qualitative Data Collection and Processing* Meetings and field visits will be arranged for the evaluation team to hold focus group discussions and key informant interviews. After the initial round of data collection and processing, the evaluation team will hold a workshop with program stakeholders to present and discuss initial observations. This may be followed by an additional round of interviews and discussions to fill gaps and clarify gray areas emerging from the workshop (approx 20 days)
- *Final reporting* The evaluation team will prepare a draft preliminary evaluation report with all conclusions and recommendations. The Team Leader will hold a half-day meeting with SC and partners to present findings and discuss lessons learned and recommendations. A second presentation to additional stakeholders, e.g. USAID Mission, will also be done. The evaluation report will be finalized based on feedback from workshops and from review of written drafts (approx 5 days for drafting; 2 days for preparing and delivering stakeholder debriefings; 2 days for final reporting).

VIII. REPORTING AND DELIVERABLES

There are five deliverables for the Evaluation Team:

- A Phase 1 design document work plan for undertaking the quantitative survey within 5 days of initiating design work for Phase 1.
- A final quantitative survey summary report in English by July 31
- A Phase 2 work plan for undertaking the qualitative survey within 5 days of the assembling of the full evaluation team in country for Phase 2
- A debriefing, summarized in Powerpoint, for key stakeholders, including USAID/FFP, on the major findings of the evaluation
- A final evaluation report, approximately 30 pages plus 2-3 page executive summary, by September 30.

Annex 3: Evaluation Schedule

Date	Activity
August 20	Jeanne, Arif, Chris arrive Dhaka
August 21	Review documents
August 22	Review documents
August 23	Entry meeting with USAID; presentation on JOJ
August 24	Meetings, interviews with program staff
August 25	Meetings with key stakeholders
August 26	Travel to Barisal; orientation by JOJ Management team at Barisal
August 27	Field visits – Barisal
August 28	Tim arrives Dhaka; Field visits – Barisal
August 29	Tim joins the team in Barisal; Field visits – Bhola
August 30	Field visits – Bhola
August 31	Field visits – Bhola; meet partner staff
Sept 1	Field visits – Patuakhali; meet partner staff
Sept 2	Field visits – Patuakhali; meet partner staff
Sept 3	Field visits – Patuakhali; meet partner staff
Sept 4	Analysis of findings are prepare presentations
Sept 5	Analysis of findings are prepare presentations
Sept 6	Debriefing at Barisal Impact Office; Return to Dhaka
Sept 7	Meeting with key stakeholders; preparation for ground truthing workshop
Sept 8	Ground-truthing workshop
Sept 9	Debriefing to USAID & the Ministry of Food
Sept 10	The evaluation team leaves Dhaka
Oct 6	TANGO submits first draft
Oct 19	SC forwards comments on first draft
Oct 27	TANGO submits second draft

Annex 4: List of Key Persons Interviewed

SO 1 - List of People Interviewed			
Date	Location	Person(s) or Group	Organization
23/08/09	Dhaka	Shahnaz A Zakaria	USAID
23/08/09	Dhaka	Tofayel Alam	USAID
23/08/09	Dhaka	Mr. Shibly	USAID
23/08/09	Dhaka and Barisal	Foiz Ahmed	SCF
25/08/09	Dhaka	Diane Lindsey	HKI
25/08/09	Dhaka	Emily Hillenbrand	HKI
23/08/09	Dhaka	Kanchan Khisa	HKI
25/08/09	Dhaka	Faisal Alam Bhuiyan	HKI
03/09/09	Patuakhali	Amin Uddin	HKI
26/08/09	Barisal	Shahidul Islam	HKI
26/08/09	Barisal	Hafizur Rahman	HKI
29/08/09	Bhola	Zulhas Uddin	HKI
	Bhola	Humaira Rahman	HKI
	Bhola	Md. Shafiul Alam	HKI
	Bhola	Md. Atikul Islam	HKI
	Bhola	Prodip Kumar Sarker	HKI
2/09/09	Patuakhali	Rezaul Karim	HKI
2/09/09	Patuakhali	Soniya Rahman	HKI
2/09/09	Patuakhali	Mamata Charabarty	HKI
2/09/09	Patuakhali	Kamrul Islam	HKI
2/09/09	Patuakhali	Mahfuzur Rahman	HKI
31/08/09	Bhola	Motiur Rahman	Grameen Jano Unnayan Sangstha (GJUS)
31/08/09	Bhola	Alamgir Kabir	GJUS
31/08/09	Bhola	Abdul Hai	GJUS
31/08/09	Bhola	Morsheda Begum	GJUS
31/08/09	Bhola	Azharul Islam	GJUS
31/08/09	Bhola	Maynuddin	GJUS
31/08/09	Bhola	Mobarak	Unnayan Shikkha Karmasuchi (USHIK)
31/08/09	Bhola	Ebrahim	USHIK
31/08/09	Bhola	Ramkrisna	USHIK
	Barisal	Md. Rafiqul Islam	Integrated Community Development Association (ICDA)
26/08/09	Barisal	Md. Ruhul Amin	ICDA
26/08/09	Barisal	Fahima	ICDA
26/08/09	Barisal	Sirajul Haque Talukder	ICDA
26/08/09	Barisal	Susanta Das	ICDA
26/08/09	Barisal	Shamsun Nahar Shila	ICDA
29/08/09	Barisal	Moajjem Hossain	Social Development Agency (SDA)
29/08/09	Barisal	Animesh Roy	SDA
29/08/09	Barisal	Nojrul Ahsan	SDA
29/08/09	Barisal	Seuli Mitra	SDA
29/08/09	Barisal	Gobindo Chandra Bala	SDA
29/08/09	Barisal	Tanvir Rahman	SDA
29/08/09	Barisal	Dalil Uddin Sikder	SDA
29/08/09	Barisal	Taslim Uddin	SDA
27/08/09	Shibpur, Bakerganj, Barisal	Sunil Chandra Bepary	VMF
27/08/09	Dawkathi, Bakerganj, Barisal	Abdul Awal Hawladar	VMF
28/08/09	Chandipur, Babuganj, Barisal	Md. Mahbub Hawlader	VMF
31/08/09	Char Sibili, Bhola Sadar, Bhola	Md. Yunus	VMF
31/08/09	Char Sumayia, Bhola	Abdul Kalam	VMF
1/09/09	Borhanuddin, Bhola	Ataharuddin	VMF

1/09/09	Lalmohan, Bhola	Md. Sobuj	VMF
2/09/09	Kamlapur, Patuakhali	Sona Baru	VMF
2/09/09	Patuakhali	Abdul Motaleb Akand	VMF
3/09/09	Itbaria, Patuakhali Sadar	Md. Rafiqul Hossain	VMF

SO 2 - List of People Interviewed

Date	Location	Person(s) or Group	Organization
24 Aug09	Dhaka	Dr. Fardosi / JoJ PM	SC
25 Aug09	Dhaka	Margarita Clark ACD	SC
26 Aug09	Barisal, Barisal Sadar	Barisal Program Team	SC
26 Aug09	Barisal, Babugani	Field Officers (10) Focus Group	SC
26 Aug09	Barisal, Babugani	District Health (EPI)	MOH
26 Aug09	Barisal, Babugani	District Health (FP)	MOH
26 Aug09	Barisal, Babugani	Mother and House visits (8)	Beneficiary
27 Aug09	Barisal, Rangasree	Court Yard Meeting (12 mothers, CHV)	SC and Beneficiaries
27 Aug09	Barisal, Rangasree	Mother and House visits (6)	Beneficiary
27 Aug09	Barisal, Radri Shibpur	CHV (20) Focus group	SC partner
27 Aug09	Barisal, Radri Shibpur	Community Meeting (25-30)	Community members
28 Aug09	Barisal, Kalaskati	Court Yard Meeting (12 mothers, CHV)	SC and Beneficiaries
28 Aug09	Barisal, Kalaskati	Mother and House visits (6)	Beneficiary
28 Aug09	Barisal, Barisal Sadar	Dr Rana / JoJ Deputy PM	SC
29 Aug09	Bhola, Bapta	CHV (10) Focus group	SC partner
29 Aug09	Bhola, Bhola Sadar	Field Officers (10) Focus Group	SC
30 Aug09	Bhola, Bapta	Mother and House visits (5)	Beneficiary
30 Aug09	Bhola, Bhelu Miah	Mother and House visits (4)	Beneficiary
31 Aug09	Bhola, Bhola Sadar	NGO Forum Dist. Manager	NGO Forum
31 Aug09	Bhola, Bhola Sadar	NGO Forum FW (4)	NGO Forum
31 Aug09	Bhola, Bhelu Miah	Mother and House visits (4)	Beneficiary
1 Sept09	Patuakhali, Patuakhali Sadar	Field Officers (12) Focus Group	SC
2 Sept09	Patuakhali, Baga	CHV (10) Focus group	SC partner
2 Sept09	Patuakhali, Baga	Mother and House visits (5)	Beneficiary

SO 3 -List of People Interviewed

Date	Location	Person(s) or Group	Organization
28/08/09	Dhaka	Barbara Burroughs	SC
	Dhaka	Kelly Stevenson	SC
	Dhaka	John Meyer	SC
	Dhaka	Saikat Saja	SC
	Dhaka	Ruhul Amin	SC
	Dhaka	Murshida Akter	SC
29/08/09	Barisal	MD. Shah Suja	SC
"	Barisal	MA Sattar	SC
	Barisal	Tofael Ahmed	SC
	Barisal	QE Dildar Mahmud	SC
	Barisal	Dr. Shohel Rana	SC
	Barisal	Foiz Ahmed	SC
	Barisal	Md. Abdus Samad	SC
	Barisal	SO3 team meeting	SC
29/08/09	Bhola	Mamun Muztaba	SC
	Bhola	Tahura Aktar	SC
	Bhola	Moiuddin	SC
	Bhola, Rajapur Union	CPP Meeting	
30/08/09	Bhola, Pakkhia Union	UMDC Meetng	
	Bhola Phkkhia Union	VDC meeting	
	Bhola	Bashir Ahmed	CPP Director

	Bhola	SO3 team	SC
31/08/09	Bhola, Union Badarpur	CPP meeting	
	Bhola, Char Kacheohapia	VDC Meeting	
	Bhola	Sanwarul Hoque Khan	SC
01/09/09	Patuakhali	Mahabub Hassan	SC
	Patuakhali, Bara Bighai Union	UMDC meeting	
	Patuakali, Bodapur Union	VDC meeting	
02/09/09	Patuakhali	SO3 team meeting	SC
03/09/09	Patuakhali, Dhulasar Union	UMDC and CPP together	
06/09/09	Barisal	JoJ field staff debrief	SC
07/09/09	Dhaka	Margarita Clark	SC
07/09/09	Dhaka	Towfique Aziz	SC
08/09/09	Dhaka	JoJ HQ Debrief	SC, HKI, NGO Forum, BRCS/CPP
08/09/09	Dhaka	Shahnaz Zakaria	USAID

Program Processes, M&E - List of People Interviewed

Date	Location	Person(s) or Group	Organization
23 Aug 09	Dhaka	Shahnaz Zakaria, Tofayel Alam, Shibly (entry meeting)	USAID
23 Aug 09	Dhaka	John Meyer	SC
24 Aug 09	Dhaka	ED and staff	NGO Forum
24 Aug 09	Dhaka	Mohammed Zia,	SC
25 Aug 09	Dhaka	Kelly Stevenson	SC
25 Aug 09	Dhaka	Margarita Clark	SC
25 Aug 09	Dhaka	Fazlul Wahab	BRCS/CPP
25 Aug 09	Dhaka	Saikat Saha	
26 Aug 09	Barisol	Barisol staff	NGO Forum
26 Aug 09	Barisol	Md. Abdus Sattar	SC
26 Aug 09	Barisol	Towfique Aziz	SC
27 Aug 09	Barisol, Randpur	SO 1 female Focus Group (8)	Beneficiaries
27 Aug 09	Barisol	Kanchan Khisa	HKI
27 Aug 09	Barisol	HKI staff	HKI
28 Aug 09	Barisol, Chandipur	SO 1 Female Focus Group (8)	Beneficiaries
28 Aug 09	Barisol	VDC (6)	Beneficiaries
29 Aug 09	Barisol	Foiz Ahmed	SC
29 Aug 09	Barisol	Dr. Shohel Rana	SC
30 Aug 09	Bhola	Bashir Ahmed	CPP
30 Aug 09	Bhola	Executive Director and staff	Grameen Jano Unnayan Sangstha
30 Aug 09	Bhola	NGO Forum staff	NGO Forum
30 Aug 09	Bhola	Md. Sanwarul Hoque Khan	SC
31 Aug 09	Bhola	Md. Shah Suja	SC
31 Aug 09	Bhola	HKI staff	HKI
31 Aug 09	Bhola	Finance staff	SC
31 Aug 09	Bhola	JoJ Staff Female Focus Group (10)	SC
1 Sept 09	Patuakhali	Mahabub Hassan	SC
1 Sept 09	Patuakhali	NGO Forum staff	NGO Forum
1 Sept 09	Patuakhali	K.M Enayet Hussein, ED & staff	Social Development Agency
2 Sept 09	Patuakhali	Ruhul Amin	SC
2 Sept 09	Patuakhali	South Asia Partnership ED & staff (7)	South Asia Partnership
2 Sept 09	Patuakhali	HKI staff	HKI
2 Sept 09	Patuakhali	Md. Abdus Samad	SC
3 Sept 09	Patuakhali	M&E staff	SC
3 Sept 09	Patuakhali	Mahabub Hassan (follow-up)	SC
5 Sept 09	Barisol	Md. Abdus Sattar (follow-up)	SC
7 Sept 09	Dhaka	Diane Lindsay	HKI
7 Sept 09	Dhaka	Kelly Stevenson (follow-up)	SC
8 Sept 09	Dhaka	Shahnaz Zakaria, Tofayel Alam	USAID

**SO 2, Commodity Management, Environmental Compliance
List of People Interviewed**

Date	Location	Person(s) or Group	Organization
24 Aug09	Dhaka	Dr. Fardosi / JoJ PM	SC
25 Aug09	Dhaka	Margarita Clark, ACD	SC
26 Aug09	Barisal, Barisal Sadar	Barisal Program Team	SC
26 Aug09	Barisal, Babugani	Field Officers (10) Focus Group	SC
26 Aug09	Barisal, Babugani	District Health (EPI)	MOH
26 Aug09	Barisal, Babugani	District Health (FP)	MOH
26 Aug09	Barisal, Babugani	Mother and House visits (8)	Beneficiary
27 Aug09	Barisal, Rangasree	Court Yard Meeting (12 mothers, CHV)	SC and Beneficiaries
27 Aug09	Barisal, Rangasree	Mother and House visits (6)	Beneficiary
27 Aug09	Barisal, Radri Shibpur	CHV (20) Focus group	SC partner
27 Aug09	Barisal, Radri Shibpur	Community Meeting (25-30)	Community members
28 Aug09	Barisal, Kalaskati	Court Yard Meeting (12 mothers, CHV)	SC and Beneficiaries
28 Aug09	Barisal, Kalaskati	Mother and House visits (6)	Beneficiary
28 Aug09	Barisal, Barisal Sadar	Dr Rana / JoJ Deputy PM	SC
29 Aug09	Bhola, Bapta	CHV (10) Focus group	SC partner
29 Aug09	Bhola, Bhola Sadar	Field Officers (10) Focus Group	SC
30 Aug09	Bhola, Bapta	Mother and House visits (5)	Beneficiary
30 Aug09	Bhola, Bhelu Miah	Mother and House visits (4)	Beneficiary
31 Aug09	Bhola, Bhola Sadar	NGO Forum Dist. Manager	NGO Forum
31 Aug09	Bhola, Bhola Sadar	NGO Forum FW (4)	NGO Forum
31 Aug09	Bhola, Bhelu Miah	Mother and House visits (4)	Beneficiary
1 Sept09	Patuakhali, Patuakhali Sadar	Field Officers (12) Focus Group	SC
2 Sept09	Patuakhali, Baga	CHV (10) Focus group	SC partner
2 Sept09	Patuakhali, Baga	Mother and House visits (5)	Beneficiary

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2009

Save the Children USA in Bangladesh

Jibon o Jibika Program

End-line Survey Report

Mark Langworthy & Richard Caldwell

TANGO International

September 2009



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Acronyms

ARI	Acute Respiratory Infection
CHV	Community Health Volunteer
CPP	Cyclone Preparedness Programme
CSI	Coping Strategy Index
DAP	Development Assistance Program
DDS	Diet Diversity Score
EPI	Expanded Program on Immunization
FAST	Food Access Survey Tool
FCS	Food Consumption Score
GB	Graduated Beneficiary (survey or sample)
GOB	Government of Bangladesh
HAZ	Stunting (variable name)
HFP	Homestead food production
HKI	Helen Keller International
JoJ	Jibon o Jibika ("Life and Livelihood" in Bangla)
MCHN	Maternal and Child Health and Nutrition
NGO	Non Governmental Organization
PDA	Personal Digital Assistant
PPS	Probability Proportional to Size (technique)
SC	Save the Children USA
SO	Strategic Objective
U2	(Survey or sample of) Women with Under-Two Children
VMF	Village Model Farm
WASH	Water, Sanitation and Hygiene
WAZ	Underweight (variable name)
WFP	World Food Programme
WHZ	Wasting (variable name)

Executive Summary

Save the Children USA (SC) was awarded a Title II Development Assistance Program that promotes food security in three highly vulnerable southern coastal districts of Barisal, Bhola and Patuakhali. This program is entitled *Jibon o Jibika (JoJ)*⁴ and is being implemented in Bangladesh in collaboration with Helen Keller International, the NGO Forum for Drinking Water Supply and Sanitation, the Cyclone Preparedness Programme of the Bangladesh Red Crescent Society and 14 local NGO partners. The program implements activities in 13 upazilas of these districts. The JoJ program has targeted a total population of over 2,600,000 individuals, with a specific focus on 180,000 children under two years of age and over 72,000 pregnant women.

The JoJ program seeks to reduce high levels of food insecurity and malnutrition with the stated goal of **decreased household food insecurity in three districts of Bangladesh's Barisal division**. The program is based on three interrelated strategic objectives (SOs) serving vulnerable households in the target area, especially those households with children under the age of two years. The SOs, as articulated by the program, are:

- SO1: Food availability and purchasing power at the household level will have increased. This strategic objective is pursued through the Homestead food production (HFP) component, which supports households to apply improved home gardening, agricultural, and poultry practices. The support is intended to provide households with a wider diversity of foods in their diets, as well as to enhance household income through increased sales of crop and livestock products.
- SO2: The health and nutrition of pregnant women and children under the age of two will have improved. Two program components support this strategic objective: Maternal and Child Health and Nutrition (MCHN), and Water and Sanitation (WASH). The MCHN component works with mothers of under-2 children to promote appropriate antenatal practices, infant and child feeding practices, and effective health-seeking behaviors for children in the household.
- SO3: Households will be more resilient to shocks that threaten their livelihoods. The activities under this strategic objective are mostly directed toward improving local and community preparedness for emergencies, but also include provision of support to households affected by emergencies.

While the program activities under SO1 and SO2 are directed toward mothers with children under 2 years of age and their households, the SO3 activities are directed to entire communities. The SO1 activities are implemented in only 440 communities.

The end-line survey of JoJ aims to: (i) assess the extent to which JoJ accomplished its stated goals and objectives; (ii) assess the effectiveness of program activities; (iii) obtain answers to key questions related to lessons learned, best practices, sustainability, and recommendations for future programming; and (iv) document/summarize the overarching lessons learned to a wider audience including partner organizations, donors, Government of Bangladesh (GOB) and other stakeholders.

⁴ "Life and Livelihood" in Bangla.

Methodology

The end-line survey was designed with two overall objectives in mind. The first objective was to obtain information that can be directly compared with the results from the baseline survey (and where possible with the mid-term as well). To address this objective the end-line questionnaire included the same questions and response categories as the baseline survey, to ensure that the same information was captured. Some additional questions were included to measure additional indicators of household food security. The required information and procedures for calculating these additional indicators are described more fully below. To be consistent with the baseline, a sample of households with children under two years of age was drawn and interviewed. The second, and more general, overall objective of the end-line survey was to quantitatively measure as fully as possible the ways that JoJ program activities have affected beneficiaries (children, mothers, and their households). In order to assess the extent to which each of the program components have provided these longer-term benefits, a second sample was drawn from households that have “graduated” from direct program support. These households had previously participated directly in some or all of the program interventions, but they no longer participated directly in the MCHN component of the program at the time of the survey. Interviews of these households were designed to capture household knowledge, attitudes, practices, and food security status after they have completed their direct participation with the program. This information can be used to assess the long-term and cumulative impacts of the program.

The first sample (U2) is population-based, drawn randomly from all households in selected mouzas that have children under two years of age. This sample includes households that currently participate in the program (as well as households that do not participate in any program activities [non-participants]). A total of 2,821 households are included in the U2 sample. The second sample (GB) has been randomly drawn from the list of all graduated beneficiaries. Graduated beneficiaries participated in MCHN and possibly other activities until their children reached two years of age. If they became pregnant again, they could still participate in program activities but would no longer receive any food aid incentives provided for mothers participating for the first time. A total of 897 households were selected for the GB sample.

Main Findings

Homestead food production (HFP)

The Homestead food production component of JoJ provides technical assistance to households in homestead gardening, agricultural practices, and poultry production. In homestead gardening, the percentage of households using improved techniques in the U2 sample was very similar to the baseline value. The GB sample, however, exhibited a significantly higher percentage of households using improved garden techniques, suggesting that the support to gardening has a positive impact on practices, but the changes take place only over a period of time. The use of improved techniques was also much more widespread for households that participated in the HFP than those that did not participate directly. However, use of improved techniques was also very high for households not in the HFP, and significantly higher than the baseline figures. Production of dark green leafy vegetables increased from baseline to end-line, again with the most pronounced increases found in the GB sample.

Household Food Consumption and Food Security

Two dimensions of household food security were measured in the JoJ quantitative surveys: measures of the quality of current food consumption (at the time of the survey) in terms of number of different food categories eaten, and ii) measures of longer-term food security conditions, namely vulnerability to food insecurity in times of stress or shock. Comparison of end-line with baseline figures shows that household current consumption, as measured by household Diet Diversity Score (DDS), has increased. However, the Food Consumption Score (FCS), which weights different food categories based on their nutritional values, did not show a measurable increase from the baseline to the end-line survey rounds. The longer-term food security conditions of households improved somewhat, with the percentage of households categorized as severely food-insecure falling from 44 percent in the baseline to 33-40 percent in the end-line samples. The HFP component of JoJ is supposed to improve households' access to a wider variety of foods, and households in unions where HFP has been implemented had greater diet diversity, with DDS of 5.8, compared with 5.4 in unions where the HFP component has not been implemented.

Maternal and Child Health and Nutrition (MCHN)

The MCHN component has supported a wide range of messages to mothers about antenatal care practices, appropriate infant and child feeding practices, and health-seeking behaviors for their children. Overall, the reported changes in awareness of health and nutrition issues increased, with significant increases in the percentages of mothers, their husbands and their mothers-in-law (husbands and mothers-in-law considered to be individuals with strong influence on mothers' decisions) that reported awareness of appropriate antenatal practices.

Actual practices also exhibited improvements from the baseline to the end-line rounds, with substantial increases in the percentages of mothers receiving antenatal checkups, eating more during pregnancy, exclusive breastfeeding, vaccinations of children, and use of recommended remedies for diarrhea. However, comparison of results between the U2 and GB samples showed that the households in the GB sample had lower rates of adoption of improved practices than in the U2 sample, particularly percentages of mothers receiving antenatal checkups, increased food consumption during pregnancy, percentage of children with full vaccinations, and percentage of children with diarrhea taken for treatment. These findings suggest that the use of MCHN practices observed for households currently receiving program support tends to diminish after direct support has ended.

Water, Sanitation and Hygiene (WASH)

The WASH component is directed toward improving household access to clean water and improving household sanitation facilities and hygiene practices. There has been very little change in the source of water for drinking – over 90 percent of all households get drinking water from deep tubewells – and this was true even at the time of the baseline. The percentage of households with ring slab latrines increased from 36 percent in the baseline to 74 percent in the end-line round. However, about 80 percent of all ring slab latrines had broken seals at the time of the end-line. Many of these seals may have been broken by Cyclone Sidr, but the reasons for the broken seals are not known. Dramatic increases in awareness of appropriate handwashing techniques are also evident from the baseline to the end-line. However, this information represents the respondents' *awareness* of appropriate practice, not actual practice.

The survey results provide evidence of the health benefits of improved water and sanitation. Households with awareness of appropriate hygiene practices and access to adequate water and sanitation facilities have lower incidence of diarrhea and Acute Respiratory Infections (ARI) among children. The factors most strongly associated with lower incidence of these illnesses were access to sanitary latrines and use of hygienic latrine practices.

Anthropometric Indicators

The baseline and end-line survey rounds collected anthropometric information about children to assess their nutritional status. Three indicators were measured: wasting (low weight for height), which measures the acute, or current undernutrition; stunting (low height for age), which indicates long-term, or chronic undernutrition; and underweight (low weight for age), which indicates both acute and chronic undernutrition. The percentage of under-2 children suffering from all three types of undernutrition declined significantly from the end-line to the baseline survey rounds. Comparison of results between SO1 unions (unions where SO1 activities are being supported) and non-SO1 unions shows that the percentages of children suffering from all three dimensions of undernutrition are significantly lower in SO1 unions than non-SO1 unions, suggesting that the SO1 activities have in fact led to improved nutritional status of children, in part as a result of more diverse diets, as described previously.

Linear regression models were computed to analyze the causes of differences in the anthropometric measures of children across households in the U2 and GB samples. In the U2 sample, the model results indicate that the MCHN, WASH, and HFP components each individually contributed to the improved nutritional status of children. However, when the models were estimated on the GB sample, which includes children aged 24 to 59 months and households that no longer receive direct program support through MCHN, the results provided no indication of any impacts of program components on the nutritional status of the older children. The lack of statistically significant results on the sample of older children raises concerns about the sustainability of program interventions on children's long-term nutritional status.

Emergency Preparedness and Response

The baseline and end-line surveys obtained information from interviewed households about the types of services and support they received during emergencies. It should be emphasized that at the time of the baseline survey, households in the program intervention areas had not suffered major emergencies for several years, while the end-line round questions referred to support received after Cyclone Sidr, one of the most severe cyclones ever to hit the program areas. Because the conditions were so different, direct comparison of results from the baseline and end-line survey rounds must be interpreted with some caution, understanding that the demand for emergency services during the respective reference periods was much lower in the baseline than the end-line. With this caveat in mind, comparison of results between the two survey rounds suggests that emergency preparedness has improved over the course of the program. In the baseline, only one third of surveyed households had received advance warning of the cyclone that hit prior to the baseline survey, compared with over 90 percent in the end-line round. A much higher percentage of households moved to shelters in the end-line than in the baseline, but this difference may reflect the less severe nature of the emergencies referred to in the baseline. Another important finding from the end-line survey is the very high percentage of households, over 95 percent, that received water during the last emergency.

Targeting

Economic status of households has been measured on the basis of income per household member, expenditures per household member, and household wealth, measured as the number of different types of assets that the household possesses. There are no important differences in economic status of non-participants, current participants, and graduated participants in the MCHN component of JoJ. In particular there is not strong evidence that program participation is biased toward households of either higher or lower economic status. This is not surprising, since in fact, over 90 percent of all eligible households in program areas currently participate in the MCHN component, so the participating households are likely to be representative of the whole spectrum of economic conditions. Also, there are no statistically significant differences in the economic status measures between HFP participants and non-participants.

Sustainability

The differences between the U2 and GB samples reveal some distinct patterns across the different program categories. On the one hand, the utilization of improved gardening practices is even higher in the GB sample than the U2 sample, suggesting that the adoption of these practices is sustainable. The fact that a high percentage of households that does not participate directly in HFP utilizes the recommended practices also suggests that farmers generally perceive the benefits of these practices, and take them up even without direct program support. On the other hand, the percentage of mothers following recommended MCHN practices is lower in the GB than the U2 sample. These results suggest that MCHN attitudes and practices tend to be given up after households lose direct program support, and raise concerns about the sustainability of the MCHN interventions.

1. Introduction

Food insecurity continues to be a major problem in Bangladesh. Although production of food crops has increased dramatically, and overall food availability in the country is not as severe a problem as in the past, poverty continues to restrict access to food for many households throughout the country. The coastal area was historically a major food-producing area of the country, but this area has suffered from river erosion, salinity, and repeated natural disasters, and these areas are now highly food-insecure. According to WFP, the districts of the Barisal, Bhola, and Patuakhali divisions in particular are suffering from very high levels of food insecurity.

Food aid has played an important role in the past. Food aid deliveries have historically been provided for relief, and distributed directly to beneficiaries. However, with increased domestic production and the perception that direct transfers of food did little to address the underlying causes of poverty and food insecurity, the role of food aid has shifted from general relief to focused development assistance, targeting the most vulnerable in society.

In this context, Save the Children USA (SC) was awarded a Title II Development Assistance Program (DAP) that promotes food security in three highly vulnerable southern coastal districts of Barisal, Bhola and Patuakhali. This program is entitled *Jibon o Jibika (JoJ)*⁵ and is being implemented in Bangladesh in collaboration with Helen Keller International (HKI), the NGO Forum for Drinking Water Supply and Sanitation, the Cyclone Preparedness Programme (CPP) of the Bangladesh Red Crescent Society and 14 local NGO partners. The program implements activities in 13 upazilas of these districts. The JoJ program has targeted a total population of over 2,600,000 individuals, with a specific focus on 180,000 children under two years of age and over 72,000 pregnant women.

The JoJ program seeks to reduce high levels of food insecurity and malnutrition with the stated goal of ***decreased household food insecurity in three districts of Bangladesh's Barisal division***. The program is based on three interrelated strategic objectives (SOs) serving vulnerable households in the target area, especially those households with children under the age of two years. The SOs, as articulated by the program, are:

- SO1: Food availability and purchasing power at the household level will have increased. This strategic objective is pursued through the Homestead food production (HFP) component, which supports households to apply improved home gardening, agricultural, and poultry practices. The support is intended to provide households with a wider diversity of foods in their diets, as well as to enhance household income through increased sales of crop and livestock products.
- SO2: The health and nutrition of pregnant women and children under the age of two will have improved. Two program components support this strategic objective: Maternal and Child Health and Nutrition (MCHN), and Water and Sanitation (WASH). The MCHN component works with mothers of under-2 children to promote appropriate antenatal practices, infant and child feeding practices, and effective health-seeking behaviors for children in the household.
- SO3: Households will be more resilient to shocks that threaten their livelihoods. The activities under this strategic objective are mostly directed toward improving local

⁵ "Life and Livelihood" in Bangla.

and community preparedness for emergencies, but also include provision of support to households affected by emergencies.

Under SO1, HKI has responsibility for implementing a homestead horticulture and agro-forestry component. Under SO2, SC has been directly implementing a maternal and child health and nutrition (MCHN) component while at the same time the NGO Forum has been implementing a water and sanitation (WASH) component. Under SO3, SC works with the CPP to implement an emergency preparedness component. JoJ officially began operations on October 1, 2004, with an initial completion date of September 30, 2009. However, following Cyclone Sidr, which traveled directly through a significant part of the JoJ program area, the DAP was amended to include cyclone recovery activities as well as an extension of development operations through May 2010.

Table 1.1 presents the program indicators that are measured on the basis of household-level information. The end-line survey has been designed to provide the necessary information to measure these indicators. The indicators are broken down by strategic objective. The end-line survey is designed to provide the necessary information to measure these indicators at the end of the program and to measure changes from the baseline values.

Table 1.1 JoJ program indicators

Homestead Food Production Indicators
SO1: Food availability and purchasing power at the household level will have increased
1. % of the population groups (reproductive-age women and children <2 yrs) of participating HHs that consume the following foods regularly: dark green leafy vegetables; pulses, animal sources of food
2. Average household net production from leafy vegetables (in kg during last 2 months)
3. % of eligible households with productive homestead gardens
4. % poultry-raising HHs successfully increasing egg production
5. % of households adopting improved production practices
6. % HHs knowing where and when to obtain technical guidance for food production
7. % HHs with poultry knowing when and how to vaccinate
8. % program participants using production practices based on up-to-date knowledge of market opportunities
9. % HH knowing how to use market price and demand information
10. Increase in diet diversity per household
Health Indicators
SO2. Health and nutrition of pregnant women and children under the age of two will have improved
1. % children between 6 and 23.9 months stunted
2. % children between 6 and 23.9 months underweight
3. % children under the age of 2 years with diarrhea in past two weeks
4. % children 6-23.9 months being fed complementary foods in addition to breastmilk at age 6 months
5. % child caregivers with children <2 with appropriate hand washing behavior
6. % children <2 continuously fed during diarrhea
7. % children <2 years ill with ARI who were served by an IMCI-competent CHV or provider
8. % children 9-23.9 months immunized for measles at 12 months
9. % women with children <2 years who received at least 3 antenatal checkups by a qualified provider
10. % children <6 months given only breast milk
Emergency Preparedness and Responses
SO3: Households will be more resilient to shocks that threaten their livelihoods
1. % of people in target areas with access to emergency relief supplies

2. End-line Survey Objectives

2.1 Objectives

The end-line survey of JoJ aims to: (i) assess the extent to which JoJ accomplished its stated goals and objectives; (ii) assess the effectiveness of program activities; (iii) obtain answers to key questions related to lessons learned, best practices, sustainability, and recommendations for future programming; and (iv) document/summarize the overarching lessons learned to a wider audience including partner organizations, donors, Government of Bangladesh (GOB) and other stakeholders.

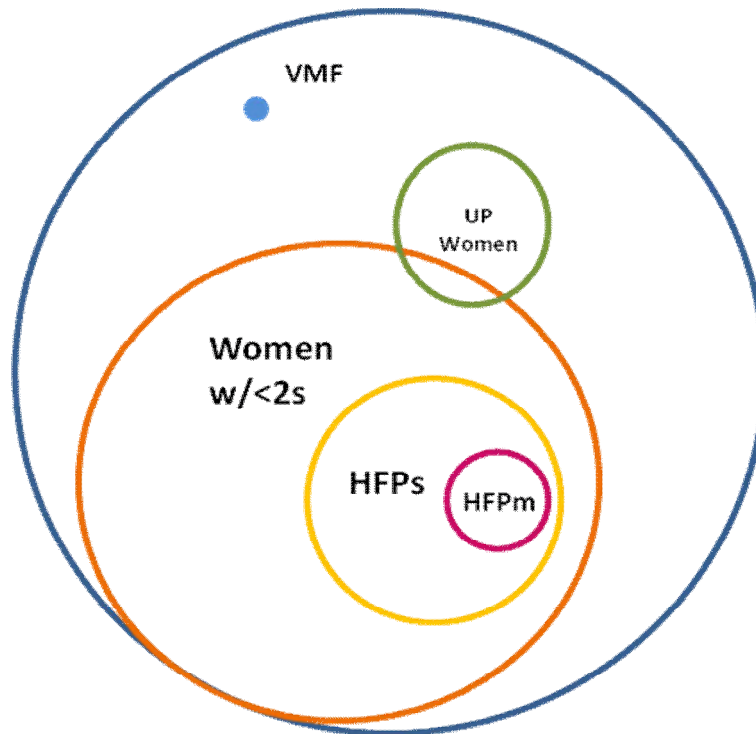
The end-line survey will support the final evaluation by: (i) providing data for key program outcome indicators; (ii) providing temporal and geographical comparisons of key indicators; and (iii) document conclusions based on quantitative results.

2.2 Program Populations

The core target population for JoJ is households with pregnant and lactating women and with children under two years of age. The program works with this population to address SO2. Activities supporting SO1 are undertaken with sub-groups of this core target population, while activities to support SO3 are directed toward communities at large within the program area. Thus, the different program components work with different sub-populations within the program area. The sub-populations of interest for the final evaluation are identified in Figure 1.

In order to provide relevant quantitative data to support the objectives of the final evaluation, representative samples of relevant JOJ sub-populations will be needed. Figure 1 illustrates the 'universe' of sub-populations in a village where all JoJ activities are present.

Figure 2.1. Sub-populations in a JoJ-supported village



In the figure, the largest circle represents all village households. This circle includes the beneficiaries of the WASH and the SO3 emergency preparedness program components. The next largest circle (orange) (Women w/<2s) represents all pregnant women and women with children under two years of age at any given time. These women and their households are the target beneficiaries for the MCHN component under SO2. The third largest circle (yellow) (HFPs) is a sub-set of this group and composed of women with children under two years of age who participate in homestead food production (HFP) activities under SO1, and the smaller (pink) circle within this sub-population (HFPm) is composed of women participating in marketing groups for homestead food production. The HFP activities are undertaken in 440 villages. Outside of women with children under two years of age (green circle) is a small population of ultra-poor women (a small proportion of which could also be women with children under two years of age). Finally, 440 villages throughout the program area, represented by a solid blue circle, have one household that is a Village Model Farm (VMF). Note that not all villages with MCHN programs have HFPs or VMFs.

The final evaluation is concerned with measuring changes to all sub-populations that participated in each of the components of JoJ. Therefore, the end-line survey is designed to capture changes in different sub-groups. However, not all groups require a quantitative survey. Two quantitative surveys were designed to capture changes among the major sub-populations: a Survey of Women with Under-Two Children (U2); and a Graduated Beneficiary (GB) Survey. The design of each of these two surveys is described in the following sections.

3. Types of Surveys

The end-line survey was designed with two overall objectives in mind. The first objective was to obtain information that can be directly compared with the results from the baseline survey (and where possible with the mid-term as well). To address this objective the end-line questionnaire included the same questions and response categories as the baseline survey, to ensure that the same information was captured. Some additional questions were included to measure additional indicators of household food security. The required information and procedures for calculating these additional indicators are described more fully below. To be consistent with the baseline, a sample of households with children under two years of age was drawn and interviewed.

The second, and more general objective of the end-line survey was to quantitatively measure the ways that JoJ program activities have affected beneficiaries (children, mothers, and their households) as fully as possible. The JoJ program is designed to actively support households with pregnant mothers or children under the age of two years. After children reach two years of age, their households “graduate” from the program and no longer receive direct support. However, the intention is that the support provided by the program lead to permanent behavior changes that would lead to continuing and cumulative benefits to children and households. In order to assess the extent to which program interventions have in fact provided these longer-term benefits, a second sample was drawn from households that have “graduated” from direct program support. These households participated directly in some or all of the program interventions, and their children were supported until they reached two years of age, and so have received a complete “cycle” of support from the program. They no longer participated directly in the MCHN component of the program at the time of the survey. Interviews of these households were designed to capture household knowledge, attitudes, practices, and food security status after they have completed their direct participation with the program. This information can be used to assess the long-term and cumulative impacts of the program.

The two samples explore changes in i) households with children under two years who currently participate in the MCHN program component and ii) women who participated in the past (that is, were pregnant or had children under two years of age and participated in the program). The first sample (U2) is population-based, drawn randomly from all households in selected mouzas that have children under two years of age. This sample includes households that currently participate in the program (as well as households that do not participate in any program activities (non-participants). The second sample (GB) has been randomly drawn from the list of all graduated beneficiaries. Graduated beneficiaries participated in MCHN and possibly other activities until their children reached two years of age. If they became pregnant again, they could still participate in program activities but would no longer receive any food aid incentives provided for mothers participating for the first time.

The U2 sample is a population-based survey. The sample was drawn from the target population of all households in the program area that have children under the age of two. The U2 survey addresses two issues. First, because it is a population-based survey – specifically, a random sample of households selected from the target population – the results provide an estimate of the proportion of all eligible households that actually participated in JoJ. Comparison of program registration rosters with census information suggests that the level of participation of eligible individuals was very high: at least 90 percent of all women with under-two children apparently

participated in JoJ. One of the objectives of the U2 survey was to independently confirm program participation rates using primary data.

The second issue to be addressed by the U2 survey was comparison of results from earlier survey rounds. The sample frame for the U2 survey is identical to those for the baseline and mid-term surveys, so the results from this survey are directly comparable with those from the earlier survey rounds.

The purpose of the GB survey was to measure the longer term impacts of program interventions on women, children, and households that have previously participated in JoJ, but have now graduated from direct program support. This survey focuses on measuring outcome indicators, particularly measures of behavioral changes, and also on respondents' assessments of the strengths and weaknesses of the various program interventions.

3.1 Women with Under-Two Children (U2) Sample

Study Population:	Households of women with children under two years of age
Inclusion Criteria:	All households of women with children under two years of age, residing in selected mouzas
Strata:	Districts
Sampling Frame:	Households with children under two years of age
Sample Design:	Stratified (by district), multi-stage clustered random sample (12 unions/district; 4 mouzas/union) without replacement

The survey was designed to cover the population of women with children under two years of age, and measure the proportion of women who participated in SO2 activities aimed at improving mother and child health and nutrition. The sample includes women from three categories: i) those who did not participate in any JoJ component, ii) those who participated in the MCHN component only, and iii) those who participated in both the MCHN and Homestead food production. The study compares the results across households of women in these three categories and also compares them with results from the baseline population.

Topics:	Maternal and Child Health Care Practices Nutrition and Food Security HFP (including agriculture and poultry) Anthropometrics for all children 6-24 months WASH Disaster Risk Reduction
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3.2 Graduated Beneficiary (GB) Sample

The sample for this survey includes all women, and their households, who have participated and graduated from the MCHN program. The outcome indicators from this survey can be compared with those from the U2 survey, to see how differences observed against the baseline for women who have graduated from the program compare to those for current program participants (U2). The sample was designed based on the assumption that little impact on stunting would be observable in active beneficiaries because not enough time had elapsed since the last survey. The best way to measure impact thus was to assess households that had completed the whole

cycle of support of the MCHN interventions. The measured children in those households are by definition older than two years. However, it is important to note that because the children in these households are older than two years, the anthropometric measurements, with the exception of weight-for-height (which is not age-specific), are not directly comparable with either the baseline or the end-line U2 samples.

Study Population:	Households that have graduated from the MCHN program
Inclusion Criteria:	Participated in the growth monitoring and have records available through the program or center
Sampling Frame:	Households of women who participated in the program between an entry date of January 1, 2006 and an exit date of March 31, 2009
Sample Design:	Multistage Clustered Sample (30 unions; two mouzas/union; 15 households/mouza) without replacement

This sample is designed to obtain information about conditions of households that have received a complete cycle of support through the program. Because they are no longer receiving direct support, this sample provides information about the sustained impacts of program interventions on households' attitudes, practices and conditions after the interventions with the sampled households have been completed. All households selected in this sample have participated in the MCHN component. A subset of the sampled households has also participated in the HFP activities. Another objective of this sample is to assess the complementary impacts of participating in both program components by comparing the results of households that participated in both MCHN and HFP with those households that participated in MCHN only.

Topics:	Maternal and Child Health Care Practices Nutrition and Food Security WASH HFP Anthropometrics for all children 6-59 months Disaster Risk Reduction
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4. Questionnaire/Tools

During the preparation for the end-line survey, the questionnaires for the U2 and GB surveys underwent extensive review by SC staff and TANGO to ensure questions were relevant (linked to program interventions), culturally appropriate, and comparable to the baseline survey. While the results of the baseline survey confirmed the relevancy of the majority of questions, post-baseline reflection suggested the need for additional exploration of factors such as reasons for participation and post-intervention outcomes.

Results of the baseline were also used to eliminate questions where the baseline results suggested that no further gains would be achieved, usually due to already high awareness in the baseline. During survey training, the end-line survey questionnaires were again pre-tested in approximately 35-50 households at the community level, using actual household interviews. A structured pre-test guide sheet was used to collect feedback, after which the questionnaire was

modified as appropriate. A final version in Bangla and English was made available after survey training.

The end-line quantitative survey is a household-level, multi-indicator survey designed to explore changes from the baseline survey regarding diverse issues related to livelihoods and well-being of those individuals and households that participated in program activities. The survey utilizes the household as the unit of analysis and, therefore, provides comparisons that can be attributable to household and community-level interventions undertaken by SC. The survey uses random selection criteria and generates results that can be generalized to the household level across the strata surveyed.

Below are the specific components of the surveys.

Demographics: Basic background information on respondent and family, including: level of education; livelihoods and income; specific information on children under 24 months of age (U2 Survey) or 24-59 months of age (GB Survey).

Homestead Food Production: Detailed information on homestead agricultural activities; improved cultivation practices; household production of fruits and vegetables; and poultry raising.

Household-level Food Security: This section provides details on diet diversity and quality. In addition to the indicators reported in the baseline survey, categories based on the Food Access Survey Tool (FAST) and the Diet Diversity Score (DDS), two additional indicators of household food security are also measured in the end-line survey: the Food Consumption Score (FCS) and the Coping Strategy Index (CSI). The FCS provides a more accurate measure of the quality of the household diet, and the CSI provides information about household vulnerability to food insecurity during times of stress.

Maternal and Child Health Care Practices: This section includes information about antenatal care, breastfeeding and infant feeding practices, child vaccination coverage, prevalence and treatment of common childhood illnesses, and care-seeking practices for those illnesses.

Anthropometrics: Weight, height and age measurements for children 6-24 months (information collected in the survey of households with under-2 children) and 24-59 months (collected in the survey of households of graduated beneficiaries).

Water and Sanitation: Access to and use of safe water sources and sanitation facilities; hand-washing behaviors.

Disaster Preparedness and Response: Includes information on disaster preparedness and response: experiences with early warning systems; flood disaster; and access to disaster shelters.

5. Sampling Methodology

Multi-stage sample designs were used for the end-line household-level surveys. The sample design for the U2 sample followed that of the baseline to ensure that the results are comparable. The GB sample was designed to capture information about graduated beneficiaries, so its sample frame is different from the other two surveys.

5.1 U2 Survey

The first stage of the survey of women with under-two children (U2) is a stratification of the area by the three districts (Barisal, Bhola and Patuakhali). This stratification is justified based upon

the diverse geographical and cultural conditions of the JoJ operational area, which makes resources available to households sufficiently different to expect a geographical variation in livelihoods and resources. This stratification is the same used in the baseline survey, so temporal comparisons can be disaggregated by district. The second stage was the selection of unions within the three districts. The number of unions selected per district was 12, due to expected magnitude of intra-union variation being relatively large compared to inter-union variation, thus minimizing sampling error. Unions were selected using the probability-proportional-to-size (PPS) technique.

The third stage of sampling was the random selection of four mouzas within selected unions. The final stage of the sampling process was the selection of women with children under two years of age. In each mouza, a fixed number of women with children U2 was selected using the systematic random sampling method. Details of sample selection are provided below.

Number of Clusters and Planned Respondents per Cluster

A minimum required sample size of 897 households per stratum was computed. Annex 1 provides details for the computation of the minimum required sample size. Within each of the three districts (strata), 12 unions were selected as clusters within the districts. The unions were selected using the PPS technique. Within each selected union, four mouzas were randomly selected from the list of all mouzas in the union.

Table 5.1 Sample design characteristics

	Number
Calculated Minimum Sample Size per Stratum	897
Number of Strata	3
Minimum Total Sample Size Required	2,690
Planned Sample Size per Stratum (includes 5 percent for non-response)	941
Planned Total Sample Size	2,824
Number of unions/district	12
Number of mouzas per union	4
Households with under-two children selected per mouza	20

Union and Mouza Selection

For the end-line survey, all unions were selected using PPS. Annex 2 provides details of the union selection for the U2 Survey.

A total of four mouzas was selected randomly from the list of all mouzas in the selected unions. Annex 2 provides details of the mouza selection for the U2 Survey.

Household (Mother) Selection

Within the selected mouzas, households with under-two children represent the target population from which households were selected. Since there is no list of all such households per mouza that could serve as a sample frame, the selection of households was made within the mouzas by following a variant of systematic random sampling, based on geographic ordering of the households. Because there was no list of individual households, the number of households with under-two children was approximated by using the number of households registered in the

MCHN program, which is available at the mouza level. Using this information, an interview skip value (k) was calculated by dividing the estimated total number of households in the mouza with under-two children by 20. The survey team entered the selected mouza from the main road entrance. The first household to be selected was chosen by randomly selecting a number between one and k, and counting to this household from where the team enters the mouza. If the selected household had an under-two child, it was interviewed. If the household did not have an under-two child, the adjacent houses were contacted sequentially until a house was found with an under-two child, and this would be the first household interviewed. After interviewing the first household, k-1 households were skipped, and the kth household was selected if it had an under-two child. If not, the adjacent households were contacted sequentially until a household with an under-two child was found. This procedure was followed until 20 households with under-two children were selected and interviewed. By using the skip value of k, the total number of households with under-two children was spanned in the selection process. Annex 3 shows the selection process schematically. Following this process, each household with an under-two child has an equal probability (1/k) of being selected (see Annex 4).

Potential Problems / Challenges with Household (Mother) Selection:

1. No one is at home
2. Male spouse at is home but mother is not at home
3. Only a grandmother or other relative is at home
4. Mother refuses to participate in the survey

If a household was selected and confirmed to have an under-two child, but the mother was not present, the interviewer left a message and returned to interview the mother later in the day. If it was not possible to interview the mother during the time the team was in the mouza, the household was counted as a non-response, and not replaced.

5.2 GB Survey

The GB survey was not stratified by district, since the objective of the survey was to measure changes in behaviors and household conditions after a household exits the program, and these changes were not expected to vary systematically across the districts.

Sample Size

The estimation of the minimum required sample size was the same as the procedure used for the U2 sample, described in Section 5.1 above. The only difference was that, because the survey is not stratified by district, only one comparison group was relevant, representing the three districts of the program intervention area. Thus, the minimum sample size required for the GB survey was 897 households.

For this survey, a modified 30 X 30 cluster sample strategy was developed, to provide a total planned sample of 900 households. The first stage of sampling was to select 30 unions from the three districts of the program area using the PPS selection procedure. In the second stage, two mouzas were randomly selected in each of the 30 selected unions. The third stage of sampling was the random selection of women that had 'graduated' from the MCHN activities. The women were systematically randomly sampled from lists of women that previously participated in JoJ,

but were currently graduated from receiving direct assistance (because their children were older than two).

Union and Mouza Selection

For the GB survey, the 30 unions were selected using PPS from a complete list of all the unions in the three program districts. The mouzas were selected randomly from the list of mouzas in the selected Unions. Annex 2 provides details of the union and mouza selection for the GB Survey.

Household (Mother) Selection

Households (mothers) were selected randomly, using a systematic random sampling procedure from beneficiary lists of women who participated in JoJ but exited the program on or before March 31, 2009. Based on initial field experience during field testing, it was found that many of the households on the participant lists had either moved or were not at home during the time of the survey. In order to address this situation, a total of 25 names were selected for each mouza, and the survey teams were instructed to work down the list until they had completed 15 household surveys in each mouza.

Potential Problems / Challenges with Household (Mother) Selection:

1. No one is at home
2. Male spouse at is home but mother is not at home
3. Only a grandmother or other relative is at home
4. Mother refuses to participate in the survey

If any of the above situations or any other problems were encountered, the household was skipped, and the interviewers were instructed to continue to the next household on the list. A record was kept of how many households were skipped and for what reason.

6. Survey Implementation and Logistics

Save the Children USA in Bangladesh contracted TANGO International to undertake the quantitative household end-line survey. TANGO International contracted a local consultant to act as the quantitative survey manager. The survey manager, with final approval of TANGO International, hired a team of interviewers. A total of seven interview teams were formed: five to conduct the U2 survey, and two to conduct the GB survey. The U2 teams were comprised of one supervisor, four household interviewers and two anthropometric measurers. The GB teams were made up of one supervisor, three interviewers and two anthropometric measurers. The interviewers and anthropometric measurers recorded all information directly into personal digital assistants (PDAs).

7. Survey Results

The following section reports results from the two samples of the end-line survey: U2 and GB. Where available, the baseline results are also reported for purposes of comparison. The baseline provides information about household characteristics, knowledge and practices prior to program interventions. The U2 sample results represent the characteristics of households that are currently participating in the program, and the GB results characterize households that had previously participated in the program and had graduated from the program at the time of the

survey. Comparison across these groups thus provides some insight into program impacts on households over time.

First, information about household participation in the program components in the two samples will be presented, broken down by different categories of household economic status. Then general household demographic characteristics will be presented and compared with the baseline results. Next, results will be presented following the order of the strategic objectives: homestead food production, food security and nutrition (SO1); maternal and child health care practices, water and sanitation, and anthropometric indicators (SO2); and disaster preparedness and response (SO3).

7.1 Program Participation

Table 7.1 provides a breakdown of the surveyed households by participation in JoJ component activities, MCHN and HFP. In all, the U2 sample includes 2,821 households. Of these households, selected randomly from the population of households with under-two children, over 90 percent participated in the MCHN program, and 14 percent also participated in the VMF program. Since this is a random sample, these proportions are statistically representative estimates of the overall participation rates in the program area. In fact, the level of coverage in the MCHN was extremely high, and consistent with secondary population information and program records. In the GB sample, all selected households were necessarily graduated participants of the MCHN program. Within this sample, about 13 percent also participated in the VMF program, roughly the same as in the U2 sample.

Table 7.1 Number of households participating in JoJ program components

	Number	%
U2 Sample		
Total Sample	2,821	100.0
Non-participant	244	8.6
Current participant – MCHN	2,577	91.4
Current Participant - HFP	387	13.7
GB Sample		
Total Sample	897	100.0
Participant – HFP	113	12.6

Figures 7.1 a-c present information about the economic status of households by category of household participation. These figures address two issues: i) the degree to which program interventions were targeted toward households of lower economic status, and ii) the extent to which participation in program activities improved the economic status of households. The survey provides information to construct three different measures of household economic status:

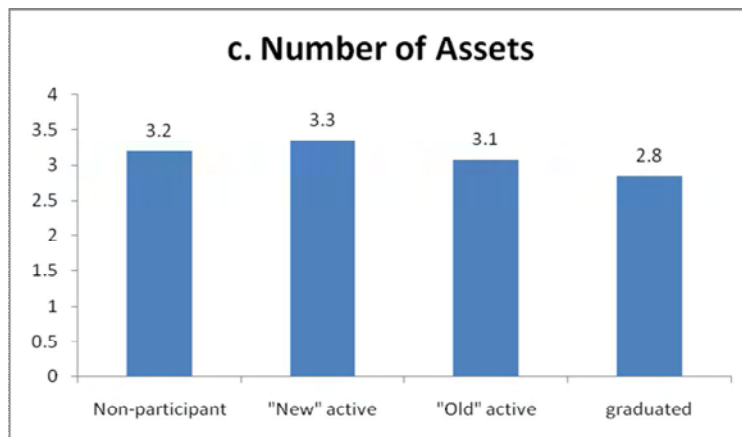
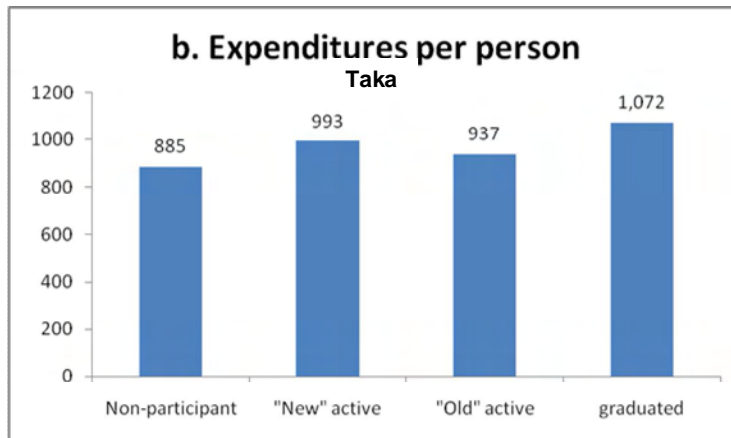
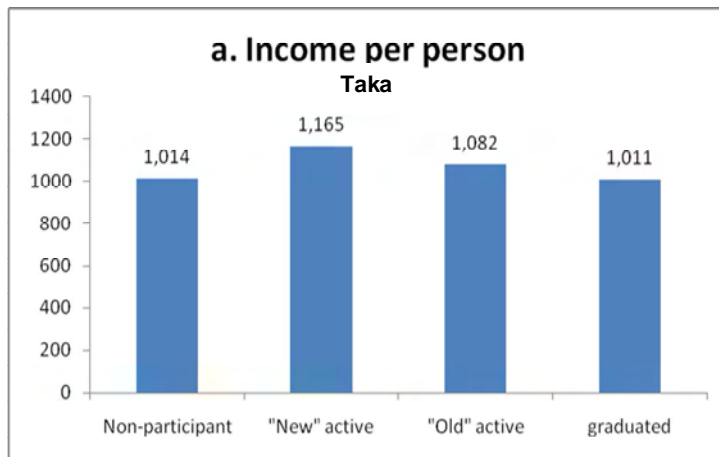
- Monthly household income per household member: This information was obtained from a question asking how much money the household earned in a month from all activities of the husband, wife and other household members. This amount is then divided by the number of household members to compute the monthly income per family member.
- Total monthly household expenditures per household member: Households were asked to report their monthly expenditures in eight categories (housing, food, utilities, education, transport, medical, loan repayment, others). Total monthly household

expenditures were computed by adding these categories, and then dividing by the number of household members.

- Number of different types of assets possessed by the household: Households were asked if they possessed any of a list of eleven household assets (wardrobe, table/chair/bench, clock, bed, radio, television, bicycle, motorcycle, telephone, rickshaw/van). The number of types of assets possessed by a household was computed by adding up the unique types of asset possessed by the household.

Conceptually, household income and expenditures are normally very closely related, although consumption may show less variation than income over time, as households save income in good times, and draw down savings in bad times to smooth out consumption over time. Operationally, both these measures are difficult to measure accurately, since they are both based on recall of factors that may fluctuate greatly over time, and the interview respondent may not be aware of all the sources of income or the expenditure patterns of all other household members. In addition, there is often concern that responses may be biased, especially concerning household income, as respondents may wish to exaggerate their level of economic distress or hide their level of economic activity. Generally, information on expenditures is considered to be more accurate than incomes, although there are also serious concerns about the accuracy of expenditure information based on respondent recall. Both the income and expenditures are measured per household member. This is to adjust for the different consumption needs of households of different sizes.

Figure 7.1 a-c. Economic status variables by category of program participant, end-line survey



Notes: "New" active – joined in 2008 or 2009. "Old" active – joined prior to 2008. Income and expenditures per person: reported monthly amounts by respondents.

The number of household assets, as opposed to current income, is used as a measure of household wealth. This indicator provides an indication of the longer-term economic condition of the household. Households that have been able to accumulate a large number of assets have enjoyed substantial periods of income greater than that needed to meet the basic consumption needs of household members. Alternatively, households with few assets have income that normally just meets basic subsistence requirements, or have recently suffered economic shocks that required them to dispose of assets to meet their consumption needs.

In general, there are no important differences in economic status of non-participants, current participants, and graduated participants. In particular there is not strong evidence that program participation is biased toward households of either higher or lower economic status. This is not surprising, since in fact, over 90 percent of all eligible households in program areas currently participate, at least in the MCHN component, so the participating households must include most of the entire spectrum of economic conditions. Figures 7.1 a-c show the relationship between these economic status indicators and the duration of participation in the program. In the figures, “New” active participants are those that have joined MCHN in 2008 or 2009. “Old” active participants are those that joined MCHN in 2007 or 2008. “Graduated” are those that have left the program before March 2009. Overall, the indicator values are quite similar across the participation categories, and there are no clear patterns of differences. Income per person is higher for participants than non-participants, but shows a general decline with increased duration of participation in the program. Expenditures are also somewhat higher for participants than non-participants, but show no clear relationship with duration of program participation. Number of assets also shows a general pattern of decline with duration of program participation.

Overall these results suggest that program participants have a slightly better economic status than non-participants, but the difference is very small. (The differences in household income and expenditures between non-participants and participants are statistically significant at the 0.1 level, but the number of assets is not significantly different across the groups.) There is no clear indication of increase in economic status with duration of program participation.

The program activity that can be expected to affect household incomes most directly is the homestead food production component. Table 7.2 presents the differences in the economic status variables broken down by participation in the HFP component. This table also shows that there is no increase in the economic status indicator values associated with participation in this component. It should be emphasized that the benefits from the HFP program may not show up as increased cash income from sales of agricultural or livestock products, but rather in improved household food consumption patterns from products produced by the households.

Table 7.2 Economic status variables by HFP participation

	U2			GB		
	Participant	Non-participant	All	Participant	Non-participant	All
Expenditures per person (taka)	930	959	955	996	1013	1011
Income per person (taka)	1116	1112	1113	1042	1077	1072
Number of assets	3.2	3.2	3.2	2.7	2.9	2.8
N	387	2434	2821	113	784	897

7.2 Household Demographics and Characteristics

Table 7.3 and Figures 7.2 and 7.3 show the distributions of individuals in the surveyed households by gender and age category. The proportion of individuals in the different age categories does not follow the pattern of the population of Bangladesh, which has a smoothly (exponentially) decreasing proportion of individuals in each age category. The pattern in both the U2 and GB samples is quite different, with a relatively small proportion of older children and young adults age 11 - 20, a large proportion of women in the 21 - 30 age category, and a large proportion of men in the 31 - 40 age category. This pattern is a result of the selection process for the two samples. Only households with young children were selected for both samples: children under two years in the U2 sample, and children two to five years in the GB sample. Because of this selection process, households having only older children were excluded. The mothers of young children fall predominantly in the 21 - 30 age category, while their husbands tend to be older, with a large proportion falling into the 31 - 40 age category. Also, Table 7.3 reveals that Bhola has a significantly higher percentage of children 10 and under than the other two districts.

Education levels of all individuals in the surveyed households over 15 years of age are reported in Table 7.3. Overall over half of these individuals have less than a complete primary education, with the percentage higher in the GB sample, at just over 60 percent. Within the U2 sample, the percentage of individuals with less than primary education is highest in Bhola and lowest in Barisal. There are not marked differences in education achievement between males and females, and in fact a slightly higher percentage of females has primary or higher education than males. Education attainment has improved somewhat since the baseline survey round, wherein 31.2 percent of individuals reporting having no education, 28.2 percent reported primary incomplete, 15.1 percent had completed primary education, and 25.5 percent had achieved secondary level or more. The geographic pattern of variation in education levels was similar in the baseline, with Bhola having the lowest level of education achievement, and Barisal the highest.

The end-line survey obtained information about income-earning activities of all individuals in the surveyed households by category of activity. Figure 7.4 shows the percentage of households engaged in a specified list of occupations for both the U2 and GB samples. Note that individuals could report more than one occupation, and more than one individual in a household can be engaged in an activity, so the proportions can add to more than 100 percent.

Table 7.3 Age distribution and education level of individuals in U2 and GB samples

	End-line - U2								End-line - GB	
	Barisal		Bhola		Patuakhali		All			
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
%	48.4	51.6	49.3	50.7	49.1	50.9	48.9	51.1	49.2	50.8
Age Categories (% of individuals)										
<= 10	36.8	37.6	40.2	40.2	35.8	36.7	37.6	38.2	39.8	39.9
11 - 20	12.0	15.4	12.6	17.2	11.6	14.9	12.0	15.8	13.5	13.1
21 - 30	16.5	23.1	16.8	22.0	18.2	24.4	17.1	23.2	13.6	24.6
31 - 40	18.0	8.5	16.2	8.0	18.0	7.5	17.4	8.0	18.7	9.6
41 - 50	6.2	37.6	5.7	3.5	5.2	4.9	5.7	4.4	6.6	4.0
51 - 60	3.8	5.7	2.9	5.2	4.6	6.8	3.8	5.9	2.8	4.7
61 - 70	4.4	3.7	3.7	3.2	5.1	3.2	4.4	3.4	3.0	2.8
> 70	2.3	1.4	1.7	0.8	1.6	1.5	1.9	1.2	2.0	1.4
Education Categories (% of individuals)										
Illiterate	15.2	21.3	33.3	36.2	17.6	24.0	21.7	26.9	20.3	25.1
Can sign	24.0	21.4	32.3	28.9	31.1	28.9	29.1	26.3	35.3	35.4
Primary	21.7	24.8	13.8	17.8	18.3	22.3	18.1	21.8	19.5	19.1
Under SSC	20.7	21.8	10.9	12.3	17.7	17.8	16.6	17.5	16.4	16.2
SS/Dhakhil or higher	18.4	10.6	9.7	4.8	15.3	7.0	14.6	7.6	8.5	4.2

Figure 7.2 Population Pyramid – U2 sample

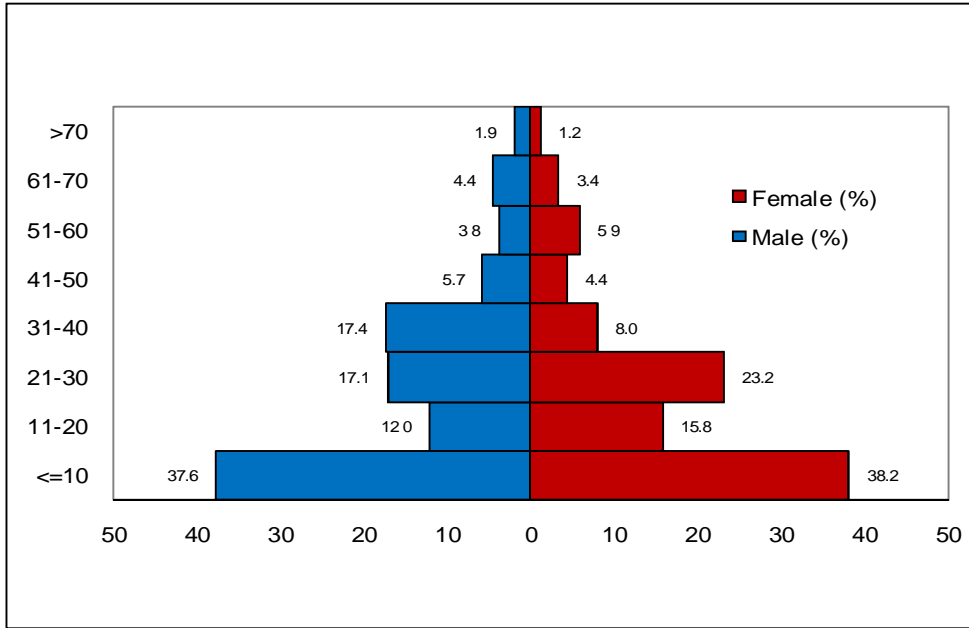


Figure 7.3 Population Pyramid – GB sample

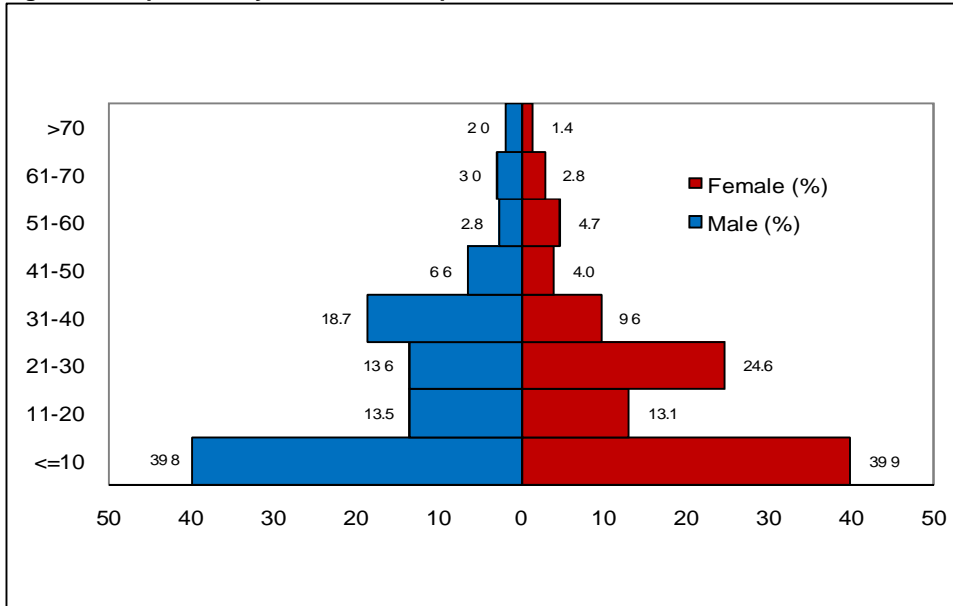


Figure 7.4 Percent of households reporting members engaged in selected occupations

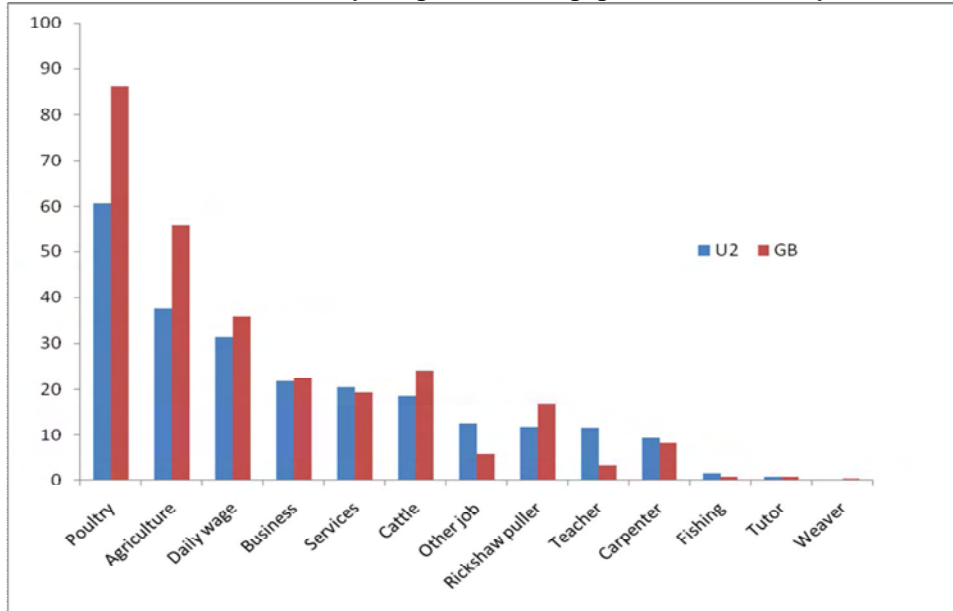
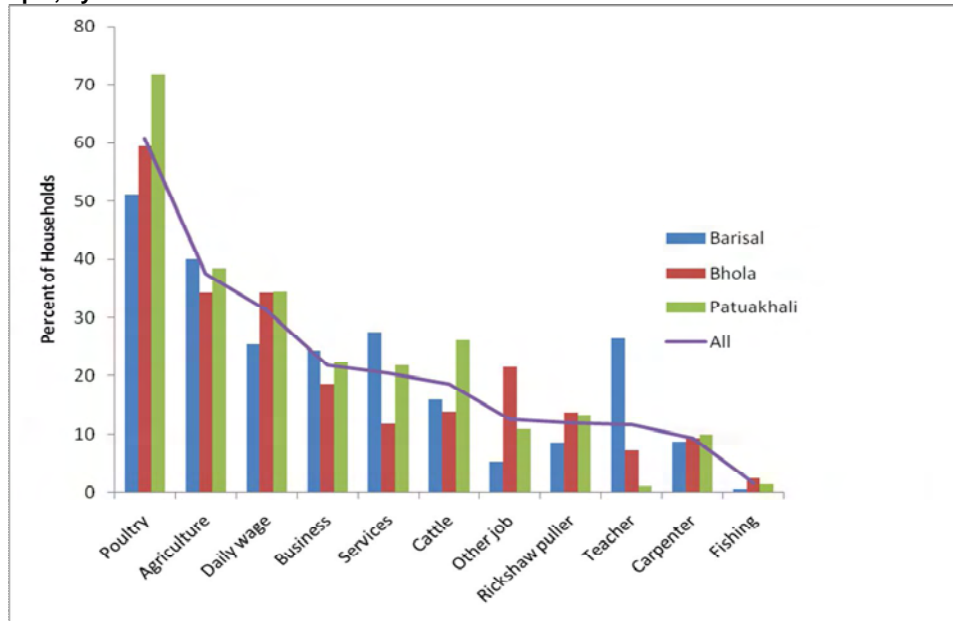


Figure 7.5 Percent of households reporting members engaged in selected occupations in U2 sample, by district



The most widely cited activity is raising poultry, which was reported by 60 percent of households in the U2 sample and 85 percent in the GB sample. The next most common activity is agriculture, but as with poultry, there are marked differences between the U2 and GB samples. Slightly under 40 percent of households in the U2 sample reported agriculture, compared with almost 60 percent in the GB sample. Over 30 percent of households in both samples reported that some household member engaged in daily wage labor. Twenty to twenty-five percent of households reported that a household member was engaged in business, services and cattle. The remaining activities were reported by fewer than 20 percent of the surveyed households. Rickshaw pulling is a relatively important occupation, especially in the GB sample, and 12 percent of households in the U2 sample had a teacher. Figure 7.5 shows the geographic variation in the frequencies of reported occupations from the U2 sample.

The percentages of households broken down by strata of household income level from both the baseline and end-line rounds are reported in Table 7.4. The income categories for the end-line were increased by a factor of 1.4 to account for inflation from the time of the baseline to the end-line survey round. The percentage of households in the different categories is quite stable from the baseline to the end-line. The average income in the U2 sample increased by 34 percent from the baseline, and for the GB sample the increase was only 19 percent. These increases in the nominal income were less than the aggregate inflation of 40 percent over the four years between survey rounds, so real (inflation-adjusted) household incomes actually decreased slightly.

7.3 Homestead food production

The JoJ program operates in rural areas, where agricultural activities play a critical role in household livelihoods. The program has undertaken a series of interventions to support improved agricultural, gardening, and poultry production activities. Support has focused on increasing household production of agricultural and livestock products that can improve the diets of the households as well as provide additional cash income through market sales. Overall, the results show substantial uptake of messages about improved gardening and poultry practices. A large portion of households that do not or did not participate directly in HFP now report utilizing practices recommended in that program component. In addition, the graduated beneficiary households generally show an even higher rate of utilization of recommended practices than current program participants.

Land is an extremely scarce resource in Bangladesh. As shown in Table 7.5, over half of the surveyed households in the baseline survey had no land and an additional 20 percent had 50 decimals or less of cultivable land. Access to land was most restricted in Bhola, and relatively more households had access to land in Patuakhali, where over 40 percent of households had more than 50 decimals of land. The pattern of household access to land showed a slight deterioration from the baseline to the end-line. In both the U2 and GB end-line samples, about 57 percent of sampled households had no cultivable land, compared with 51 percent in the baseline. Conversely, the percentage of households with 50 decimals or more of cultivable land decreased relative to the baseline. These changes in land access over time are not surprising, and reflect the growing population pressure on the limited resource base in Bangladesh.

Table 7.4 Percent of households by income category, baseline and end-line surveys

Income Categories (Taka)	Baseline	Income Categories (Taka)	End-line	
			U2	GB
<=1000	0.8	<=1,400	0.4	1.0
1,001-2,500	22.1	1,401-3,500	25.2	24.3
2,501-5,000	50.0	3,501-7,000	50.2	59.5
5,001-7,500	11.9	7,001-10,500	15.0	8.6
7,501-10,000	9.8	10,501-14,000	3.7	3.0
10,000+	5.4	14,000+	5.6	3.6
Average HH Income (Taka)	4,670		6,260	5,570
% change from baseline			34.0	19.3

Notes:

Income categories have been increased by a factor of 1.40 to account for inflation from 2004 to mid-2009.

Frequency distributions of the U2 and GB samples are different from the baseline at the 0.01 significance level.

Table 7.5 Percent of Households possessing cultivable land, homestead gardens, and other specific types of gardens

	Baseline				End-line – U2				End-line GB
	Barisal	Bhola	Patuakhali	Total	Barisal	Bhola	Patuakhali	Total	
Ownership of cultivable land									
No cultivable land	41.3	73.3	38.4	51.4***	48.4	72.3	51.3	57.3***	56.9***
<50 decimals cultivable land	28.7	12.0	20.4	20.1	22.9	14.4	22.9	20.1	23.6
50+ decimals cultivable land	29.8	14.4	41.0	28.3***	28.8	13.3	25.7	22.6***	19.5***
N ¹	1,506	1,665	1,636	4,807	949	939	933	2,821	897
% with homestead garden	66.8	47.1	78.3	63.9	66.5	44.6	69.3	60.2***	64.8
Of which, have “developed” garden									
<50 decimals cultivable land	21.9	1.4	10.0	11.2	28.8	25.1	31.0	28.6***	42.5***
50+ decimals cultivable land	28.5	5.5	12.1	16.3	30.2	34.1	34.2	32.4***	51.8***
All	24.4	2.4	11.0	13.2	29.3	27.0	32.0	29.8***	44.8***
N ²	1,005	784	1,282	3,071	631	419	647	1,697	581

N¹ is all surveyed households; N² is all households with a homestead garden.

* end-line value different from baseline value at .10 significance level

** end-line value different from baseline value at .05 significance level

*** end-line value different from baseline value at .01 significance level

The JoJ program has emphasized support to garden production as a means to increase household incomes and provide access to more varied and nutritious foods for household consumption. Overall, there was not much change in the percentage of households having gardens from the baseline to the end-line survey rounds. Sixty-four percent of households had gardens in the baseline, almost identical to the 65 percent in the end-line GB sample. The percentage of households with gardens was somewhat lower in the U2 sample, at 60 percent. The survey also recorded, based on observation of the interviewers, whether or not the garden could be classified as “developed.” A homestead garden is defined as “developed” if it has a designated, fenced-off area of land and has at least some production year round. Table 7.5 shows the percentage of households with developed gardens (out of households that have gardens), broken down by categories of cultivable land. Overall there has been a large increase in the percentage of households that have developed gardens, from 13 percent in the baseline to 30 percent in the U2 sample and 45 percent in the GB sample.

Table 7.6 shows the percentage of households that utilize one or more of a range of improved gardening techniques (bed system, quality seed, organic fertilizer, and organic pesticide).⁶ In the U2 sample, about three-quarters of all households with gardens reported utilizing at least one of the improved techniques, and over 20 percent reported using three or more techniques. Use of improved techniques is quite similar between the baseline and U2 samples. The percent using at least one technique is slightly lower than in the baseline, but the percent using three or more is the same. In contrast, the GB households have significantly higher utilization rates than households in either the baseline or the U2 samples, suggesting that farmers adopt the improved gardening techniques only after some time lag after receiving support from JoJ. The change in the percent of households using three or more improved techniques is particularly marked, from less than 20 percent in the baseline to almost one half in the GB sample. Rates of utilization of improved techniques are higher in Patuakhali compared to the other two districts. There is little difference in utilization rates between larger and smaller famers.

Table 7.7 compares the utilization of improved gardening techniques of households that participated in HFP with those that did not. Not surprisingly, utilization rates are very high for HFP participants: over 90 percent in the U2 sample use at least one technique and 40 percent use three or more. More interestingly, the table results suggest a process of diffusion of these techniques over space and over time. The use of improved techniques is also quite high among the households that did not participate in HFP, suggesting that even households that do not participate directly in the program are finding out about the new techniques and adopting them.

Comparing the GB results with the U2 results in Table 7.7 emphasizes that utilization rates are higher for the GB households that have participated in the HFP for a longer time than the households in the U2 sample, suggesting that adoption of the techniques occurs with some

⁶ Intensive land use was included in the baseline report and the end-line questionnaires. However, this technique was excluded from the analysis in Table 7.6, because the definition of this technique was vague, and up to the interpretation of the interviewer. In addition, the percentage of households reporting intensive land use was over 90 percent in the baseline, which suggests that the interviewers used a very broad definition of this technique.

Table 7.6 Percent of households using improved production techniques

	Baseline				End-line U2				GB
	Barisal	Bhola	Patuakhali	Total	Barisal	Bhola	Patuakhali	Total	
< 50 decimals of land									
1+ improved techniques	86.4	60.5	88.5	79.1	68.7	75.2	87.3	77.6	85.5***
3+ improved techniques	17.8	11.8	26.0	18.9	12.1	19.9	30.4	21.2	49.5***
<i>N</i> ¹	623	585	681	1889	406	331	448	1185	440
>= 50 decimals of land									
1+ improved techniques	89.8	67.8	92.3	87.4	72.9	76.1	81.9	77.0***	92.9*
3+ improved techniques	21.1	15.6	33.4	26.5	13.3	26.1	34.2	23.6	52.5***
<i>N</i> ²	383	199	601	1183	225	88	199	512	141
All HH with Gardens									
1+ improved techniques	87.7	62.4	90.3	82.3	70.2	75.4	85.6	77.4***	87.3***
3+ improved techniques	19.1	12.8	29.5	21.8	12.5	21.2	31.5	21.9	50.3***
<i>N</i> ³	1006	784	1282	3072	631	419	647	1697	581

Notes:

*N*¹ is the number of households with less than 50 decimals of land and a garden; *N*² is the number of households with over 50 decimals of land and a garden; *N*³ is the number of households with a homestead garden.

1+ improved techniques: households that have adopted at least one of the following improved gardening techniques: bed system, quality seed, organic fertilizer and organic pesticides.

3+ improved techniques: households that have adopted three or more of the improved techniques.

n/a: data not available in JoJ Baseline Survey Report

* end-line value different from baseline value at .10 significance level

** end-line value different from baseline value at .05 significance level

*** end-line value different from baseline value at .01 significance level

Table 7.7 Percent of households adopting improved gardening techniques by HFP participation

	End-line - U2		End-line - GB	
	HFP participant	Non-participant	HFP participant	Non-participant
1+ improved techniques	90.6***	74.6	99.0***	84.9
3+ improved techniques	39.6***	18.2	77.3***	44.8
Developed Homestead Garden	46.0***	26.3	67.0***	40.3
<i>N</i>	298	1399	97	484

Notes:

N is the number of households with a garden.

1+ improved techniques: households that have adopted at least one of the following improved gardening techniques: intensive land use, bed system, quality seed, organic fertilizer and organic pesticides.

3+ improved techniques: households that have adopted three or more of the improved techniques.

* HFP participant value different from non-participant value at .10 significance level.

** HFP participant value different from non-participant value at .05 significance level.

* ** HFP participant value different from non-participant value at .01 significance level.

delay from the time when households begin to receive training on the techniques. Overall the utilization of improved techniques is higher in the GB sample than the U2 sample, with the utilization rates significantly higher for participants compared with the rates for non-participants in both samples.

Information about production of fruits and vegetables is provided in Tables 7.8 – 7.10. Overall, there is not much variation in the percentage of households growing fruits and vegetables in the two months prior to the survey, either across districts or across the two samples (Table 7.8). Average production of dark green leafy vegetables, shown in Table 7.9, has increased for small farmers in the U2 sample compared with the baseline, while production of larger farmers has not changed much. Interestingly, the graduated households reported significantly higher production than either the baseline or the U2 samples. This result is consistent with the greater use of improved techniques by households in this sample compared with the U2 sample.

Table 7.10 shows that a higher percentage of HFP participants grew dark green leafy vegetables and achieved higher production than non-participants, although the difference in production between HFP and non-HFP participants is not statistically significant in the U2 sample. Again, the difference in production levels is most marked in the GB sample.

Tables 7.11 and 7.12 report the uses of fruit and vegetables produced by the households. In the case of fruits, a somewhat smaller percentage of households in the U2 sample sold fruits, and the percentages that sold vegetables are quite similar between the baseline and U2. The percentage of households in the GB sample that sold both fruits and vegetables is higher than the U2 sample, and for vegetables it is significantly higher than the baseline as well.

Tables 7.13 and 7.14 provide information about poultry. Recall from above that poultry raising was the most frequently cited economic activity by households in both of the end-line survey samples. This is reflected in Table 7.13. Overall over 80 percent of households in the U2 sample and almost 90 percent in the GB sample raised poultry. There is a somewhat greater tendency for larger farms to have poultry, but even among households without any agricultural land, 80 – 85 percent have poultry. This is an activity that even resource-poor households can engage in. There is not much variation across the districts, with Bhola the lowest at 79 percent raising poultry, and Patuakhali the highest at 86 percent. Adoption of improved poultry varieties is generally quite low – the proportions in the U2 sample are even lower than in the baseline. However, the GB sample shows a significantly higher proportion of households adopting improved breeds compared with the baseline, even though the absolute values are still quite low, less than five percent overall. As with fruits and vegetables, there is not much difference in the uses of eggs produced by the households between the baseline and U2, but the percentage of households in the GB sample selling eggs is markedly higher than either the baseline or the U2 sample (Table 7.14).

Table 7.8 Percent of households growing vegetables and fruits

	End-line – U2				End-line GB
	Barisal	Bhola	Patuakhali	Total	
< 50 Decimals of Land					
% producing fruit in last two months	53.0	58.2	45.7	51.0	44.8
% producing vegetables in last two months	87.2	87.3	87.7	87.4	63.2
<i>N</i> ¹	149	79.0	162	390	212
≥ 50 Decimals of Land					
% producing fruit in last two months	64.9	70.5	63.3	65.2	54.9
% producing vegetables in last two months	80.0	76.1	87.9	82.4	72.0
<i>N</i> ²	225	88	199	512	175
All HH with gardens					
% producing fruit in last two months	55.2	56.6	50.1	53.6	58.2
% producing vegetables in last two months	76.9	74.7	80.7	77.8	80.2
<i>N</i> ³	631	419	647	1697	581

Notes:

*N*¹ is the total number of households with less than 50 decimals of land; *N*² is the total number of households with over 50 decimals of land. *N*³ is the total number of households with gardens.

Table 7.9 Average household production of dark green leafy vegetables

	Baseline				End-line – U2				End-line GB
	Barisal	Bhola	Patuakhali	Total	Barisal	Bhola	Patuakhali	Total	
< 50 Decimals of Land									
Vegetable Production (kg)	8.6	8.9	11.4	9.7	12.2	18.2	16.5	15.2	31.8
<i>N</i> ¹	623	585	681	1889	120	58	126	304	134
≥ 50 Decimals of Land									
Vegetable Production (kg)	16.4	33.2	26.2	24.2	25.1	29.6	24.7	25.6	40.2
<i>N</i> ²	383	199	601	1183	180	67	175	422	126
All HH with gardens									
Vegetable Production (kg)	11.6	15.1	18.3	15.3	16.7	19.6	17.9	17.8	37.9
<i>N</i> ³	1006	784	1282	3072	485	313	522	1320	467

Notes:

*N*¹ is number of households with under 50 decimals of land that produce vegetables; *N*² is the number of households with over 50 decimals of land that produce vegetables, *N*³ is the total number of households that produce vegetables.

Table 7.10 Dark green leafy vegetable (DGLV) production in previous 2 months, by HFP participation

	End-line - U2		End-line - GB	
	HFP participant	Non-participant	HFP participant	Non-participant
Percentage that produce DGLV	81.9*	76.9	85.6**	79.3
N ¹	298	1399	97	484
DGLV production (kg)	20.8	17.2	53.1**	34.6
N ²	244	1076	83	384

N¹ is all households with a homestead garden. N² is all households that produce DGLV.

* HFP participant value different from non-participant value at .10 significance level.

** HFP participant value different from non-participant value at .05 significance level.

*** HFP participant value different from non-participant value at .01 significance level.

Table 7.11 Percent of household reporting selected uses of household fruit production

	Baseline				End-line – U2				End-line GB
	Barisal	Bhola	Patuakhali	Total	Barisal	Bhola	Patuakhali	Total	
< 50 Decimals of Land									
Consume	99.5	99.2	99.3	n/a	97.5	100.0	98.6	98.5	100.0
Sell	7.3	17.8	19.1	n/a	1.3	17.4	12.2	9.0	22.1
Give Away	47.0	27.5	40.0	n/a	17.7	15.2	29.7	21.6	24.2
N ¹					79	46	74	199	95
≥ 50 Decimals of Land									
Consume	98.4	100.0	99.8	n/a	98.6	98.4	100.0	99.1	100.0
Sell	6.9	20.7	13.9	n/a	6.8	9.7	12.7	9.6	17.7
Give Away	52.4	38.4	48.6	n/a	30.1	19.4	31.0	28.4	36.5
N ²					146	62	126	334	96
All HH producing fruits									
Consume	n/a	n/a	n/a	n/a	98.3	98.7	99.4	98.8	99.7
Sell	n/a	n/a	n/a	n/a	8.6	9.7	11.4	9.9	24.6
Give Away	n/a	n/a	n/a	n/a	21.0	24.1	26.2	23.7	27.5
N ³					348	237	324	909	338

Notes:

N¹ is the number of households with under 50 decimals of land that produce fruit; N² is the total number of households with over 50 decimals of land that produce fruit; N³ is the number of households producing fruit.

Since multiple responses can be given, the columns may add to over 100%.

n/a: data not available in JoJ Baseline Survey Report

Respondents could provide multiple responses, so percentages of categories may add to more than 100%

Table 7.12 Percent of households reporting selected uses of household vegetable production

	Baseline				End-line				End-line Graduated
	Barisal	Bhola	Patuakhali	Total	Barisal	Bhola	Patuakhali	Total	
< 50 Decimals of Land									
Consume	100.0	99.5	99.7	n/a	99.2	100.0	99.2	99.4	100.0
Sell	2.4	11.1	9.8	n/a	9.0	16.9	13.3	12.3	23.4
Give Away	19.3	16.5	31.2	n/a	25.4	30.5	28.9	27.9	50.4
N ¹					122	59	128	309	137
≥ 50 Decimals of Land									
Consume	99.6	98.0	99.8	n/a	100.0	100.0	99.4	99.8	100.0
Sell	4.4	17.0	13.1	n/a	11.8	12.7	15.9	13.6	20.3
Give Away	25.9	23.0	34.4	n/a	39.0	26.8	34.7	35.3	50.8
N ²					187	71	176	434	128
All HH Producing vegetables									
Consume	n/a	n/a	n/a	n/a	99.6	100.0	99.4	99.6	99.8
Sell	n/a	n/a	n/a	n/a	10.7	11.8	13.6	12.1	26.6
Give Away	n/a	n/a	n/a	n/a	28.2	30.0	29.3	29.1	48.2
N ³					485	313	522	1320	467

N¹ is the total number of households with under 50 decimals of land that produce vegetables; N² is the total number of households with over 50 decimals of land that produce vegetables; N³ is the total number of households that produce vegetables.

n/a: data not available in JoJ Baseline Survey Report

Respondents could provide multiple responses, so percentages of categories may add to more than 100%

Table 7.13 Households with poultry by category of cultivable land

	Baseline				End-line – U2				End-line GB
	Barisal	Bhola	Patuakhali	Total	Barisal	Bhola	Patuakhali	Total	
% HH raising poultry									
No cultivable land					78.0	75.0	80.4	77.4	86.1
<50 decimals of cultivable land ^a	84.3	80.9	82.9	82.5	86.2	87.4	90.2	88.0	92.5
50+ decimals of cultivable land	91.1	92.1	93.1	92.3	91.9	88.8	92.5	91.5	92.0
All HH	n/a	n/a	n/a	n/a	83.9	78.6	85.7	82.7	88.7
% among poultry-raising HH with improved varieties									
No cultivable land					0.4	1.2		0.6	3.9
<50 decimals of cultivable land	0.8	0.8	1.8	1.0	0.5	1.5	0.5	0.7	4.7
50+ decimals of cultivable land	2.2	3.3	2.2	2.4	0.4	0.8	0.8	0.6	5.7
All HH	n/a	n/a	n/a	n/a	0.4	1.2	0.3	0.6	4.5

Notes:

^a In the baseline, the category <50 decimals of cultivable land includes HH with no cultivable land.

n/a: data not available in JoJ Baseline Survey Report

Table 7.14 Uses of eggs from poultry in last two months

	Baseline				End-line – U2				End-line GB
	Barisal	Bhola	Patuakhali	Total	Barisal	Bhola	Patuakhali	Total	
< 50 Decimals of Land									
% HH reporting:									
Consume	80.2	57.8	73.0	n/a	94.0	88.5	93.0	92.4	91.4
Sell	15.1	9.5	16.4	n/a	18.0	31.3	22.8	22.8	37.1
Hatch	-	-	-	-	56.3	80.2	77.8	70.0	62.3
Other ^a	55.6	73.0	66.7	n/a	0.0	0.0	1.2	0.5	0.0
<i>N</i> ¹					167	96	171	434	175
≥ 50 Decimals of Land									
% HH reporting:									
Consume	89.5	79.2	87.0	n/a	95.2	93.7	97.1	95.6	93.4
Sell	12.0	10.9	18.7	n/a	16.7	17.9	19.0	17.8	26.3
Hatch	-	-	-	-	55.9	73.7	75.6	66.8	72.4
Other ^a	49.6	69.3	65.8	n/a	0.9	0.0	1.5	0.9	0.0
<i>N</i> ²					227	95	205	527	152
All HH with Poultry									
% HH reporting:									
Consume	n/a	n/a	n/a	n/a	91.6	85.3	92.8	90.2	90.8
Sell	n/a	n/a	n/a	n/a	21.6	21.2	20.0	20.9	36.3
Hatch	n/a	n/a	n/a	n/a	54.5	74.2	78.0	68.6	65.5
Other ^a	n/a	n/a	n/a	n/a	0.7	0.0	1.7	0.9	0.3
<i>N</i> ³					679	565	690	1934	684

Notes:

*N*¹ is the total number of households with under 50 decimals of land that produce poultry; *N*² is the total number of households with over 50 decimals of land that produce poultry; *N*³ is the total number of households that produce poultry.

^a Hatching was included in the “other” category in the baseline, since the baseline questionnaire did not include “hatching” as an option.

n/a: data not available in JoJ Baseline Survey Report

Tables 7.15 – 7.17 provide information about agricultural practices: soil improvement techniques and pest management practices. With respect to soil improvement practices, application of animal manure is by far the most widely practiced, with almost two thirds of the U2 sample and three quarters of the GB sample using this technique. Manure use ranges from 73 percent in Patuakhali to 54 percent in Bhola. Compost and chemical fertilizer are the other soil improvement techniques that are relatively widely adopted. The percentages of households using all the soil improvement techniques are significantly higher in the GB sample compared to the U2 sample. In terms of pest management practices, chemical and organic methods are the most common. The percentage of households using organic practices is almost as high as that of households using chemicals. Table 7.17 shows that HFP participants use more of all soil improvement practices, but especially composting and crop rotation. Use of all forms of pest control is higher for HFP participants and non-participants, and a much higher percentage of HFP participants is aware of where to get technical advice.

Respondents in the GB sample were asked for their assessments of the support they received in the HFP activities. Figure 7.6 shows the percentage of responses (very useful, useful, somewhat useful, not useful, no opinion) for the HFP overall as well as gardening and poultry production. Most respondents found all the components at least somewhat useful. The percentage of respondents that found poultry production either very useful or useful was relatively lower than for homestead gardening. Respondents were also asked about what they learned in the HFP training. Table 7.18 summarizes the responses, ranked by the frequency that they were cited.

Figure 7.6 GB sample: perceptions of usefulness of program agricultural training

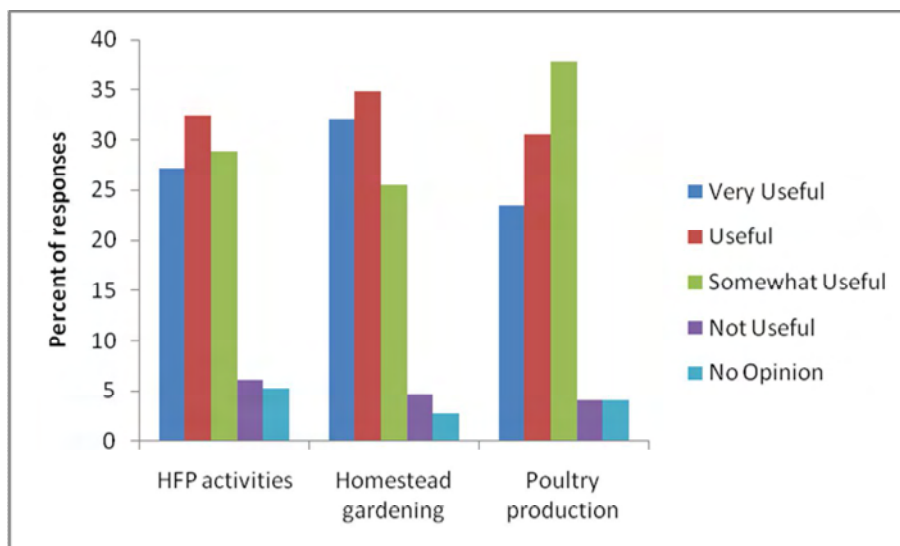


Table 7.15 Percent of households utilizing specified soil improvement practices

Type of Practice	End-line – U2				End-line
	Barisal	Bhola	Patuakhali	Total	GB
Animal Manure	62.7	53.5	72.7	64.5	74.4***
Compost	34.5	33.1	41.6	36.9	57.1***
Chemical Fertilizer	37.1	40.8	46.3	41.4	56.6***
Crop Rotation	5.1	8.8	9.9	7.7	20.2***
Nothing	4.3	3.1	3.7	3.8	0.8***
Other	0.4	0.4	0.4	0.4	3.4***
<i>N</i>	490	460	454	1204	387

Notes:

N is all households with cultivable land.

* GB value different from U2 value at .10 significance level.

** GB value different from U2 value at .05 significance level.

*** GB value different from U2 value at .01 significance level.

Table 7.16 Percent of households utilizing specified pest management practices

Type of practice	End-line – U2				End-line
	Barisal	Bhola	Patuakhali	Total	Graduated
Chemical	39.0	44.2	40.5	40.7	50.1***
Organic	30.6	26.2	47.6	36.0	40.3
Nothing	18.4	13.8	18.1	17.3	15.5
Mechanical	4.9	5.0	14.3	8.5	13.2***
Biological	0.8	1.2	1.3	1.1	0.0
<i>N</i>	490	460	454	1204	387

Notes:

N is all households with cultivable land.

* GB value different from U2 value at .10 significance level.

** GB value different from U2 value at .05 significance level.

*** GB value different from U2 value at .01 significance level.

Table 7.17 Percent of households adopting specified soil improvement practices and pest management practices by HFP participation

	End-line - U2		End-line - GB	
	HFP participant	Non-participant	HFP participant	Non-participant
Soil Improvement Practices				
Animal Manure	76.2***	61.9	87.5**	71.9
Compost	53.6***	33.8	72.9**	54.3
Chemical Fertilizer	44.0	40.4	77.1***	53.7
Crop Rotation	13.7***	6.5	29.2	19.6
Nothing	1.8	4.1	0.0	0.9
Other	0.6	0.4	2.1	3.4
Pest Management Practices				
Chemical	51.2***	38.4	75.0***	46.6
Organic	44.6***	34.6	50.0	38.6
Mechanical	15.5***	7.1	6.3	14.5
None	13.1	17.5	8.3	15.9
Biological	1.2	1.1	0.0	0.0
<i>N</i> ¹	168	1066	48	352
Know where to get technical advice for homestead gardening	77.5***	36.5	90.7***	30.0
<i>N</i> ²	298	1399	97	484

Notes:

*N*¹ is all households with cultivable land; *N*² is all households with a homestead garden.

* HFP participant value different from non-participant value at .10 significance level.

** HFP participant value different from non-participant value at .05 significance level.

*** HFP participant value different from non-participant value at .01 significance level.

Table 7.18 GB sample: practices learned from homestead garden and poultry production training

Homestead Garden	% Response^a	Poultry Production	% Response^b
Organic Fertilizer	93.4	Improved poultry feeding	87.8
Improved Production	84.9	Healthy living place for poultry	78.6
Improved Variety	84.0	Poultry Vaccination	75.5
Nutritional Knowledge	56.6	Poultry Diseases	64.3
Organic Pest Control	39.6	Poultry Rearing	53.1
Marketing	29.2	Poultry Consumption	44.9
IPM	23.6	Other	10.2
Other	17.0		

Notes:

^aPercent of households receiving training in homestead gardening

^bPercent of households receiving training in poultry production

7.4 Household Level Food Consumption and Food Security

Information was collected to measure several dimensions of current household food consumption patterns as well as households' levels of vulnerability to reductions in food consumption during times of stress or shock. In the baseline, current household consumption of different food categories was summarized using the diet diversity score (DDS). The Food Access Survey Tool (FAST), a series of questions about household strategies to ensure adequate food access in difficult times during the previous twelve months, provided information about household longer-term food security status. Two additional indicators have been calculated in the end-line surveys, the food consumption score (FCS) to measure the quality of current household food consumption, and the coping strategy index (CSI) to measure household vulnerability to food insecurity in times of stress.

Table 7.19 provides information about the percentages of households that reported consuming different food categories in the 24-hour period prior to the interview. From the baseline to the end-line, there were reductions in the percentages of households that consumed roots/tubers, milk/milk products, sugar, honey, and fruits. There was also a big reduction in eggs/poultry consumption, but this was due to the fact that the category was "eggs" in the baseline and "poultry" in the end-line. Egg consumption is likely to be much more frequent than poultry consumption, especially for poorer households. A higher proportion of households consumed legumes/pulses, meat, fish, oils/fats, and vegetables in the end-line compared with the baseline. Oil/fat consumption has also increased dramatically from the baseline to the end-line survey rounds.

Two summary indicators of household nutrition are constructed on the basis of the information about household consumption of the food categories reported in Table 7.20. The first is the diet diversity score (DDS). This indicator was computed in the baseline. The DDS is computed by adding up the number of different food categories that the household reported consuming in the previous day. For example if the household reported eating cereals, legumes, fish, and oil, the DDS for that household would be four. Table 7.20 reports the average DDS by sample, further broken down by region in the baseline and U2 samples. The DDS has increased from an overall value of 5.2 in the baseline to 5.7 in the U2 sample and 5.8 in the GB, an increase of 10-11 percent over the life of the project. These increases are statistically significant at the .01 level of confidence. In terms of geographic variation, Bhola shows a lower average DDS value than the other two districts, both in the baseline and in the end-line U2 samples.

The DDS is a measure of diet "quality": a higher DDS value represents a more varied diet. The food consumption score is a modification of this basic indicator of diet quality in which different types of food are assigned weights based on their respective nutritional values. Because the FCS accounts for nutritional value of food in addition to simply the number of different types of food consumed, it is expected to be a more accurate measure of dietary quality. This indicator is reported and analyzed in this report, to assess whether it provides a clearer indication of dietary quality than the DDS, which is one of the project indicators.

The specific weights used to compute the FCS are as follows:

Food Item	Weight in FCS
Cereals	2
Roots/tubers	2
Legumes/pulses	3
Milk/milk products	4
Eggs/poultry	4
Meat	4
Fish/sea food	4
Oil/fat	0.5
Sugar/honey	0.5
Fruits	2
Dark green leafy vegetables	3
Other vegetables	2

The FCS thus gives greater weight to more nutritious foods, such as high-protein animal products. The FCS was calculated for the baseline by applying the weights presented above to the baseline information about household consumption of each of the food categories. As seen in Table 7.20, the FCS score is generally slightly more than double the value of the DDS. However, the pattern of change of the FCS from the baseline to the end-line samples is quite different from that of the DDS. Whereas the DDS shows an increase over the life of the program, the FCS is essentially constant, and the small differences are not statistically significant. The differences in the patterns of change of these two indicators are explained by the fact that, while the overall number of foods eaten by the household has grown, the increase has been in foods with relatively low nutritional value (oil/fat), and offset by a decrease in high-value foods (eggs/poultry).

In addition to these two indicators of current household food consumption patterns, two other food security indicators measure households' resiliency (or alternatively, vulnerability) over time to deal with economic or other shocks that can suddenly disrupt household access to food. Both indicators are computed on the basis of households' responses to a series of questions about their food consumption patterns over time and during times of stress. The two indicators are the Food Access Survey Tool (FAST) score and the Coping strategy Index (CSI). The FAST was included in the baseline, while the CSI is an additional indicator that has become widely used in food security studies around the world.⁷ As with the FCS, the CSI is analyzed in this report in order to assess whether it measures food security more accurately, or captures other dimensions of food security. Details of how these indicators are computed are provided in Annex 5. Note that in this report, the CSI is calibrated so that the maximum possible value is 100. A zero value indicates high food security (no coping strategies were used), and a value of 100 indicates extreme food insecurity (all coping strategies were used very frequently).

⁷Maxwell, Daniel, Richard Caldwell and Mark Langworthy. "Measuring food insecurity: Can an indicator based on localized coping behaviors be used to compare across contexts?" *Food Policy*, Volume 33, Issue 6, December 2008

Table 7.19 Percentages of households reporting the consumption of foods from a specific group

Food groups	Baseline				End-line – U2				End-line GB
	Barisal	Bhola	Patuakhali	Total	Barisal	Bhola	Patuakhali	Total	
Cereals	99.9	99.1	99.9	100.0	99.4	99.7	100.0	99.7	99.8
Roots/tubers	64.6	64.1	72.3	67.1	65.5	53.5	59.4	59.5	58.6
Legumes/pulses	64.6	62.2	50.4	58.9	71.5	71.9	63.2	68.9	64.8
Milk/milk products	55.0	38.7	57.9	50.3	44.2	24.9	46.9	38.7	33.4
Eggs/Poultry	23.8	21.7	19.5	21.6	3.2	2.6	0.9	2.2	2.3
Meat	11.1	14.2	11.7	12.4	33.4	19.5	22.9	25.3	25.6
Fish/sea food	46.7	47.9	48.8	47.9	58.9	54.8	59.0	57.6	54.2
Oil/fat	1.0	2.2	2.2	1.8	83.4	90.1	29.4	89.4	92.2
Sugar/honey	39.3	32.2	36.3	35.8	30.5	19.8	36.7	26.6	26.9
Fruits	51.9	48.7	58.5	53.0	36.4	22.0	36.7	31.7	43.0
Vegetables	66.0	61.5	72.6	66.7	68.2	70.1	79.5	72.6	75.6
Others	49.1	27.8	23.7	33.1	9.4	17.1	30.2	18.8	21.4
<i>N</i>	<i>1506</i>	<i>1665</i>	<i>1636</i>	<i>4807</i>	<i>949</i>	<i>939</i>	<i>932</i>	<i>2820</i>	<i>897</i>

Notes:

All values for U2 Total and GB are different from the Baseline Total value at the .01 significance level.

Eggs/ poultry was listed as eggs in baseline, and poultry in end-line.

N is all households reporting on food consumption.

Meat: Liver/beef/poultry meat/meat/offal.

Table 7.20 Household food security indicators - Diet Diversity Score (DDS), Food Consumption Score (FCS), Food Access Survey Tool (FAST) categories and Coping Strategy Index (CSI), by district

	Baseline				End-line - U2				End-line GB
	Barisal	Bhola	Patuakhali	All	Barisal	Bhola	Patuakhali	All	
Indicators of Current consumption									
Diet Diversity Score (DDS)	5.7	5.2	5.5	5.5	6.0	5.5	6.2	5.9***	5.9***
Food Consumption Score (FCS)	13.6	12.7	13.7	13.3	14.0	12.0	13.6	13.2	13.1
Indicators of Food Security / Vulnerability									
% HH in FAST Food security Categories									
Food Secure	54.4	26.8	57.0	45.4	60.5	49.3	59.8	56.5***	46.9
Moderately Food Insecure	11.3	10.7	11.1	11.0	9.9	9.9	10.9	10.2	12.6
Severely Food Insecure	34.3	62.5	31.9	43.6	29.6	40.8	29.3	33.2***	40.5*
Coping Strategy Index (CSI)					7.9	9.9	6.3	8.0	12.4

Notes:

* end-line value different from baseline value at .10 significance level

** end-line value different from baseline value at .05 significance level

*** end-line value different from baseline value at .01 significance level

The FAST results show a general trend of improvement in long-term food security conditions of households. Overall, the percentage of food-secure households, as measured by the FAST score, increased, from 45 percent in the baseline to 57 percent, and the percentage of severely food insecure fell from 43 percent to 33 percent in the U2 sample. However, the percentages in the GB sample are quite similar to those in the baseline sample, although the percentage of severely food insecure decreased slightly. While Bhola exhibited a much higher percentage of severely food-insecure households in the baseline relative to other districts, the variation across districts was not as extreme in the end-line U2 sample.

The necessary information to compute the CSI is not available in the baseline survey, so this indicator is only computed for the end-line samples, and changes over time cannot be measured. In the end-line samples, the values of the CSI are overall quite low, ranging from 6.3 in Patuakhali to a high of 12.4 in the GB sample. The pattern of variation of the CSI across the districts is similar to that of the FAST categories. For example, Bhola has the highest percentage of severely food insecure, and this district also has the highest CSI value. Thus, the CSI and the FAST scores generally provide the same results about the patterns of food security conditions in the end-line samples.⁸ The mutual correspondence between these two different measures suggests they are both accurately capturing household food security conditions.

Table 7.21 provides information about the food security indicators broken down by participation in different program components, and includes as a category households that did not participate in either MCHN or HFP (found in U2 only). The HFP is expected to affect household food security by providing households with access to a greater variety of foods from their home gardens, so HFP participants are expected to exhibit higher values for DDS and FCS than non-participants. Indeed, the results show that, the values of DDS for participants are higher than those for non-participants, and these difference are statistically significant for both categories of project participant. However, there is no statistically discernible difference in any of the food security indicators when comparing households that participated in MCHN only, and those that participated in both MCHN and HFP. Thus, participation in JoJ has led to improvements in diet diversity, and this improvement is observed across participants in all program components.

On the face of it, these results suggest that there is no incremental impact of HFP on food consumption patterns or food security levels. One possible explanation for this may be that many households in unions receiving SO1 support may have adopted improved agricultural, gardening and poultry practices, even if they have not participated directly in the HFP. Evidence to support this hypothesis is provided in the figures in Table 7.7, which show that the use of improved gardening practices is quite high, even among households that did not participate directly in HFP. The demonstration effects from HFP participants to their neighbors may have diffused the impacts of this program component to other households within the communities in SO1 districts. Thus, within SO1 unions, differences may not be great between households that participate in HFP and those that do not participate, but the important differences would be between unions where SO1 activities are supported and unions not providing support for SO1 activities. Table 7.21 provides evidence to support this hypothesis in relation to the food security indicators. The indicators are disaggregated into unions where HFP

⁸ The correlation coefficient between the CSI and the FAST score, -.745, is very high in absolute value. The correlation coefficient is negative because higher values of FAST score correspond to greater food security, while higher values of CSI correspond to lower food security.

Table 7.21 Household food security indicators - Diet Diversity Score (DDS), Food Consumption Score (FCS), Food Access Survey Tool (FAST) categories and Coping Strategy Index (CSI), by participation in MCHN and FHP

	End-line U2					End-line GB	
	Non-participant	MCHN only	MCHN+HFP	Non-SO1 Unions	SO1 Unions	MCHN only	MCHN+HFP
Indicators of Current consumption							
Diet Diversity Score (DDS)	5.3	5.9 ^a	6.1 ^b	5.6	6.0 ^e	5.9	6.2 ^c
Food Consumption Score (FCS)	12.1	13.3 ^a	13.5 ^b	12.5	13.5 ^e	13.0	13.6 ^c
Indicators of Food Security / Vulnerability							
% HH in FAST Food security Categories							
Food Secure	59.4	56.2	56.7 ^f	60.9	54.6 ^g	50.2	50.5 ^f
Moderately Food Insecure	8.6	10.7	8.9 ^f	9.6	10.5 ^g	12.0	12.4 ^f
Severely Food Insecure	32.0	33.2	34.4 ^f	29.5	34.8 ^g	37.8	37.1 ^f
Coping Strategy Index (CSI)	9.2	7.8	8.3	10.3	11.4 ^e	12.9	8.9 ^d

Notes:

^aMCHN only different from non-participants at the .01 significance level.

^bMCHN+HFP different from non-participants at the .01 significance level; **not** different from MCHN only at the .10 significance level

^cMCHN+HFP **not** different from MCHN only at the .10 significance level

^dMCHN+HFP different from MCHN only at the .01 significance level

^eSO1 unions different from non-SO1 unions at the .01 significance level

^fDistributions of FAST food security categories are **not** different across the program participation categories (Non-participant, MCHN only, MCHN+HFP) at the .10 significance level in either the U2 or GB samples.

^gDistributions of FAST food security categories are significant across SO1 and non-SO1 unions at the .01 significance level.

activities have been supported (SO1 unions) and those where HFP activities have not been supported (non-SO1 unions) in the U2 sample.⁹ Measures of current household food consumption (DDS and FCS) are higher for households in SO1 communities, while the longer-term indicators (FAST score and CSI) show that households in SO1 communities are more food-insecure than those in non-SO1 communities. The fact that households in SO1 communities have more diverse diets suggests that the SO1 interventions have provided all households in communities where these interventions have been implemented with a wider range of foods to eat. This is true even though the households in the SO1 unions generally have lower levels of long-term food security (that is, are more vulnerable) than those in the non-SO1 unions.

Table 7.22 reports the food security indicators broken down by three categories of economic status: income per household member, expenditures per household member, and number of household assets. This table shows that there is a very strong relationship between economic status and food security. That is, households with higher per-capita income and expenditures and a greater number of assets have better quality diets, are more food-secure, and utilize coping mechanisms less frequently than do households of lower economic status. The fact that this positive relationship between food security and economic status is strongly supported by the results raises confidence in the overall accuracy of the information obtained in the survey. Note that the patterns of change for DDS and FCS are quite similar, as well as for the CSI and the FAST severely food-insecure category. Thus, the expected relationship between economic status and food insecurity is captured equally by both measures of current food consumption as well as vulnerability.

7.5 Maternal and Child Health Care Practices

The MCHN component of JoJ promotes improved antenatal care, infant feeding practices, and child health care, particularly related to immunization and treatment of diarrhea and acute respiratory infection (ARI). The baseline and end-line surveys obtained detailed information about knowledge and practices in these health seeking behaviors.

Table 7.23 provides information about antenatal checkups by pregnant women. Overall there has been a very large increase in the percentage of pregnant women having antenatal checkups from the baseline to the end-line. In the baseline, only slightly over one-third of pregnant women reported having three or more antenatal checkups, compared with almost 90 percent in the end-line U2. However, the percentage of pregnant women having checkups in the GB sample, while also much higher than the baseline, is lower than the U2 sample. Pregnant women have increased visits to facilities in the public and NGO sectors while decreasing those to the private medical sector. Within the public sector, the percentage of pregnant women visiting satellite/EPI outreach centers has increased dramatically, while the percentage going to other public sector facilities has generally declined. Within the NGO sector, satellite clinics and visits with NGO field workers have increased markedly.

⁹ All unions in the GB sample are SO1 unions, so the comparison between SO1 unions and non-SO1 unions is not possible in the GB sample.

Table 7.22 Food Security Indicators, Diet Diversity Score (DDS), Food Consumption Score (FCS), and Coping Strategy Index (CSI) by economic status categories (number of assets, income per person, and expenditures per person)

	End-line – U2				End-line – GB			
	DDS	FCS	CSI	Severely Food Insecure -FAST ^a	DDS	FCS	CSI	Severely Food Insecure -FAST ^a
Number of Assets								
0-1	5.0	11.1	14.3	58.9	5.0	10.9	20.5	68.2
2	5.4***	12.3***	10.2***	41.1***	5.5***	12.6***	13.6***	48.2***
3	5.5	12.6	7.7***	34.0**	5.7	13.0	11.3	34.8**
4	6.0***	13.9***	5.9***	24.1***	6.1	13.7	8.0***	24.3*
5	6.4***	15.0***	3.5***	15.2***	6.7***	15.7***	3.7***	11.4**
6+	6.9***	16.6***	1.3***	4.7***	7.1	17.0**	2.2	2.1**
Income per person (taka)								
< 600	5.5	12.6	14.9	56.1	5.0	11.1	23.1	78.3
600 - 849	5.4	12.2	10.8***	45.7***	5.4**	11.9*	15.2***	51.2***
850 - 1,149	5.7***	13.0***	7.4***	32.7***	5.9***	13.3***	11.5***	37.3***
1,150 +	6.1***	14.4***	3.3***	13.8***	6.6***	15.4***	3.8***	9.0***
Expenditures per person (taka)								
< 600	5.3	12.3	9.9	41.3	5.7	12.6	11.4	52.1
600 - 849	5.6***	12.9***	9.6	40.0	5.6	12.5	13.4	45.0
850 - 1,149	5.8**	13.4**	7.4***	32.4***	5.7	13.1	13.6	43.8
1,150 +	6.1***	14.4***	5.0***	18.6***	6.0	13.8	11.1***	28.2***
All	5.7	13.2	8.0	33.2	5.8	13.1	12.4	40.5

Notes:

^a percent of households in the severely food insecure category based on FAST score.

* category value different from previous category value at .10 significance level.

** category value different from previous category value at .05 significance level.

*** category value different from previous category value at .01 significance level.

Table 7.23 Percent of women receiving antenatal checkups and percent reporting selected facilities for antenatal checkups

	Baseline				End-line – U2				End-line GB
	Barisal	Bhola	Patuakhali	All	Barisal	Bhola	Patuakhali	All	
Received at least one antenatal check-up¹	38.8	33.5	39.1	37.1	92.6	94.2	97.4	94.8	78.6
3 or more visits²	39.3	32.5	37.5	36.5	87.2	87.0	90.9	88.4	70.2
Facilities for antenatal check-ups²									
Public Sector	52.2	50.8	41.4	47.9	62.5	56.3	68.2	62.4	51.6
Hospital/Medical college	10.1	4.7	5.9	6.9	2.4	0.8	1.4	1.5	8.1
Upazila Health Complex	22.7	25.2	10.7	19.2	2.8	4.4	5.5	4.3	7.8
Satellite/EPI outreach centre	2.1	7.3	8.0	5.8	38.5	40.0	52.1	43.6	29.2
MCWC	1.9	3.6	8.6	4.9	1.5	0.5	3.7	1.9	1.0
FWC	15.0	9.3	8.1	10.8	18.2	10.6	14.5	14.4	7.8
FWV	1.9	1.8	2.2	2.0	8.9	19.5	27.5	18.7	2.1
NGO Sector	9.9	12.2	24.3	15.8	53.6	72.5	70.8	65.7	51.6
Static clinic	6.6	3.6	5.6	5.3	2.4	7.8	3.7	4.6	3.4
Satellite clinic	2.3	8.2	17.6	9.6	28.0	50.9	42.9	40.6	45.0
Field worker	2.4	3.8	3.7	3.3	29.9	40.5	48.7	39.8	3.0
Hospital	1.0	0.4	1.4	1.0	1.1	0.7	3.3	1.7	2.4
Private medical sector	39.6	36.8	34.8	37.0	13.4	8.9	11.9	11.4	15.8
Clinic/Hospital	21.3	12.4	17.1	17.0	9.3	4.1	8.0	7.1	7.1
MBBS Doctor	14.3	20.3	14.2	16.1	3.9	3.3	2.9	3.3	6.2
Village doctor	3.5	4.4	3.4	3.7	0.9	1.7	1.1	1.2	0.7
Homeopathic doctor	0.3	-	0.5	0.3	0.2	-	0.1	0.1	-
Pharmacy	1.2	1.3	0.6	1.0	0.2	0.1	0.2	0.2	4.0
Other Sector	1.0	2.7	-	1.2	0.3	0.5	0.1	0.3	1.0
Trained Traditional Birth Assistant (TTBA)	0.3	0.4	-	0.2	0.1	0.2	0.1	0.1	-
Untrained Traditional Birth Assistant (UTBA)	-	-	-	-	0.1	0.1	-	0.1	0.1
Others	0.7	2.4	-	1.0	0.2	0.1	-	0.1	1.0
Antenatal check-ups from medically trained provider	90.9	87.8	89.5	89.4	99.3	99.4	99.9	99.6	99.2

Notes:

¹Percent of all women who gave birth in two years prior to survey

²Percent of all women who received antenatal checkups

All values for U2 All and GB are different from Baseline All at the 0.01 significance level

Tables 7.24 – 7.26 provide information about women’s attitudes and actual behaviors regarding practices during pregnancy, and on advice they receive from their husbands and mothers-in-law about appropriate practices during pregnancy. Generally the information in these tables shows substantial increase in awareness of appropriate practices by mothers, husbands, and mothers-in-law. For example, Table 7.24 shows that the percentage of mothers aware that they should eat more food during pregnancy increased from 77 percent in the baseline to over 90 percent in the end-line (specifically, to 96 percent in U2 and 93 percent in GB). The actual pattern of food consumption during pregnancy also increased, from 18 percent in the baseline to over 60 percent in the end-line U2 sample. Again, however, the percentage of women eating more food during pregnancy in the GB sample, while higher than the baseline, is only 38 percent, or about 60 percent of the U2 sample. Information on taking rest shows the same pattern, with substantial increases from the baseline to the end-line, but the percentage of mothers taking more rest in the GB sample is much lower than in the U2 sample. Tables 7.25 and 7.26 show that the reported awareness of husbands and mothers-in-law about appropriate pregnancy practices has also improved from the baseline, but again the percentages reporting the appropriate responses (antenatal visits, more food, more rest) are much higher in the U2 sample than the GB sample.

Information about infant nursing and feeding practices is provided in Table 7.27 and Figure 7.7. Overall, almost two thirds of children under six months of age are reported as exclusively breastfed, with the proportion in Bhola almost 70 percent. At six months of age, over 90 percent of infants are receiving supplemental foods with nursing, and the percentage is highest in Patuakhali. Figure 7.7 shows the percentages of children being provided with supplementary foods by the age of the child, comparing the baseline and end-line figures (for U2 only, as the children in the GB sample are not of nursing age). The figure shows that the percentage of children under six months of age who receive supplementary foods has fallen significantly from the baseline to the end-line, but by six months of age the percentages are nearly identical. This means that a higher proportion of children under six months of age are exclusively breastfed now than at the time of the baseline.

Table 7.28 reports immunization rates of children from the baseline and end-line surveys. The overall immunization rates have increased from the baseline to the end-line, particularly for measles. The percentage of children that have been fully immunized with all vaccines increased from 70 percent in the baseline to over 90 percent in the end-line. One clear trend in the figures is that the percentage of children with registration cards has increased. The percentages of vaccinations reported by mothers rather than observed from registration cards are actually highest in the GB sample, and also higher in the baseline than in the U2 sample, which is logical, given that these children are older..

Table 7.24 Mothers' attitudes and practices of food consumption and rest during pregnancy, by district (percent)

	Baseline				End-line				Graduated
	Barisal	Bhola	Patuakhali	Total	Barisal	Bhola	Patuakhali	Total	
Attitudes of women about taking food during pregnancy									
More Food	85.6	71.0	74.4	76.7	94.9	96.1	98.2	96.4	92.8
Same Amount	7.2	8.2	11.1	8.9	4.5	1.8	1.1	2.5	3.6
Less Food	5.7	18.7	10.6	11.9	0.5	2.1	0.8	1.1	3.5
Quantity of food consumption during last pregnancy									
More Food	21.8	12.5	21.4	18.4	57.5	57.1	72.8	62.4	38.2
Same Amount	42.6	22.2	33.9	32.6	26.0	24.1	19.0	23.0	26.3
Less Food	35.6	65.3	44.8	49.0	16.4	18.8	8.3	14.5	35.5
Amount of rest during last pregnancy									
More Rest	35.6	51.9	48.8	45.7	94.9	96.1	98.2	96.4	67.0
Same Amount	43.9	27.1	30.0	33.4	4.5	1.8	1.1	2.5	20.5
Less Rest	20.4	21.0	21.2	20.9	0.5	2.1	0.8	1.1	12.5
<i>N</i>	1479	1635	1601	4715	949	939	933	2821	897

Notes:

N is all households with recorded responses.

All values for U2 All and GB are different from Baseline All at the 0.01 significance level

Table 7.25 Beliefs of respondents' husbands regarding pregnancy care practices, as reported by respondents, by district (percent)

	Baseline				End-line – U2				End-line GB
	Barisal	Bhola	Patuakhali	All	Barisal	Bhola	Patuakhali	All	
Antenatal sessions									
Should attend	47.4	31.7	37.4	38.6	81.9	80.5	91.0	84.4	64.4
Should not attend	52.6	68.3	62.6	61.5	2.4	4.7	2.1	3.1	13.0
No Advice	-	-	-	-	15.5	14.5	6.6	12.2	22.3
Eating									
More than usual	54.4	39.3	42.5	45.1	83.6	80.0	90.7	84.7	69.1
Less than usual	0.4	0.5	0.7	0.5	0.1	0.0	0.0	0.0	0.6
The same amount as usual	2.1	4.9	2.7	3.3	3.0	3.1	1.8	2.6	3.9
No advice	43.1	55.4	54.1	51.1	13.1	16.6	7.3	12.3	26.2
Daytime rest									
More than usual	48.3	28.0	35.8	37.0	80.1	73.6	86.9	80.2	61.9
Less than usual	0.9	4.0	1.7	2.2	0.2	3.1	1.7	1.7	2.2
The same amount as usual	4.1	5.8	3.3	4.4	4.7	5.6	2.6	4.3	6.0
Nothing	46.6	62.2	59.3	56.3	14.6	17.4	8.6	13.5	29.3
<i>N</i>	1479	1635	1601	4715	949	939	933	2821	897

Notes:

N is all households with recorded responses.

All values for U2 All and GB are different from Baseline All at the 0.01 significance level

Table 7.26 Beliefs of respondents' mothers-in-law regarding pregnancy care practices, as reported by respondents (percent)

	Baseline				End-line – U2				End-line GB
	Barisal	Bhola	Patuakhali	All	Barisal	Bhola	Patuakhali	All	
Antenatal sessions									
Should Attend	27.3	19.9	24.5	23.7	49.7	47.3	53.7	50.2	33.1
Should not attend	72.7	80.1	75.5	76.3	2.3	5.0	2.9	3.4	11.1
No Advice	0.0	0.0	0.0	0.0	32.1	26.8	20.3	23.4	33.2
Not Applicable	0.0	0.0	0.0	0.0	24.9	20.9	23.2	23.0	22.5
Eating									
More than usual	31.8	25.9	28.8	28.7	48.4	44.1	53.8	48.8	37.0
Less than usual	0.4	1.2	0.9	0.8	0.0	0.6	0.2	0.3	0.2
The same amount as usual	1.2	2.6	0.9	1.6	4.1	3.6	2.3	3.3	3.7
Nothing	66.7	70.4	69.4	68.9	22.2	30.6	20.4	24.4	36.8
Not Applicable	0.0	0.0	0.0	0.0	25.3	21.0	23.3	23.2	22.3
Daytime rest									
More than usual	27.5	17.4	24.2	22.8	43.8	38.5	49.0	43.8	34.1
Less than usual	1.4	6.7	3.0	3.8	1.1	5.2	2.1	2.8	2.6
The same amount as usual	2.9	3.8	1.2	2.6	6.2	4.4	3.8	4.8	2.8
Nothing	68.2	72.1	71.6	69.9	24.0	31.1	21.9	25.7	38.2
Not Applicable	0.0	0.0	0.0	0.0	24.9	20.8	23.3	23.0	22.3
<i>N</i>	1082	1233	1255	3570	949	939	933	2821	897

Notes:

N is all households with recorded responses.

All values for U2 All and GB are different from Baseline All at the 0.01 significance level.

Table 7.27 Children under six months exclusively breastfed and six-month old children with supplemental foods, by district (percent)

	Baseline				End-line – U2			
	Barisal	Bhola	Patuakhali	All	Barisal	Bhola	Patuakhali	All
Children under 6 months exclusively breastfed	15.8	50.2	17.7	29.5	61.7	69.9	62.3	64.4***
<i>N</i> ¹	354	470	412	1236	206	183	215	604
6 month old children receiving supplemental foods	96.8	59.3	91.7	81.6	88.3	86.0	96.4	90.6**
<i>N</i> ²	94	113	109	316	60	43	56	159

Notes:

*N*¹ is the number of children under six months who are breastfed. (All Children <6 months)

*N*² is the number of children six months old who are breastfed. (All children six months old)

* end-line value different from baseline value at .10 significance level

** end-line value different from baseline value at .05 significance level

*** end-line value different from baseline value at .01 significance level

Table 7.28 Children 12-23 months who received specific vaccines at any time before the survey, by district and source of information (health card or mother's report) (percent)

Source of information	Baseline					End-line – U2					End-line - GB				
	BCG	Polio ^a	DPT ^a	Measles	All	BCG	Polio ^a	DPT ^a	Measles	All	BCG	Polio ^a	DPT ^a	Measles	All
Barisal															
Vaccination card	65.1	61.1	63.3	49.9	49.9	80.4	80.1	79.8	77.8	77.1	n.a.	n.a.	n.a.	n.a.	n.a.
Mother's report	32.9	28.7	28.2	25.1	24.6	18.8	18.5	18.1	18.8	16.5	n.a.	n.a.	n.a.	n.a.	n.a.
Either source	98.0	89.9	91.5	75.1	74.5	99.2	98.6	97.9	96.6	93.6	n.a.	n.a.	n.a.	n.a.	n.a.
Bhola															
Vaccination card	53.4	50.2	52.6	39.1	38.9	69.9	68.9	68.9	67.7	67.3	n.a.	n.a.	n.a.	n.a.	n.a.
Mother's report	45.2	36.9	34.6	30.2	27.4	29.1	27.5	27.9	28.5	25.3	n.a.	n.a.	n.a.	n.a.	n.a.
Either source	98.6	87.1	87.2	69.3	66.2	99.0	96.4	96.8	96.2	92.6					
Patuakhali															
Vaccination card	65.1	59.4	62.9	48.0	47.7	71.8	71.4	71.0	69.7	69.5	n.a.	n.a.	n.a.	n.a.	n.a.
Mother's report	32.7	26.7	26.1	21.8	20.7	27.8	28.0	28.0	28.0	26.9	n.a.	n.a.	n.a.	n.a.	n.a.
Either source	97.8	86.1	88.9	69.8	68.4	99.6	99.4	99.0	97.7	96.4					
All															
Vaccination card	61.2	56.9	59.6	45.7	45.5	74.1	73.5	73.3	71.8	71.4	47.5	46.8	46.4	43.6	42.9
Mother's report	36.9	30.8	29.6	25.7	24.2	25.2	24.6	24.6	25.0	22.8	51.8	52.1	48.6	51.6	47.5
Either source	98.1	87.7	89.2	71.4	69.6	99.3	98.1	97.9	96.8	94.2	99.3	98.9	95.0	95.2	90.4

Notes:

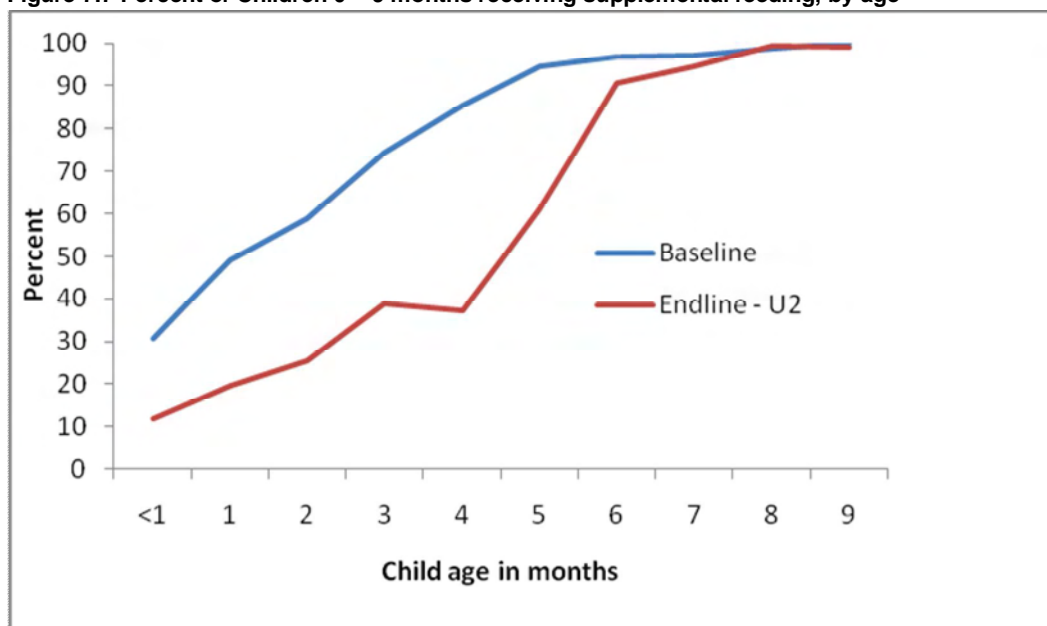
N is the number of children 12-23 months.

^aPolio and DPT data represent the percent of children recorded or reported to have received at least three rounds of the vaccines.

n.a. – not applicable

All values for U2 All and GB are different from Baseline All at the 0.01 significance level.

Figure 7.7 Percent of Children 0 – 9 months receiving supplemental feeding, by age



The percentage of children over six months of age who had diarrhea during the two weeks prior to the survey declined somewhat, from 30 percent in the baseline to 22 percent in the U2 sample and 24 percent in the GB sample (Table 7.29). The percentage of children that had diarrhea who were taken for treatment increased from the baseline value of 70 percent. Again, however, the increase was somewhat less in the GB sample (80 percent in the end-line) than the U2 sample (85 percent in the end-line). Table 7.30 provides information about where children were taken for treatment. The only big difference from the baseline is the high percentage treated by Community Health Volunteers (CHV) – a category of service provider established by the program, and that did not exist at the time of the baseline. Overall, almost one-fifth of households with cases of children’s diarrhea in the U2 sample were treated by CHVs. However, in the GB sample the percentage of cases treated by CHVs was less than one percent.

There have been some notable changes in remedies provided for diarrhea since the time of the baseline (Table 7.31). Use of labon-gur saline and no treatment has gone down, while provision of packet saline (oral rehydration salts), pill/capsule/syrup, and especially water, has increased in the end-line survey round. The percentages of households using each type of remedy are very similar in the U2 and GB samples. The percentage of children with diarrhea that were given the same or more food is substantially higher in the U2 sample than the baseline (80 percent compared with 57 percent), but the figure in the GB sample is almost identical to the baseline.

Table 7.29 Children > 6 months with diarrhea and children > 6 months with diarrhea taken for treatment, by district (percent)

	Baseline				End-line				End-line
	Barisal	Bhola	Patuakhali	Total	Barisal	Bhola	Patuakhali	Total	Graduated
Children > 6 mos. with diarrhea in last two weeks <i>N</i> ¹	22.4 1152	40.9 1194	25.8 1225	29.8 3571	16.1 737	29.6 753	19.3 714	21.8*** 2204	24.1*** 897
Children > 6 mos. with diarrhea in last two weeks taken for treatment <i>N</i> ²	63.8 258	80.6 488	59.0 316	70.1 1064	76.5 119	90.6 223	82.6 138	84.8*** 480	79.6*** 216

Notes:

*N*¹ is all children 6-23 months (Baseline, U2), 24-59 months (GB); *N*² is all children 6-23 months with diarrhea in the last two weeks.

All values for U2 All and GB are different from Baseline All at the 0.01 significance level.

* end-line value different from baseline value at .10 significance level

** end-line value different from baseline value at .05 significance level

*** end-line value different from baseline value at .01 significance level

Table 7.30 Children 6-23 months who had had diarrhea during the two weeks preceding the survey, and who received advice and treatment from a provider while suffering from diarrhea, by district

Source of care	Baseline				End-line – U2				End-line
	Barisal	Bhola	Patuakhali	Total	Barisal	Bhola	Patuakhali	Total	GB
Hospital/Medical college	3	0.8	0.5	1.2	3.2	0	0	0.7**	0.6
Upazila Health complex	1.8	4.6	1.1	3.1	3.2	3.5	5.3	3.9	2.3
Satellite/EPI outreach center	0	0.3	0	0.1	0	1	0	0.5***	0.6
FWC	1.8	0.3	3.7	1.5	5.4	1	0.9	2.0	0.6
FWV	0	0	0.5	0.1	0	0.5	0.9	0.5	0
FWA	0	0	0	0	1.1	1	2.6	1.5***	0.6
NGO Satellite clinic	0	0	0.5	0.1	0	0	1.8	0.5	0
NGO Field worker	0	0	0.5	0.1	0	3	1.8	2	0.6
NGO Hospital	-	-	-	-	1.1	0	0.9	0.5	0
CHV	-	-	-	-	24.7	17.3	13.2	17.8	0.6
Private clinic/Hospital	0	0	1.6	0.4	1.1	1	1.8	1.2	0
MBBS doctor	10.8	6.9	9.6	8.4	9.7	5.9	11.4	8.3	2.3***
Village doctor	29.5	35	31.6	32.9	36.6	60.4	37.7	48.7***	52.0***
Homeopathic doctor	8.4	5.6	3.7	5.8	2.2	5.9	1.8	3.9	1.7**
Pharmacy	46.4	47.2	55.1	49.0	36.6	48	54.4	49.1	68.8***
Friends/relatives	0	0.5	1.6	0.7	5.4	16.8	26.3	16.9***	1.2
Neighbor	0.6	6.6	1.1	3.9	6.5	7.9	10.4	8.3***	0
Others	6.6	3.8	3.7	4.4	1.1	2	0	1.2***	1.7*
<i>N</i>	165	394	187	746	93	202	114	409	173

Notes:

N is all households with a child who had diarrhea who received advice from one of these providers

* end-line value different from baseline value at .10 significance level

** end-line value different from baseline value at .05 significance level

*** end-line value different from baseline value at .01 significance level

Table 7.31 Children 6-23 months who had had diarrhea during the two weeks preceding the survey, by type of treatment received, by district (percent)

Source	Baseline				End-line – U2				End-line
	Barisal	Bhola	Patuakhali	Total	Barisal	Bhola	Patuakhali	Total	GB
Labon-gur saline	13.8	14.7	12.0	13.7	6.6	11.2	7.2	8.9***	13.8
Packet Saline (ORS)	50.0	51.7	50.8	51.0	84.3	72.2	77.5	76.8***	81.6***
Rice poser	0.8	0.8	0.3	0.7	0.8	1.3	0.7	1.0	6.9***
Pill/Capsule/Syrup	38.8	60.7	48.6	51.8	50.4	78.0	63.0	66.8***	62.7***
Injection	0.4	1.2	0.3	0.8	0.0	0.9	0.0	0.4	0.5
Intravenous	0.0	0.4	0.0	0.2	0.8	0.9	1.4	1.0*	0.5
Home remedies/Herbal	8.5	5.1	5.7	6.1	8.3	6.7	5.1	6.6	4.6
Water	7.3	1.8	6.6	4.6	34.7	38.6	31.9	35.7***	41.5***
Do not give anything	18.1	12.7	19.2	15.9	5.8	3.1	2.9	3.7***	5.1***
Others	6.5	11.2	5.7	8.4	2.5	3.6	7.2	4.4***	2.3***
Given same or more food	52.4	59.1	63.8	57.2	78.2	77.6	86.2	80.2***	56.9
<i>N</i>	259	489	317	1065	121	223	138	482	476

Notes:

N is all children with diarrhea given one of these treatments.

* end-line value different from baseline value at .10 significance level

** end-line value different from baseline value at .05 significance level

*** end-line value different from baseline value at .01 significance level

Table 7.32 presents information about children suffering from ARI and where treatment was sought. The most significant difference from the baseline to the end-line was the increase in the percentage of children that suffered from ARI, from only one quarter of the children in the baseline, to 55 - 60 percent in the end-line. This increase may be the result of increased awareness of the signs of ARI at the time of the end-line survey. However, the information available from the questionnaire does not provide insight into whether the change is due to increase in actual incidence of illness or increased awareness of the symptoms. The percentage of sick children that received treatment for ARI in the U2 sample was quite similar to the baseline value: about 74 percent of children with ARI received some form of treatment in both the baseline and the U2 samples. In the GB sample the percentage was a bit lower, at 70 percent. The types of facilities used for treatment in the end-line samples are quite similar to the baseline, with the exception of the U2 sample, in which about 16 percent of ARI cases were treated by CHVs. Thus, as with diarrhea cases, there has been an important shift toward using the CHVs established by the program. Again, the shift is not evident in the GB sample of former program participants.

7.6 Household Water and Sanitation

The WASH component of JoJ is concerned with improving household access to clean water and improving household sanitation and hygiene practices. Access to a clean, protected water supply and appropriate sanitation facilities is very important to household health. This section will examine changes in hygiene and sanitation practices. Generally, there has been an improvement in latrine facilities, and large reported improvements in hygiene practices. These improvements are associated with lower incidence of diarrhea and ARI in children.

Table 7.33 provides information about the sources of water for drinking and household use in the baseline and end-line survey rounds. There has been little change in the sources of water from the time of the baseline survey. The most significant change has been the increase in the percentage of tubewells tested for arsenic, from about 50 percent in the baseline to about 80 percent in the end-line. Of those tested, about two-thirds in the baseline had acceptable levels of arsenic, compared with 60 percent in the U2 end-line sample, and only 42 percent in the GB end-line sample.

The distribution of different types of sanitation facilities in the baseline and end-line survey rounds is provided in Table 7.34. The biggest changes are the increase in the number of ring slab latrines, from 36 percent of all facilities in the baseline to 74 percent in the end-line round. However, in the end-line round, a high percentage of these ring slab latrines have broken water seals: whereas in the baseline, about 65 percent of households with ring slab latrines had broken seals, in the end-line over 80 percent of the ring slab latrines had broken seals. Many of the water seals may have been broken in Cyclone Sidr, however the survey does not provide information about the reasons for why they were broken. Ownership of latrines has not changed much between the baseline and end-line rounds. However, there have been substantial changes in reported hygienic practices regarding latrines. The percentage of women reporting using hygienic sanitation practices (flushing latrines) was less than five percent for households

Table 7.32 Children who were ill with ARI during the two weeks preceding the survey, children receiving treatment, and type of facility where treatment was sought (percent)

	Baseline				End-line – U2				End-line GB
	Barisal	Bhola	Patuakhali	All	Barisal	Bhola	Patuakhali	All	
Number HH with children suffering from ARI	233	614	345	1192	529	573	462	1564	526
% of HH	15.5	36.9	21.1	24.8	55.7	61.0	49.5	55.4	58.5
% received treatment ^a	70.0	80.9	63.2	73.7	72.8	81.2	67.7	74.4	70.0
Treatment from:^b									
Public Sector	6.7	7.4	12.4	8.5	11.7	4.1	10.9	8.4	6.8
Hospital/Medical college	0.6	0.6	4.1	1.5	1.3	0.4	2.5	1.3	3.0
Upazila Health Complex	1.2	6.1	2.3	4.2	4.7	3.0	4.8	4.0	1.4
Satellite/EPI outreach centre	-	0.2	0.9	0.3	0.3	0.2	0.3	0.3	0.3
MCWC	-	0.2	1.8	0.6	0.0	0.0	0.3	0.1	0
FWC	4.3	0.4	2.7	1.7	4.7	0.6	2.2	2.4	2.5
FWV	0.6	-	0.5	0.2	0.8	0.0	1.3	0.6	0
FWA	0.6	-	-	0.1	0.8	0.0	0.0	0.3	0
NGO Sector	0.6	0.2	1.8	0.7	16.4	19.4	18.2	18.1	1.1
Static clinic	0.6	-	0.5	0.2	0.8	0.4	0.6	0.6	0.3
Satellite clinic	-	0.2	0.9	0.3	0.5	1.3	0.6	0.9	0
Field worker	-	-	-	-	2.1	3.2	1.0	2.2	0
Hospital	-	-	0.5	0.1	0.8	-	1.3	0.6	0.5
CHV	-	-	-	-	13.8	16.8	16.2	15.6	0.3
Private medical sector	93.3	90.9	83.0	89.4	82.6	92.9	83.1	86.8	93.5
Clinic/Hospital	2.5	0.4	1.4	1	3.1	0.6	4.8	2.6	0.3
MBBS Doctor	27.8	12.5	13.7	15.6	14	9.5	16.6	12.9	9.5
Village doctor	25.9	37.8	38.4	35.7	43.1	50.8	43.3	46.2	58.3
Homeopathic doctor	8.6	10.5	15.5	11.4	6.5	7.7	3.5	6.2	2.5
Pharmacy	39.5	35.6	26.5	34	24.4	44.1	34.7	35.1	56.7
Other Sector	3.1	5.2	6.4	5.1	7.8	16.8	22.4	15.3	0.8
Friend/Relative	-	0.4	1.4	0.6	3.1	11	17.5	10.1	0.5
Neighbor	-	1.2	0.9	0.9	3.9	8	7.6	6.5	0
Others (Specify)	3.1	3.6	4.1	2.7	1.3	0.2	1.3	0.9	16.9
Received treatment from a health facility or a medically trained provider	24.9	16.8	18.0	18.7	39.7	32.0	40.9	37.0	10.1

Notes:

^aPercent of HH with children suffering from ARI.

^bPercent of HH seeking treatment for children with ARI.

Table 7.33 Percent distribution of households by main source of water and by distance to the main source, percentage of tubewells tested for levels of arsenic contamination, and percentage of tested tubewells bearing green or red marks

	Baseline								End-line – U2								End-line GB	
	Barisal		Bhola		Patuakhali		All		Barisal		Bhola		Patuakhali		All		Drinking	Domestic use
	Drinking	Domestic use	Drinking	Domestic use	Drinking	Domestic use	Drinking	Domestic use	Drinking	Domestic use	Drinking	Domestic use	Drinking	Domestic use	Drinking	Domestic use		
Main sources of water																		
Deep tubewell	92.7	13.3	94.2	19.5	98.7	18.2	95.3	17.1	97.7	23.1	99.8	34.1	99.5	15.1	99.0	24.1	98.8	24.7
Pond sand filter	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0		0.2		0.4		0.0		0.2	0.0	0.1
Rain water harvesting system	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rainwater	0.1	0.3	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pond	0.3	64.9	0.2	69.0	0.2	68.3	0.2	67.5	0.0	55.6	0.1	58.3	0.2	74.9	0.1	62.9	0.1	66.6
River/canal	0.3	17.8	0.6	9.2	0.2	13.0	0.4	13.2	0.2	19.7	0.0	6.6	0.0	9.8	0.1	12.1	0.1	7.8
Traditional well	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.3	0.0	0.1	0.0	0.1	0.0	0.0
Tubewell (shallow)	6.5	3.7	4.5	1.9	0.9	0.2	3.9	1.9	1.9	1.4	0.1	0.3	0.3	0.1	0.8	0.6	1.0	0.8
Others	0.1	0.0	0.5	0.3	0.0	0.0	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1		0.0	0.0
Distance water sources																		
<500 m		98.6		98.9		96.5		98.0		100.0		100.0		100.0		100.0		100.0
500-1000 m		1.1		0.9		2.6		1.5		0.0		0.0		0.0		0.0		0.0
1000 m+		0.3		0.2		0.9		0.5		0.0		0.0		0.0		0.0		0.0
N ²		1502		1664		1635		4801		924		910		879		2713		883
% of tubewell tested																		
N ³		79.4		55.5		20.7		51.1		81.1		86.0		73.4		80.2		79.2
		1497		1645		1630		4772		912		917		912		2741		895
Green mark		74.7		67.0		32.3		66.0		55.8		66.5		61.1		61.3		42.2
Red mark		5.2		2.6		2.1		3.8		0.3		0.0		0.1		0.1		0.0
No mark		20.1		30.3		65.6		30.2		43.9		33.5		38.7		38.6		57.8
N ⁴		1188		913		337		2438		740		789		669		2198		708

Notes:

N¹ is all households, N² is all households whose water source was measured, N³ is all households with a tubewell, N⁴ is all households whose tubewell was tested
Green mark indicates acceptable level of arsenic. Red mark indicates unacceptable level of arsenic

Table 7.34 Percent distribution of household sanitation facilities by type; and percentage of women employing hygienic practices

	Baseline				End-line – U2				End-line GB
	Barisal	Bhola	Patuakhali	All	Barisal	Bhola	Patuakhali	All	
Type of toilet facility used by household members									
Ring-slab/offset latrine (water seal)	8.3	4.9	24.7	12.7	18.9	6.6	14.8	13.4	11.5
Pit latrine (covered)	0.4	1.6	3.5	1.9	1.2	0.9	1.9	1.3	0.2***
Ring-slab/offset latrine (water seal broken)	23.6	14.5	30.5	22.8	63.2	62.4	57.8	61.1***	62.8***
Pit latrine (uncovered)	43.8	21.6	6.8	23.5	5.3	2.1	2.5	3.3***	7.1***
Septic latrine	1.3	0.2	0.2	0.5	3.2	1.3	2.9	2.4***	1.9***
Hanging/open latrine	19.4	48.3	30.4	33.2	7.5	21.0	19.5	16.0***	15.9***
No toilet facility	3.3	8.9	3.9	5.5	0.8	5.8	0.6	2.4***	0.6***
Ownership of a latrine									
Owning a latrine ^a	91.3	92.0	96.5	93.4	93.9	89.2	95.0	92.9	89.6***
Owning a hygienic latrine ^b	9.0	6.4	27.3	14.3	21.9	8.1	19.5	16.5**	12.7
Women employing hygienic practices among households with any type of latrine	3.4	2.6	7.2	4.4	100.0	99.3	99.7	99.7***	84.5***
<i>N</i> ¹	1164	711	1075	2950	879	688	745	2303	749
Women employing hygienic practices among households with a hygienic type of latrine	34.0	40.0	25.5	29.5	100.0	98.8	100.0	99.8***	99.2***
<i>N</i> ²	150	111	464	725	220	82	183	485	122

Notes:

^a Ownership of latrine includes: ring-slab/offset latrine (water seal), pit latrine (covered), ring-slab/offset latrine (water seal broken), pit latrine (uncovered), septic latrine.

^b Hygienic latrine is defined as one of the following: ring slab / offset (water seal), or covered pit latrine, or septic latrine.

*N*¹ is all households with a latrine (ring-slab/offset latrine (water seal), pit latrine (covered), ring-slab/offset latrine (water seal broken), pit latrine (uncovered), septic latrine)

*N*² is all households with a hygienic latrine ring slab / offset (water seal), or covered pit latrine, or septic latrine

* end-line value different from baseline value at .10 significance level

** end-line value different from baseline value at .05 significance level

*** end-line value different from baseline value at .01 significance level

with any type of latrine, and 30 percent for households with hygienic latrines (ring slab/offset with water seal, covered pit latrine, septic latrine). By the end-line survey round, essentially all women with latrines were employing hygienic practices.

Table 7.35 shows a dramatic increase in the percentage of women that demonstrated awareness of appropriate hand washing behavior. The percentage of women who achieved scores of eight or higher out of a maximum of 12 on hand washing behavior¹⁰ increased from less than 20 percent in the baseline to 74 percent in the end-line U2 sample and 97 percent in the GB sample.

Provision of access to safe water and promotion of improved sanitation and hygiene practices are undertaken in order to improve health conditions. Table 7.36 compares the incidence of diarrhea and ARI in children during the two weeks prior to the survey with households' access to clean water and adoption of appropriate sanitation facilities and hygiene practices. Access to water from a tubewell that has been tested for arsenic has no statistically discernible impact on either diarrhea or ARI. Households with access to a sanitary latrine and follow hygienic latrine practices (flushing with water) have a significantly lower incidence of both diarrhea and ARI. Households following recommended handwashing practices actually have a somewhat higher incidence of diarrhea than those that do not, while there is no significant impact on ARI incidence. Finally, those households that utilize the whole range of recommended facilities and practices have significantly lower incidence of both illnesses than households that do not. In the U2 sample 10.9 percent of all households utilized the complete package of sanitation and hygiene facilities and practices. In the GB sample the percentage is 9.4 percent.

¹⁰ The score is the sum of the number of critical times for hand washing and the number of appropriate hand washing techniques correctly identified by the respondents.

Table 7.35 Percentages of mothers of children under two years of age with appropriate hand-washing behavior and overall score

	Baseline				End-line – U2				End-line
	Barisal	Bhola	Patuakhali	All	Barisal	Bhola	Patuakhali	All	GB
Critical times for hand washing									
Before food preparation	51.1	35.2	61.2	49.1	70.9	66.6	71.6	69.7	80.2
Before eating	91.5	84.8	87.1	87.7	94.5	96.0	98.9	96.5	97.0
Before feeding children	42.7	16.5	28.6	28.8	77.1	83.9	89.6	83.5	57.4
After defecation	90.8	84.9	88.9	88.1	97.6	99.6	99.6	98.9	98.7
After cleaning babies bottom	38.8	18.7	30.2	28.9	72.1	76.1	79.3	75.8	43.3
Other					2.4	1.2	0.4	1.3	36.6
Hand washing techniques									
Uses water	96.4	95.0	96.3	95.9	98.3	97.9	98.9	98.4	99.0
Uses soap or other cleaning agents	27.5	19.7	27.4	24.7	54.3	53.0	67.6	58.3	38.9
Ash	8.2	3.4	4.0	5.1	4.5	6.2	8.1	6.3	10.1
Washes both hands	79.6	78.4	72.9	76.9	88.8	92.8	90.8	90.8	94.4
Rubs hands together at least 3 times	86.9	77.3	78.7	80.8	85.2	91.4	94.4	90.3	94.2
Dries hands with clean cloth	39.9	51.5	39.4	43.8	27.1	31.7	33.3	30.7	37.8
Dries hands with air	0.0	0.0	0.0	0.0	38.1	37.3	49.5	41.6	31.0
Other	0.0	0.0	0.0	0.0	1.8	3.6	1.9	2.4	24.1
Refuses to Demonstrate	0.0	0.0	0.0	0.0	0.6	1.5	0.5	0.9	0.5
Scores for hand washing behavior									
0	-	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
1	0.5	0.8	0.3	0.5	0.0	0.0	0.0	0.0	0.0
2	0.7	3.2	1.4	1.8	0.0	0.0	0.0	0.0	0.0
3	2.7	5.2	3.5	3.8	0.4	0.6	0.1	0.4	0.0
4	6.0	10.9	7.8	8.3	0.9	0.7	0.2	0.6	0.0
5	13.5	23.6	17.7	18.4	5.6	2.2	1.6	3.2	0.0
6	25.1	28.4	30.8	28.2	11.2	11.8	4.9	9.3	0.0
7	24.2	16.6	20.6	20.3	14.9	14.2	9.9	13.0	3.0
8+	27.4	11.2	17.9	18.5	67.0	70.4	83.3	73.6	97.0
<i>N</i>	1506	1665	1636	4807	949	939	933	2821	897

Table 7.36 Percent of households reporting children with diarrhea, ARI in past two weeks, by use of selected sanitation and hygienic practices or facilities

		End-line U2		End-line GB	
		Diarrhea	ARI	Diarrhea	ARI
Tested Tubewell	Yes	17.2	55.3	23.1	58.4
	No	17.0	55.9	27.7	59.1
Sanitary Latrine	Yes	12.0***	44.9***	13.1***	48.4**
	No	18.3	57.6	25.8	60.1
Proper Handwashing	Yes	18.0*	54.6	26.6**	56.5
	No	15.0	57.8	20.3	61.6
Hygienic latrine practices	Yes	12.1***	45.7***	12.7***	50.0**
	No	18.0	57.4	25.8	59.8
All of above	Yes	14.7***	45.8***	14.3**	47.6**
	No	22.6	57.0	25.1	59.7
<i>N</i>		2821		897	

Notes:

* value different from households without the practice/facility at the .10 significance level

** value different from households without the practice/facility at the .05 significance level

*** value different from households without the practice/facility at the .01 significance level

7.7 Anthropometric Indicators

As in the baseline survey, a major focus of the JoJ end-line survey was on assessing the anthropometric status of children. These anthropometric indicators are general indicators that should reflect the combined impacts of all program interventions other than disaster preparedness. In the end-line survey, children 6-59 months of age were measured (6-23 months in the U2 sample and 24-59 months in the GB sample), in terms of the three standard indices of physical growth: height for age, weight for height, and weight for age. These indices are widely used to assess the general nutritional status of an individual or a population group. These measures provide the following specific information about the nutritional status of children:

Height for age: This index identifies whether a child is short for her/his age or stunted, a condition reflecting the effect of previous under-nutrition or chronic malnutrition. It cannot measure short-term changes in malnutrition. Stunting is associated with a number of long-term factors such as chronic insufficient protein and energy intake, frequent infection, sustained inappropriate feeding practices, and poverty.

Weight for height: This index identifies whether a child has low weight for her/his height (wasting), and thereby helps identify children suffering from current or acute malnutrition or wasting. Weight for height is appropriate for examining short-term effects such as those from seasonal changes in food supply or short-term nutritional stresses brought about by illness.

Weight for age: This index identifies whether a child is underweight for her/his age. It is a composite index of weight for height and height for age. It reflects both chronic and acute malnutrition, and is a useful indicator in assessing changes in the magnitude of malnutrition over time. However it is not useful in distinguishing between stunting and wasting. (A child can be underweight for his/her age because he/she is stunted or wasted, or both stunted and wasted.)

Table 7.37 presents results for these three anthropometric indicators from the baseline and end-line survey rounds. The first section of this table report results based on the WHO 2006 Growth Standards reference population. The WHO has adopted this new standard to better reflect children's growth patterns across the globe, and recommends that government agencies, donors, and NGOs also adopt the new standards in nutritional assessments.¹¹ It is important to note that stunting and underweight are both age-dependent indicators: the results from the GB sample are not directly comparable with those of the baseline and U2 samples because the children in the GB sample are older. Only wasting is directly comparable across the three samples. Stunting has declined by almost 8 percent, from 39 percent in the baseline to 36 percent in the U2 sample. Stunting rates are higher in the GB sample than either U2 or baseline but this difference is explained at least in part by the fact that children are older in the GB than the other two samples. Wasting rates are significantly lower in both the U2 and GB samples compared to the baseline, from 40 percent lower in the U2 sample to 45 percent lower in the GB sample. The percentage of underweight children is 25 percent lower in the in the U2 sample compared to the baseline. Again, the GB sample is not directly comparable to the baseline and U2 samples for this measure, because the children are older than those in the other two samples. All the anthropometric indicators have improved from the baseline to the end-line survey round. Also, the regional patterns of variation in the anthropometric indicators are similar over the two survey rounds; Bhola has a markedly higher incidence of children with all three measures of undernutrition than the other two districts. With the exception of stunting in the GB sample, a slightly higher percentage of boys exhibit under-nutrition than girls in all the samples.

Anthropometric Indicators based on the 1978 NCHS reference population are provided in the second section of Table 7.37. The baseline results with the U2 sample of the end-line. These results are consistent with the computations provided in the JoJ Baseline Report. Using this earlier reference population, stunting rates have decreased by over 11 percent (from 35.6 percent to 31.5 percent). Incidence of underweight has decreased by 10 percent (from 52.3 percent to 46.9 percent).

Figures 7.8 a-c show graphically the changes in the anthropometric indicators over time, based on the WHO 2006 Growth Standards reference population. These figures include findings from the JoJ mid-term survey. They also show the general trend of improvement across all three anthropometric measures.

The anthropometric indicators for children are broken down by household participation in different program components in Table 7.38. In the U2 sample, there are no statistically detectable differences in any of the nutritional indicators when comparing non-participants, households that participated in MCHN only, and those that participated in both MCHN and HFP. As discussed in the analysis of food security indicators, one explanation for this lack of difference in indicators between households that participated in HFP compared with households that participated only in MCHN may be that, through demonstration effects from HFP participants to neighboring households, many households in SO1 unions have adopted improved gardening and farming practices even though

¹¹ IASC Global Nutrition Cluster, March 2009. *Fact Sheet on the Implementation of the 2006 WHO Child Growth Standards for Emergency Nutrition Programmes for Children aged 6-59 Months.*

Table 7.37 Anthropometric indicators, by district and by sex of the child

	District			Gender of Child		All
	Barisal	Bhola	Patuakhali	Male	Female	
I. Computed based on WHO 2006 Reference Population						
Stunting (height for age) % <-2SD						
Baseline	38.3	40.3	38.9	42.9	35.2	39.2
U2	33.6 (30.2-37.0)	41 (37.5-44.5)	33.8 (30.3-37.3)	40.6 (37.8-43.5)	31.6 (28.8-34.3)	36.2*** (34.2-38.2)
GB	49.7 (42.2-57.2)	67.5 (63.0-71.9)	50.2 (44.5-55.9)	56.8 (52.2-61.3)	59.9 (55.2-64.5)	58.3*** (55.0-61.5)
Wasting (weight for height) % <-2SD						
Baseline	25.2	33.7	24.8	30.5	25.1	27.9
U2	13.8 (11.3-16.3)	21.4 (18.4-24.3)	16.2 (13.5-18.9)	19.4 (17.1-21.8)	14.8 (12.7-16.9)	17.1*** (15.6-18.7)
GB	13.9 (8.7-19.1)	15.8 (12.3-19.2)	15.1 (11.0-19.1)	15.5 (12.2-18.8)	14.8 (11.5-18.2)	15.2*** (12.8-17.5)
Underweight (weight for age) % <-2SD						
Baseline	43	51.7	43.8	49.1	43.1	46.2
U2	31.4 (28.1-34.8)	40.3 (36.8-43.8)	32.4 (29.0-35.8)	39.1 (36.2-42.0)	30.3 (27.6-33.1)	34.8*** (32.8-36.8)
GB	45.1 (37.6-52.6)	58.1 (53.4-62.8)	45.5 (39.8-51.2)	51 (46.4-55.5)	51.9 (47.1-56.6)	51.4*** (48.1-54.7)
II. Computed based on NCHS 1978 Reference Population						
Stunting (height for age) % <-2SD						
Baseline	34	37.5	35.1	37.7	33.6	35.6
	(31.2-36.8)	(34.7-40.3)	(32.4-37.8)	(35.4-39.8)	(30.5-36.3)	(34.0-37.2)
U2	28.9 (25.6-32.2)	35.3 (31.8-38.7)	30.3 (26.9-33.6)	33.5 (30.7-36.3)	29.5 (26.8-32.2)	31.5*** (29.6-33.5)
Wasting (weight for height) % <-2SD						
Baseline	22.1	28.4	24.7	27.6	22.3	25.1
	(19.6-24.5)	(25.8-31.0)	(22.2-27.1)	(25.5-29.6)	(20.3-24.3)	(23.5-26.5)
U2	14.4 (11.9-17.0)	21.9 (18.9-24.8)	18.5 (15.6-21.3)	20.8 (18.4-23.1)	15.8 (13.6-17.9)	18.3*** (16.7-19.9)
Underweight (weight for age) % <-2SD						
Baseline	47.6	56.2	53.1	53.1	51.4	52.3
	(44.6-50.5)	(53.2-59.1)	(50.2-55.9)	(50.8-55.4)	(49.0-53.8)	(50.6-53.9)
U2	42.1 (38.5-45.7)	53.3 (49.8-56.9)	45.2 (41.6-48.9)	49.4 (46.5-52.4)	44.4 (41.4-47.3)	46.9*** (44.9-49.0)

Numbers in parentheses below the values are the 95% confidence intervals.

* end-line value different from baseline value at .10 significance level

** end-line value different from baseline value at .05 significance level

*** end-line value different from baseline value at .01 significance level

Figure 7.8 a-c Anthropometric indicators by survey round, by district

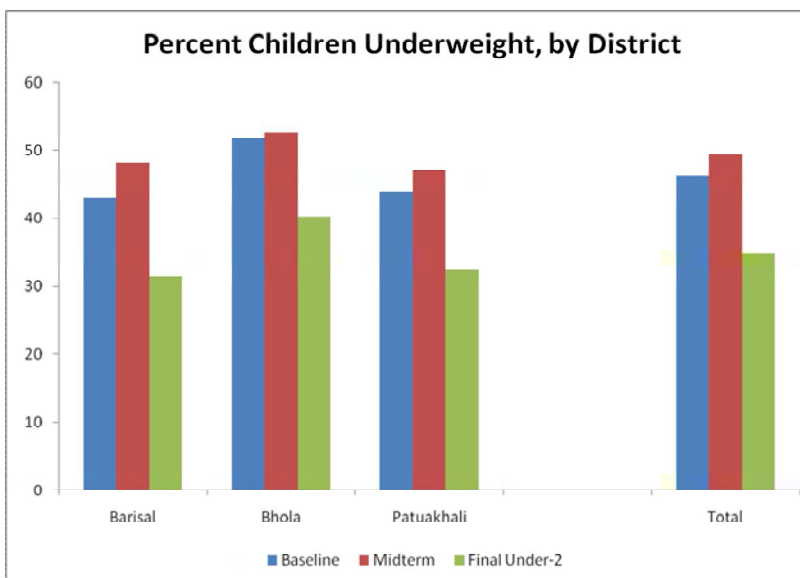
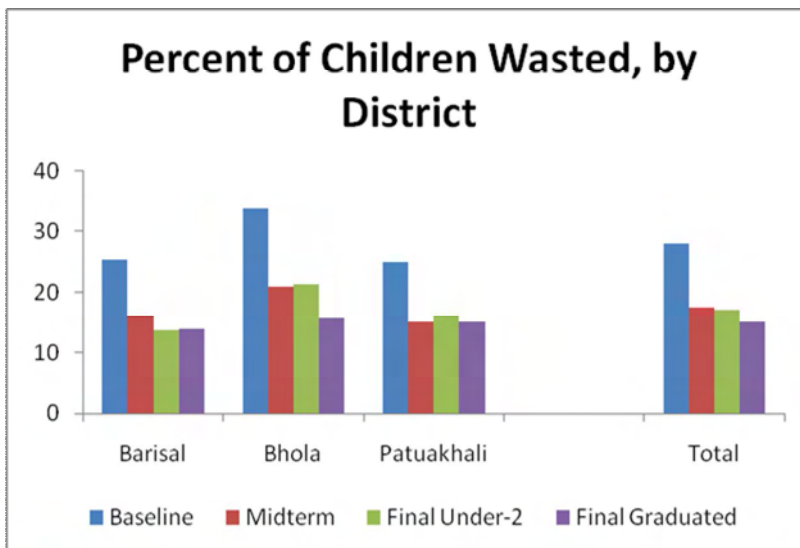
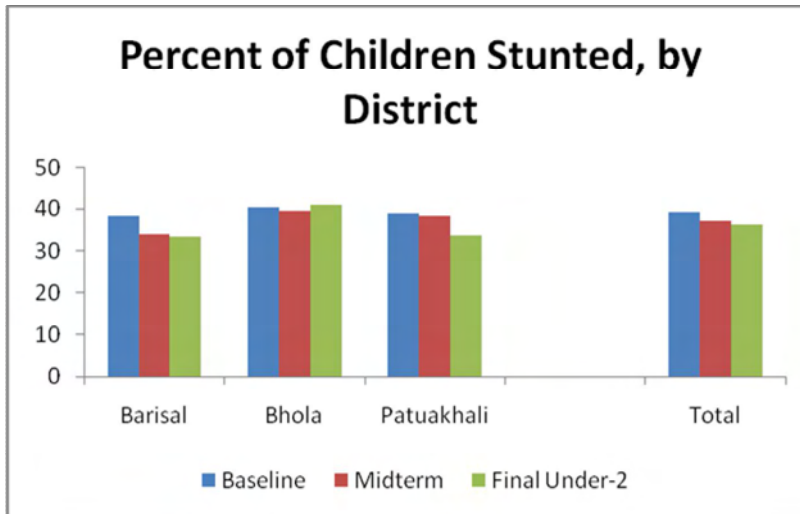


Table 7.38 Anthropometric Indicators by program participation categories, end-line samples

	End-line U2				End-line GB		
	Non-participant	MCHN only	MCHN+HFP	Non-SO1 Union	SO1 Union	MCHN only	MCHN+HFP
Stunting (< -2 SD)	32.2	36.0	39.0	40.6	34.3***	59.6	48.7**
Wasting (< -2 SD)	16.3	17.0	18.5	19.4	16.2**	15.1	15.9
Underweight (< -2 SD)	36.1	34.0	38.5	38.7	33.1**	52.7	42.5***

Notes:

SO1 us – unions where SO1 activities are supported, Non-SO1 Unions – unions where SO1 activities not supported.

* MCHN+HFP / SO1 union value different from MCHN only / non-SO1 union value at .10 significance level

** MCHN+HFP / SO1 union value different from MCHN only / non-SO1 union value at .05 significance level

*** MCHN+HFP / SO1 union value different from MCHN only / non-SO1 union value at .01 significance level

they did not participate directly in HFP. The values for indicators of undernutrition are significantly lower in SO1 unions than in non-SO1 unions. These results suggest that HFP activities within the SO1 unions have improved the nutritional status of children in all households in those areas, whether or not the households participated directly in HFP.

In the GB sample, the measures of longer-term undernutrition (stunting and underweight) are lower in the households that have participated in HFP compared with those that participated in MCHN only. The fact that these differences are significant in the GB sample while they are not significant in the U2 sample suggests that the participation in the HFP affects the long-term nutritional status of children only after a lag in time from when households initially received support from HFP.

A series of linear regressions was calculated to analyze the factors that affect the anthropometric indicators of children. Among other factors, these regressions examine the impacts of various program components (MCHN, WASH, FHP) on children's nutritional status. Explanatory variables in the models include characteristics of the measured children (age, gender, whether the child suffered from diarrhea or ARI in the two weeks prior to the survey), measures of household economic status (income per family member, number of assets), food security indicators (FAST score, DDS)¹², whether or not the household utilizes a package of sanitation and hygiene facilities and practices (water from a tested tubewell, uses an improved latrine, practices appropriate sanitation procedures, and practices appropriate handwashing procedures), and whether or not the household is in an SO1 union. Note that the DDS is positively associated with support provided by HFP in the SO1 unions (as demonstrated in Table 7.21). Thus, the model can identify impacts of the HFP on undernutrition in through two causal pathways: i) whether or not the child's household is in an SO1 union, and ii) the indirect impact of HFP on the household's diet diversity.

Regressions were run on both the U2 and GB samples. However, the regression models performed very poorly in the GB samples, with the models explaining only six percent or less of the variation in the anthropometric measures of children. The implication of these results is that, for the older children in the GB sample, none of the variables included in the model explained variations in the anthropometric measurements of the children. In particular, none of the variables related to JoJ program activities explained any of the variations in the anthropometric status of these older children. Because the regressions on the GB sample provided no conclusive results, the estimated parameters from these regressions are not reported.

In contrast, the results from the regressions on children 6-23 months of age explained a larger portion of the variation in the anthropometric indicators, and many of the explanatory variables included in the model were found to be statistically significant. The results of these regression models on the 6-23 month old children in the U2 sample are reported in Tables 7.39a-c. Separate regressions were estimated on the Z-scores of the three measures: wasting (WHZ), stunting (HAZ), and underweight (WAZ). For each explanatory variable, the tables report elasticity values and the significance level of the coefficient, based on the T-test for the hypothesis that the coefficient is zero. Elasticity values are computed from the linear regression coefficients. They are interpreted as the percentage change in the dependent variable of the model for a one percent change in the particular explanatory variable. For example, in Table

¹² The CSI indicator was also tried in the regressions, but the FAST score performed better.

39a, the elasticity value of 0.080 for income per person means that if income per person increases by one percent, the predicted WHZ score for the child will increase by 0.080 percent. (For dummy variables that take a 0 or 1 value only, the elasticity value represents the percentage change in the dependent variable if the dummy variable changes from 0 to 1.) The elasticity value is independent of the units of measure for the variables, and so can be compared directly across the variables. The elasticity values give a direct measure of the relative importance of the different explanatory variables in explaining variation in the dependent variable.

The adjusted R^2 and F values are measures of how well the data fit the model. The adjusted R^2 of 0.128 for the model in Table 39a means that the model explains about 13 percent of the variation in the observed WHZ scores. The F value relates to the hypothesis test that all the coefficients of the model are zero. A low significance value for the F value means that we can reject the hypothesis that all the coefficients are zero, that is, the model as a whole explains some of the variation in the dependent variable. The significant variables, those with significance levels below 0.10, are marked in bold in the tables. Note that all of the models estimated on the U2 sample have quite low adjusted R^2 values. This means that, even in the U2 sample, much (most) of the variation in the Z scores is explained by factors not included in the models. However, based on the F values, we can reject the hypothesis that the models do not explain any of the variation in the anthropometric variables, and many of the individual coefficients in the models are statistically different from zero.

Table 39a reports the results for wasting (WHZ), which measures short-term, or acute undernutrition. The results show that the likelihood of wasting increases with the age of the child, that girls have slightly higher WHZ scores than boys, and that incidence of diarrhea and ARI significantly lowers the WHZ score. Children in households of higher economic status (higher expenditures per person, and more assets) have higher WHZ scores. With respect to program interventions, children in households that have adopted the full package of hygiene and sanitation facilities and practices (water from a tested tubewell, use of a sanitary latrine, awareness of appropriate washing practices and hygienic latrine practices) have higher WHZ scores than do children in other households. The MCHN indicator which is positively associated with WHZ is whether or not the mother had antenatal checkups. The DDS is statistically significant and positive, although quite small in magnitude (a one percent increase in the DDS is associated with a 0.03 percent increase in the WHZ value). This indicates a small indirect impact of the HFP program component on children's weight for height measures. The other variables were not statistically significant. Children of households in SO1 unions do not have significantly different WHZ scores than those in non-SO1 unions.

The regression model for stunting (HAZ) shows the same general pattern of coefficients for child characteristics (age, sex, had ARI or diarrhea in past two weeks) and household economic status (income per person, number of assets) as the previous model, although the elasticity values for these variables are somewhat smaller than in the WHZ model. The sanitation package variable is not significant in this equation. Of the MCHN variables, the dummy variables for whether the mother had antenatal checkups and whether the mother ate more during the child's pregnancy are both positively related to the child's height-for-age measurement. Of the HFP variables, both the food security indicators and the dummy variable for whether the household was in an SO1 union positively affect the HAZ value. Thus, both the MCHN and HFP program components contribute positively to this longer-term nutritional

indicator, while the WASH component does not have a statistically significant impact. Finally, the results for the model of underweight (WAZ) are reported in Table 7.39c. For this indicator, which measures both long-term and current dimensions of the child's nutritional status, all program components contribute positively to children's nutritional status.

While the regression results from the U2 sample reveal that JoJ interventions have impacts on the nutritional status of children under two years of age, the inconclusive results from the regressions on the GB sample suggest that the impacts of the program interventions are not evident in older children. This may be because as children get older, the effects of antenatal care and current hygiene and sanitation conditions become relatively less determinant factors in children's growth. Also note that some of the children in the GB sample may have received program support only some time after they had already been born, so that they may have already been on a lower growth trajectory by the time that they began to receive benefits from the program. In these cases, even though the children may have benefited from program interventions, their long-term anthropometric measurements (HAZ, WAZ) will be low, simply because they started from a lower point when they began to receive services.

Another possible explanation is that the awareness and practices promoted by the various program components are not sustained after direct program support ends. As described above, there is evidence that awareness and practices of appropriate MCHN behaviors are in fact lower in the GB sample than in the U2 sample. The general conclusion from the regression results is that the JoJ interventions have statistically measurable positive impacts on nutritional status of children of households that are currently being supported by the program, particularly the longer-term measures of HAZ and WHZ. However, program interventions do not have any measurable impacts on the nutritional status of children in households that are no longer actively participating in the MCHN component. These results raise concerns about the capacity of the program to sustainably improve the nutritional status of children.

Table 7.39a Regression results for WHZ (wasting) from U2 sample

Dependent Variable: WHZ for children 6-23 months		
Explanatory Variables	Elasticity	Significance level
Age	-0.513	0.000
girl	0.092	0.015
Income per person	0.080	0.006
# assets	0.211	0.000
sanitation & hygiene package	0.113	0.056
Antenatal checkup	0.183	0.049
Eat more during pregnancy	0.055	0.165
Knowledge eat more during pregnancy	-0.141	0.160
Child has diarrhea	-0.242	0.000
Child has ARI	-0.250	0.000
DDS	0.034	0.003
FAST score	0.040	0.357
SO1 union	0.051	0.225
Adjusted R ²	0.128	
F Value	25.802	0.000

Notes:

Coefficients in bold significant at the .10 level.

Hygiene and sanitation package: tested tubewell + sanitary latrine + score ≥ 8 on washing practices + hygienic practices.

Table 7.39b Regression results for HAZ (stunting) from U2 sample

Dependent Variable: HAZ for children 6-23 months		
Explanatory Variables	Elasticity	Significance level
Age	-0.593	0.000
girl	0.107	0.000
income per person	0.058	0.008
# assets	0.123	0.000
Sanitation Package	0.060	0.171
Antenatal checkup	0.167	0.016
Eat more during pregnancy	0.111	0.000
Knowledge eat more during pregnancy	-0.104	0.166
Child has diarrhea	-0.098	0.004
Child has ARI	-0.051	0.071
DDS	0.115	0.021
FAST score	0.071	0.028
SO1 union	0.053	0.090
Adjusted R ²	0.155	
F Value	32.038	0.000

Notes:

Coefficients in bold significant at the .10 level.

Hygiene and sanitation package: tested tubewell + sanitary latrine + score ≥ 8 on washing practices + hygienic practices

Table 7.39c Regression results for WAZ (underweight) from U2 sample

Dependent Variable: WAZ for children 6-23 months		
Explanatory Variables	Elasticity	Significance level
Age	-0.427	0.000
girl	0.080	0.002
expenditures per person	0.068	0.001
# assets	0.169	0.000
Sanitation Package	0.083	0.041
Antenatal checkup	0.181	0.005
Eat more during pregnancy	0.081	0.003
Knowledge eat more during pregnancy	-0.106	0.126
Child has diarrhea	-0.157	0.000
Child has ARI	-0.152	0.000
DDS	0.158	0.001
FAST score	0.060	0.045
SO1 union	0.051	0.075
Adjusted R ²	0.169	
F Value	35.595	0.000

Notes:

Coefficients in bold significant at the .10 level.

Hygiene and sanitation package: tested tubewell + sanitary latrine + score ≥ 8 on washing practices + hygienic practices

7.8 Emergency Preparedness and Response

JoJ has worked to improve disaster preparedness and response in program communities. It should be noted that there were no serious cyclones or flooding events in the program areas for many years prior to the baseline, whereas the information in the end-line survey is in reference to cyclone Sidr. Thus, the results from the two rounds are based on very different conditions, and so direct comparisons must be interpreted with caution. With this caveat in mind, Table 7.41 reveals that emergency preparedness has improved substantially from the time of the baseline survey. In the baseline, for example, only one-third of surveyed households had received advance warning of the cyclone that hit prior the baseline survey. By contrast, in the end-line survey over 90 percent of households received advance warning of the cyclone (91 percent in U2 and 95 percent in GB). However, in the U2 sample, a higher percentage of households, almost 20 percent, did not receive advance warning in Barisal district, compared with Bhola and Patuakhali. The sources of the warning messages changed in important ways from the baseline to the end-line. Specifically, CPP volunteers, television, and especially mosque microphones increased in relative importance in the end-line. Warnings from the Union Parishad also increased from almost nil to reaching almost 13 percent of households that received warning. Conversely, radio diminished somewhat in importance as a source of information. Also noteworthy is the very high percentage of responses for “friends/neighbors/relatives” as sources of emergency warning information in the U2 end-line. This category was not included in the GB questionnaire, so friends, neighbors, and relatives were counted in the “other” category in the GB sample.

The percentage of households that moved to a shelter during an emergency increased from less than four percent of surveyed households to over 20 percent in the end-line (over 25 percent in the GB sample). Again, note that the answers from the end-line surveys refer to Cyclone Sidr, one of the most severe to strike the program area in many years. There was not much change in the types of shelter that people moved to from the baseline to the end-line survey rounds.

A much larger percentage of households reported having received assistance in the end-line (after Cyclone Sidr), over 50 percent, compared with only two percent in the baseline. There was also substantial variation in the percentage of households receiving assistance across the districts – 83 percent in Patuakhali compared with 33 percent in Bhola. These regional variations presumably reflect the differences in how badly different program areas were affected by Sidr. In terms of the types of assistance received there was essentially a complete reversal of households receiving food versus water in the two survey rounds. In the baseline, 93 percent of households reported receiving food and less than five percent received water. Conversely, in the end-line, less than 5 percent of households reported receiving food (less than one percent in the GB sample) and over 96 percent received water. The percentages of households receiving other types of assistance are not much different between the baseline and U2 samples. However, a smaller percentage of households in the GB sample reported receiving clothing, housing, and money than in the U2 sample.

Table 7.41 Percent of households receiving warning messages and assistance from last cyclone (Sidr)

Responses	Baseline				End-line – U2				End-line GB
	Barisal	Bhola	Patuakhali	All	Barisal	Bhola	Patuakhali	All	
Warning message									
Received	18.8	50.6	27.3	32.7	81.5	94.7	98.5	91.4	95.2
Did not receive	81.2	49.4	72.7	67.3	18.5	5.3	1.5	8.6	4.8
<i>N</i> ¹	1506	1665	1636	4807	949	909	907	2765	897
Source of messages									
CPP Volunteers	0.4	18.4	45.4	22.8	0.3	47.4	46.7	32.8	22.2
Radio	68.2	42.6	46.3	48.3	33.6	41.2	47.5	41.1	41.2
Television	47.0	20.2	21.3	25.3	51.7	34.8	44.8	43.5	48.2
Union Parishad	-	0.2	0.4	0.3	4.8	13.3	19.0	12.7	18.1
NGOs	0.4	0.5	0.9	0.6	2.5	7.4	3.4	4.5	1.1
Mosque microphones	-	5.6	2.2	3.6	19.0	45.2	46.6	37.7	38.4
Neighbors/Friends/ Relatives	-	-	-	-	83.2	93.5	95.9	91.2	0.0
Others	11.7	44.1	12.1	29.2	0.9	1.5	1.6	1.3	87.5
<i>N</i> ²	283	843	447	1573	773	862	893	2528	855

Notes:

*N*¹ is all households with a cyclone, *N*² is all households who received warning message of the last cyclone, *N*³ is all households who moved during last cyclone, *N*⁴ is all households who received assistance during the last cyclone

All values for U2 All and GB are different from Baseline All at the 0.01 significance level.

Table 7.41 (continued). Percent of households receiving warning messages and assistance from last cyclone

	Baseline				End-line – U2				End-line GB
	Barisal	Bhola	Patuakhali	All	Barisal	Bhola	Patuakhali	All	
Moved to a shelter									
Moved	0.8	3.8	6.1	3.6	11.8	22.6	28.8	20.9	25.5
Did not move	99.2	96.2	93.9	96.4	88.2	77.4	71.2	70.1	74.5
<i>N</i> ¹	1506	1665	1636	4807	949	909	907	2765	897
Type of shelter									
Pacca house	16.7	11.1	5.1	8.0	16.9	4.3	9.0	9.0	15.0
Kacha house	58.3	58.7	37.4	46.6	74.6	28.8	33.1	39.9	46.7
Cyclone/flood center	0.0	20.6	36.4	28.2	4.2	50.0	41.4	37.0	19.3
Union Parishad building	-	-	-	-	1.7	1.4	1.1	1.7	0.4
School building	0.0	3.2	2.0	2.3	0.8	10.6	3.8	5.6	7.3
Boat	0.0	0.0	1.0	0.6	0.0	0.5	0.4	0.3	0.0
Highways/embankment	-	-	-	-	0.0	1.9	4.5	2.7	1.7
Raised hillock	16.7	4.8	14.1	10.9	0.8	1.0	5.6	3.0	3.0
Mosque	-	-	-	-	0.0	1.4	1.1	1.0	1.3
Other	8.3	1.6	4.0	3.4	0.8	0.0	0.0	0.2	4.3
<i>N</i> ³	12	63	99	174	118	208	266	592	233
Received assistance	0.7	1.1	4.0	2.0	46.2	32.5	82.8	53.7	57.4
<i>N</i>	1506	1665	1636	4807	949	909	907	2765	897
Type of assistance received									
Food	100.0	89.5	92.4	92.6	2.7	3.1	5.7	4.3	0.6
Water	-	-	6.1	4.2	95.0	96.3	97.1	96.3	97.2
Clothing	-	26.3	22.7	21.1	10.7	11.5	19.0	15.1	6.0
Housing	-	5.3	22.7	16.8	12.6	6.4	15.0	12.6	6.2
Money	-	-	1.5	1.1	5.3	8.1	14.0	10.2	6.8
Medicine	-	5.3	3.0	3.2	0.9	1.0	9.2	5.1	5.2
Other	-	-	6.1	4.2	4.1	3.1	5.3	4.5	20.8
<i>N</i> ⁴	10	19	66	95	438	295	751	1484	515

Notes:

*N*¹ is all households with a cyclone, *N*² is all households who heard of the last cyclone, *N*³ is all households who moved during last cyclone, *N*⁴ is all households who received assistance during the last cyclone.

All values for U2 All and GB are different from Baseline All at the 0.01 significance level.

8. Summary and Discussion

The findings from the two samples of the end-line survey provide evidence of many changes in the levels of awareness, practices, and conditions of households in the JoJ program area since the time of the baseline survey. Comparison of results from the baseline and end-line samples provides an indication of how these factors have changed over the course of the project. Comparison between the U2 and GB samples offers some insights into the sustainability of the program interventions. Discussion of findings will first summarize impact and outcome level indicators, followed by discussion of individual program components; finally, program implementation issues of targeting and sustainability will be addressed in the context of survey findings.

Anthropometric Indicators

Looking first at the impact level indicators of household conditions, all anthropometric measures of undernutrition have decreased from the baseline to the end-line U2 sample. Regression analysis reveals that the HFP, MCHN and WASH components all have positive impacts on all three measures of undernutrition for under-2 children. However, the regression results do not show any significant impacts on older children in households that participated in the program activities at an earlier time.

Food Security Indicators

Measures of household food security show mixed results over the life of the project. Measures of the quality of diet in current household consumption showed improvement, both from the baseline, and comparing program participants with non-participants in the U2 sample. The broader indicator of household security, the FAST score, which measures longer-term food security and vulnerability, did not change significantly from the baseline to the end-line. Participants in the HFP component do not show any improvement in either current food consumption measures or longer-term food security in comparison with households that have not participated in this component. Also, the additional indicators that were measured in the end-line, the Food Consumption Score and Coping Strategy Index, showed similar patterns as the similar indicators (DDS and FAST scores) that were computed in the baseline. Thus, these additional indicators help to confirm the overall picture of food security conditions, but do not provide more accurate measures or additional insights about food security conditions as compared to the original indicators. In the regression analysis, the FAST score actually performed slightly better than the CSI. Since DDS and FAST score are indicators normally used to assess Title II projects, continuation of use of these indicators of food security is recommended.

Homestead food production (HFP)

There is strong evidence of increased awareness of appropriate or improved practices in all areas of HFP, including agriculture, gardening and poultry production. Improvements in homestead agriculture have been particularly notable. Adoption of improved gardening techniques has been very high among participants in HFP, but also among the wider population in the sampled communities. This suggests that these techniques provide real improvements, and are therefore perceived by many households to be advantageous. In addition, the adoption rates are generally as high among the smaller farmers as larger farmers, suggesting

that the benefits from these improvements can reach even households of lower economic status.

One very important finding with respect to agriculture is the general tendency that the adoption rates are even higher in the households in the GB sample than among the sample that includes current program participants. This suggests that the improvements are sustainable, as households continue to practice the techniques even after they no longer have direct support from the program.

Households in SO1 unions have more diverse diets than those in non-SO1 unions. Thus, the SO1 interventions appear to have successfully improved the diets of all households within the SO1 intervention areas, not only those that participate directly in HFP. This finding also suggests that the support provided to HFP households is diffused to other households within the same communities. Increased diet diversity, which is related to SO1 support, is also correlated with improved nutritional indicators of under-2 children.

Maternal and Child Health and Nutrition (MCHN)

In the area of MCHN there is evidence of widespread improvement in awareness of appropriate practices and changes in behaviors. In all areas covered by the survey – antenatal care, infant feeding, immunization and child health care – awareness of appropriate practices and reported behaviors has increased substantially from the baseline. However, comparison of results from the GB sample with those of the U2 sample reveals a decline in levels of awareness and practices for households that previously received MCHN support in relation to those currently receiving support. The percent of women receiving antenatal checkups, the percent reporting eating more during pregnancy, and vaccination rates of children are all lower in the GB sample than the U2 sample.

One negative trend observed across the survey rounds is the quite dramatic increase in incidence of ARI among children. One possible explanation is that parents are now more aware of the signs of ARI, and thus the actual incidence has not increased, but rather awareness has increased. However, the information available in the survey cannot reveal whether the increase in the reported incidence is due to greater awareness or to an increase in the actual incidence. The reasons for this change should be further investigated.

Water, Sanitation and Hygiene (WASH)

The promotion of appropriate hygiene and sanitation practices has shown a marked improvement in reported practices of participating households since the baseline. There has been a dramatic increase in the percentage of homes with improved latrines, but the percentage of ring slab latrines with broken seals has also increased significantly. The higher proportion of broken seals may be the result of damage incurred by Cyclone Sidr. The reported use of improved handwashing techniques has also improved dramatically, as has the use of hygienic sanitation practices. Households that utilize these practices, especially those that use the entire set of practices, have lower incidence of diarrhea and ARI in children than households that do not follow the recommended practices.

Emergency Preparedness and Response

The reported level of support provided in response to emergencies is overall quite high in the end-line survey round. The levels of support increased from the baseline, but it should be noted

that the information collected in the end-line survey was in reference to Cyclone Sidr, one of the worst storms to hit the program intervention area in recent years, whereas the storms in the years prior to the baseline survey were not so severe. Thus the results from the two survey rounds are not directly comparable: the lower levels of response in the baseline may be partly due to the lower severity of emergencies compared with the end-line.

Targeting

Economic status of households has been measured on the basis of income per household member, expenditures per household member, and household wealth, measured as the number of different types of assets that the household possesses. There are no important differences in economic status of non-participants, current participants, and graduated participants in the MCHN component of JoJ. In particular there is not strong evidence that program participation is biased toward households of either higher or lower economic status. This is not surprising, since in fact, over 90 percent of all eligible households in program areas currently participate in the MCHN component, so the participating households are likely to be representative of the whole spectrum of economic conditions. Also, there are no statistically significant differences in the economic status measures between HFP participants and non-participants.

Sustainability

Comparison of results between the U2 and GB samples provides some insights into the extent to which program interventions have achieved sustainable changes in attitudes, practices and household conditions. If the percentage of households reporting certain attitudes, behaviors, or conditions remains constant, or even increases in the GB sample compared with the U2 sample, this indicates that the program has made lasting changes in these areas. However, lower percentages in the GB sample compared to the U2 sample would indicate that the proportion of households with the desired attitudes, behaviors, and conditions declines after the households no longer have direct program support. The differences between the U2 and GB samples reveal some distinct patterns across the different program categories. On the one hand, the utilization of improved gardening practices is even higher in the GB sample than the U2 sample, suggesting that adoption of these practices is sustainable. The fact that a high percentage of households that do not participate directly in FHP also utilize the recommended practices also suggests that farmers generally perceive the benefits of these practices, and take them up even without direct program support.

In contrast, the proportion of mothers following recommended MCHN practices is lower in the GB than the U2 sample. Specifically, the percentages of mothers receiving antenatal visits, vaccinated children, and children with diarrhea who are taken for treatment are all significantly lower in the GB compared with the U2 samples. Attitudes about proper antenatal care also show declines in the graduated households. These results suggest that MCHN attitudes and practices tend to be given up after households lose direct program support, and raise concerns about the sustainability of the MCHN interventions.

Annexes

Annex 1. Sample Size Computations for JoJ End-line Survey

For surveys designed to measure change over time or differences between comparison groups, precision is specified in terms of the smallest change or comparison group difference that it is desired to be able to reliably measure.

Sample Size Calculation:

$$n = D [(Z_1 + Z_2)^2 * (P_1 (1 - P_1) + P_2 (1 - P_2))] / (P_2 - P_1)^2]$$

Where:

n = required minimum sample size per survey round

D= design effect

P₁ = the estimated level of an indicator measured as a proportion at the time of the baseline survey

P₂ = the *expected* level of the indicator at the time of the end-line survey for the program area such that the quantity (P₂ - P₁) is the size of the magnitude of change it is desired to be able to detect

Z₁ = the Z-score corresponding to the degree of confidence with which it is desired to be able to conclude that an observed change of size (P₂ - P₁) would not have occurred by chance (the level of statistical significance), and

Z₂ = the z-score corresponding to the degree of confidence with which it is desired to be certain of detecting a change of size (P₂ - P₁) if one actually occurred (statistical power).

Z₁ and Z₂ have “standard” values depending on the reliability desired. This formula takes into account the magnitude of change that can be detected with 95 percent confidence given the *expected* standard deviations for the indicator of interest. The indicator used from the baseline to calculate sample size is the proportion of children between 6 and 23 months stunted. This indicator is chosen because a) it embodies much of the aims of the Title II program, and b) it is indicative of the magnitude of change the program seeks at the impact level.

At the time of the baseline survey, 35.6 percent of children between 6 and 23 months old were below -2 standard deviations for height-for-age. Save the Children Bangladesh expects this proportion to decrease by 20% with the assistance it provides in MCHN and food security. In this case then, the value of P₁ = .356 and P₂ = .285. Using standard parameters of 95 percent level of significance (Z₁) and 80 percent power (Z₂), so Z₁ = 1.645 and Z₂ = 0.840 are chosen. Inserting these values in the above formula yields the following result:

$$\begin{aligned} n &= 1.7 [(1.645 + 0.840)^2 * ((.356)(.644) + (.285)(.715))] / (.285 - .356)^2] \\ &= 1.7 [(6.175 * (0.432953 / 0.005069))] \\ &= 1.7 [(6.175) * 85.40449] = 1.7 (527) = 897 \text{ households per strata.} \end{aligned}$$

Since it will be difficult to resample households that are not available, a non-replacement rate of 5 percent will be built into the sample. Thus, by multiplying 897 households per strata by 1.05¹³, a final sample size of 941 households per strata. Applying the results to each of the three strata, the required sample size for the end-line survey is 2,823 households. This is a significant decrease over the baseline survey sample size of 1,500 households per site, and is a result of the original proportion of children 6-23 months old that were stunted.

¹³ In the baseline survey, non-response averaged approximately 5%, and this is not expected to change in the end-line survey.

Design Effect

The equation above includes the coefficient D for design effect. This provides a correction for the loss of sampling efficiency resulting from the use of cluster sampling instead of simple random sampling, and the gain of sampling efficiency resulting from stratification. It is the factor by which the sample size must be multiplied by in order to produce survey estimates with the same precision as a simple random sample.

Estimates of design effect were calculated from key continuous variables in the baseline survey. The estimated design effect of the baseline survey is 1.7, largely due to the offsetting of stratification (which lowers the design effect coefficient) and clustering of villages (which increases the design effect coefficient) to derive the needed sample.

Annex 2. Cluster (Mouza) Selections

U2 Sampled Clusters

District	Upazila	Union	Children U2	Cluster No.	Cluster (randomly selected mouza)	Sample size
Barisal	Babuganj	Chand Pasha	1541	8	Arazi Kalikapur	20
Barisal	Babuganj	Chand Pasha			Gazipur	20
Barisal	Babuganj	Chand Pasha			Banshgari	20
Barisal	Babuganj	Chand Pasha			Bayelakhali	20
Barisal	Babuganj	Kedar Pur	1305	9	Kismat Thakur Mallik	20
Barisal	Babuganj	Kedar Pur			Bhutardia	20
Barisal	Babuganj	Kedar Pur			Purba Bhutardia	20
Barisal	Babuganj	Kedar Pur			Paschim Bhutardia	20
Barisal	Bakerganj	Char Amaddi	877	10	Badal Para	20
Barisal	Bakerganj	Char Amaddi			Paschim char Amaddi	20
Barisal	Bakerganj	Char Amaddi			Satikhola	20
Barisal	Bakerganj	Char Amaddi			Dakshin Katadia	20
Barisal	Bakerganj	Darial	1498	11	Bamnikathi Charkhanda	20
Barisal	Bakerganj	Darial			Uttampur	20
Barisal	Bakerganj	Darial			Uttar Kajlakati	20
Barisal	Bakerganj	Darial			Andhar Manik	20
Barisal	Bakerganj	Farid Pur	956	12	Mangalsi	20
Barisal	Bakerganj	Farid Pur			Faridpur	20
Barisal	Bakerganj	Farid Pur			Paschim Char	20
Barisal	Bakerganj	Farid Pur			Raghunathdi	20
Barisal	Bakerganj	Farid Pur			Char Bhatsala	20
Barisal	Bakerganj	Garuria	1424	1	Kati Para	20
Barisal	Bakerganj	Garuria			Junia	20
Barisal	Bakerganj	Garuria			Helencha	20
Barisal	Bakerganj	Garuria			Meur	20
Barisal	Bakerganj	Kalash Kathi	1390	2	Bebaz	20
Barisal	Bakerganj	Kalash Kathi			Diatali	20
Barisal	Bakerganj	Kalash Kathi			Purba Durgapur	20
Barisal	Bakerganj	Kalash Kathi			Sadish Amtali	20
Barisal	Bakerganj	Padre Shivpur	1470	3	Arai Beki	20
Barisal	Bakerganj	Padre Shivpur			Bara Puiautha	20
Barisal	Bakerganj	Padre Shivpur			Padri Shibpur	20
Barisal	Bakerganj	Padre Shivpur			Dakshin Kati	20
Barisal	Bakerganj	Vor Pasha	879	4	Paschim Lakshmi Pasha	20
Barisal	Bakerganj	Vor Pasha			Bara Krishnakati	20
Barisal	Bakerganj	Vor Pasha			Dudhal Mou	20
Barisal	Bakerganj	Vor Pasha			Kanki	20
Barisal	Muladi	Char Kale Khan	1310	5	Kayetmara	20
Barisal	Muladi	Char Kale Khan			Kolchar	20
Barisal	Muladi	Char Kale Khan			Purba Bani Mardan	20
Barisal	Muladi	Char Kale Khan			Dakshin Gachhua	20
Barisal	Muladi	Kazir Char	1362	6	Kazir Char	20
Barisal	Muladi	Kazir Char			Char Michua	20
Barisal	Muladi	Kazir Char			Decreer Char	20
Barisal	Muladi	Kazir Char			Commissionerer Char	20
Barisal	Muladi	Shafi Pur	2782	7	Baliatali	20
Barisal	Muladi	Shafi Pur			Brajamohan	20
Barisal	Muladi	Shafi Pur			Safipur	20
Barisal	Muladi	Shafi Pur			Char Malia	20
Barisal Total			16794	12 unions	48 mouza villages	960

District	Upazila	Union	Children U2	Cluster No.	Cluster (randomly selected mouza)	Sample size
Bhola	Bhola Sadar	Chor Samiya	1429	12	Purba Char Kali	20
Bhola	Bhola Sadar	Chor Samiya			Char Chhifali	20
Bhola	Bhola Sadar	Chor Samiya			Char Samaia	20
Bhola	Bhola Sadar	Chor Samiya			Chhota Char Samaia	20
Bhola	Bhola Sadar	Illisha	3563	1	Char Ananda Part-2	20
Bhola	Bhola Sadar	Illisha			Char Illisha	20
Bhola	Bhola Sadar	Illisha			Char Kalupara	20
Bhola	Bhola Sadar	Illisha			Murad Chhabulla	20
Bhola	Bhola Sadar	Rajapur	3359	2	Ganeshpura	20
Bhola	Bhola Sadar	Rajapur			Char Sitaram	20
Bhola	Bhola Sadar	Rajapur			Jazira Majidpur	20
Bhola	Bhola Sadar	Rajapur			Ramdaspur	20
Bhola	Bhola Sadar	Vaduria	2431	3	Char Bhedaria	20
Bhola	Bhola Sadar	Vaduria			Char Ramesh	20
Bhola	Bhola Sadar	Vaduria			Char Chatkimara	20
Bhola	Bhola Sadar	Vaduria			Char Karimaddin	20
Bhola	Borhan Uddin	Hasan Nagar	959	4	Hassan Nagar	26
Bhola	Borhan Uddin	Hasan Nagar			Sudhampur	26
Bhola	Borhan Uddin	Hasan Nagar			Dakshin Char	28
Bhola	Borhan Uddin	Hasan Nagar			Lamchhidhali	
Bhola	Borhan Uddin	Sachra	1728	5	Gazipur Char	20
Bhola	Borhan Uddin	Sachra			Gobindapur	20
Bhola	Borhan Uddin	Sachra			Bathanbari	20
Bhola	Borhan Uddin	Sachra			Deula Shibpur	20
Bhola	Doulatkhan	Charpata	1691	6	Bara Char Lamchhi Pata	20
Bhola	Doulatkhan	Charpata			Uttar Char Lamchhi Pata	20
Bhola	Doulatkhan	Charpata			Char Pata	20
Bhola	Doulatkhan	Charpata			Dakatia Megara	20
Bhola	Doulatkhan	Uttar Joynagar	1702	7	Uttar Joynagar	40
Bhola	Doulatkhan	Uttar Joynagar			Madhya Joynagar	40
Bhola	Doulatkhan	Uttar Joynagar				
Bhola	Doulatkhan	Uttar Joynagar				
Bhola	Lal Mohon	Dhali Gauranagar	2778	8	Dhali Gauranagar	20
Bhola	Lal Mohon	Dhali Gauranagar			Karimganj	20
Bhola	Lal Mohon	Dhali Gauranagar			Chatila	20
Bhola	Lal Mohon	Dhali Gauranagar			Char Mollaji	20
Bhola	Lal Mohon	Kalma	2921	9	Lej Chhakina	20
Bhola	Lal Mohon	Kalma			Char Lakshmi	20
Bhola	Lal Mohon	Kalma			Balur Char	20
Bhola	Lal Mohon	Kalma			Char Chhakina	20
Bhola	Lal Mohon	Ramganj	2123	10	Purba Char Umed	20
Bhola	Lal Mohon	Ramganj			Roychand	20
Bhola	Lal Mohon	Ramganj			Uttar Ramgonj	20
Bhola	Lal Mohon	Ramganj			Daskhin Roychand	20
Bhola	Tazomuddin	Shomvhpur	2607	11	Shibpur	20

District	Upazila	Union	Children U2	Cluster No.	Cluster (randomly selected mouza)	Sample size
Bhola	Tazomuddin	Shomvhpur			Golakpura	20
Bhola	Tazomuddin	Shomvhpur			Char Koralmara	20
Bhola	Tazomuddin	Shomvhpur			Char Lamchhi Koralmara	20
Bhola Total			27291	12 unions	45 mouza villages	960

District	Upazila	Union	Children U2	Cluster No.	Cluster (randomly selected mouza)	Sample size
Patuakhali	Bauphal	Bauphal	1510	3	Bauphal	20
Patuakhali	Bauphal	Bauphal			Kayna	20
Patuakhali	Bauphal	Bauphal			Dakshin Hosnabad	20
Patuakhali	Bauphal	Bauphal			Jauta	20
Patuakhali	Bauphal	Dhulia	1053	4	Basudebpasha	20
Patuakhali	Bauphal	Dhulia			Char Basudebpasha	20
Patuakhali	Bauphal	Dhulia			Tentulia	20
Patuakhali	Bauphal	Dhulia			Aloki Chandkati	20
Patuakhali	Bauphal	Kanakdia	1599	5	Baultali	20
Patuakhali	Bauphal	Kanakdia			Amirabad	20
Patuakhali	Bauphal	Kanakdia			Ayla	20
Patuakhali	Bauphal	Kanakdia			Hogla	20
Patuakhali	Bauphal	Najirpur	1977	6	Bakla Taterkati	20
Patuakhali	Bauphal	Najirpur			Nimdi	20
Patuakhali	Bauphal	Najirpur			Algi	20
Patuakhali	Bauphal	Najirpur			Char Wadel	20
Patuakhali	Golachipa	Amkhola	2118	7	Ramdula	20
Patuakhali	Golachipa	Amkhola			Nijsuhati	20
Patuakhali	Golachipa	Amkhola			Ramananda	20
Patuakhali	Golachipa	Amkhola			Guchchhagram	20
Patuakhali	Golachipa	Char Kajol	2281	8	Bara Char Kajal	20
Patuakhali	Golachipa	Char Kajol			Bara Shibar Char	20
Patuakhali	Golachipa	Char Kajol			Chhota Shibar Char	20
Patuakhali	Golachipa	Char Kajol			Char Kapalbera	20
Patuakhali	Golachipa	Choto Baishdia	1416	9	Char Emarson	20
Patuakhali	Golachipa	Choto Baishdia			Tilla	20
Patuakhali	Golachipa	Choto Baishdia			Char Tozammel	20
Patuakhali	Golachipa	Choto Baishdia			Haridrakhali	20
Patuakhali	Golachipa	Golkhali	1902	10	Suhari (1St Part I)	20
Patuakhali	Golachipa	Golkhali			Golkhali	20
Patuakhali	Golachipa	Golkhali			Badura	20
Patuakhali	Golachipa	Golkhali			Bhadachar	20
Patuakhali	Golachipa	Ranga Bali	2111	11	Bhar Char	20
Patuakhali	Golachipa	Ranga Bali			Rangabali	20
Patuakhali	Golachipa	Ranga Bali			Char Jamuna	20
Patuakhali	Golachipa	Ranga Bali			Sener Haola	20
Patuakhali	Patuakhali Sadar	Badarpur	1122	12	Gabua	20
Patuakhali	Patuakhali Sadar	Badarpur			Khalisakhali	20
Patuakhali	Patuakhali Sadar	Badarpur			Mithapur	20
Patuakhali	Patuakhali Sadar	Badarpur			Tengrakhali	20
Patuakhali	Patuakhali Sadar	Jainkathi	984	1	Char Jainkati	20

District	Upazila	Union	Children U2	Cluster No.	Cluster (randomly selected mouza)	Sample size
Patuakhali	Patuakhali Sadar	Jainkathi			Purba Jainkati	20
Patuakhali	Patuakhali Sadar	Jainkathi			Sehakati	20
Patuakhali	Patuakhali Sadar	Jainkathi			Fedainagar	20
Patuakhali	Patuakhali Sadar	Lohalia	1257	2	Kuripaika	20
Patuakhali	Patuakhali Sadar	Lohalia			Lohalia	20
Patuakhali	Patuakhali Sadar	Lohalia			Idrakpur	20
Patuakhali	Patuakhali Sadar	Lohalia			Kakrabania Lohalia	20
Patuakhali Total			19330	12 unions	48 mouza villages	960

Grand Total			63415	36 unions	141 mouza villages	2880
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GB Survey Selected Clusters (Mouzas)

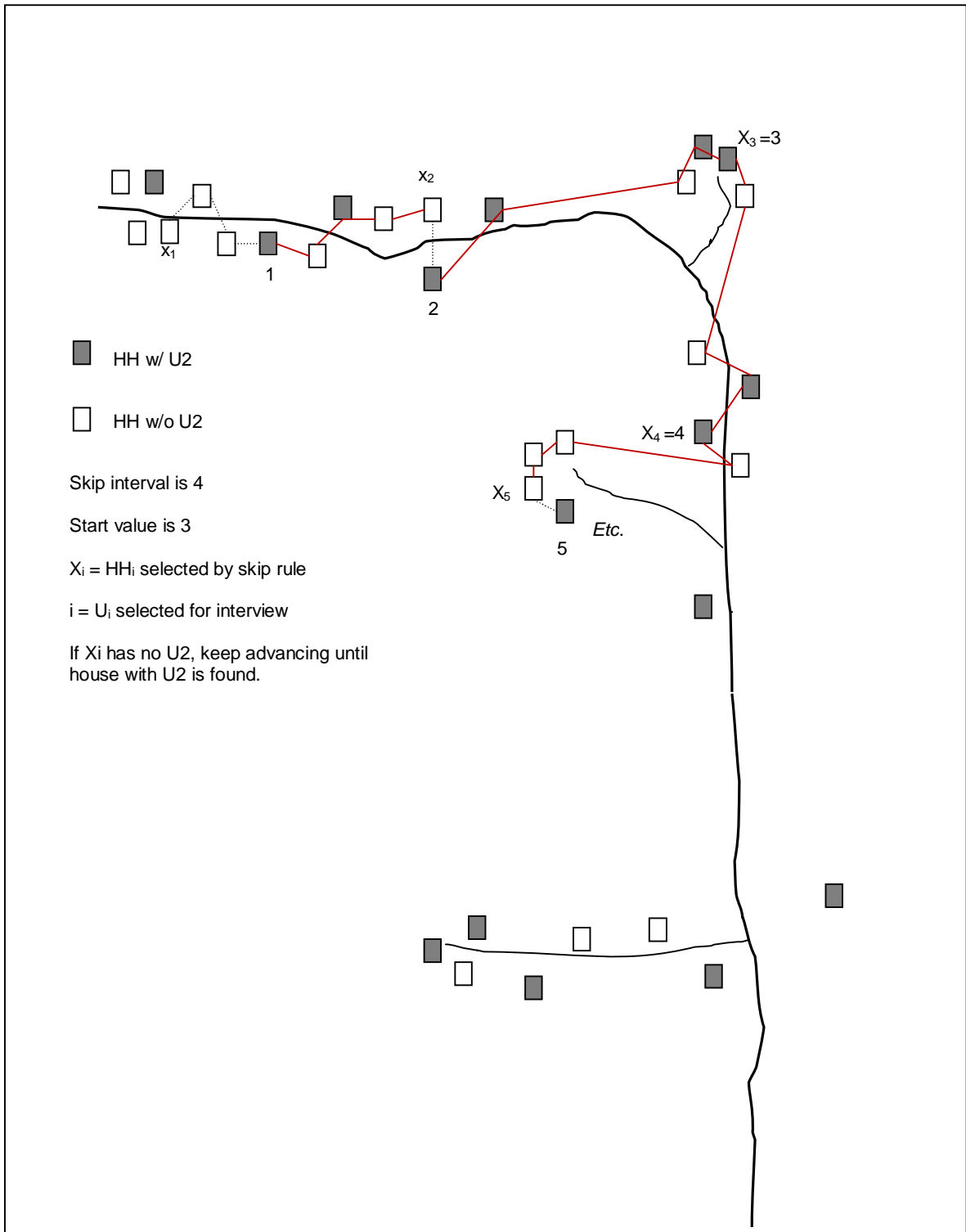
District	Upazila	Union	Children 24-59 months on July 1st	Cluster No.	Cluster (randomly selected mouza)	Sample size
Barisal	Babuganj	Madhop Pasha	1010	30	Rabindranagar	15
Barisal	Babuganj	Madhop Pasha			Goaldi Musuria (Part II)	15
Barisal	Bakerganj	Char Amaddi	629	1	Char Amaddi	15
Barisal	Bakerganj	Char Amaddi			Katadia	15
Barisal	Bakerganj	Nyamoti	785	2	Purba Maheshpur	15
Barisal	Bakerganj	Nyamoti			Paschim Krishnanagar	15
Barisal	Bakerganj	Ranga Sree	823	3	Nanda Para	15
Barisal	Bakerganj	Ranga Sree			Lochanabad	15
Barisal	Muladi	Gasua	619	4	Sreemati	15
Barisal	Muladi	Gasua			Char Decree	15
Barisal	Muladi	Muladi	765	5	Uttar Galuibhanga	15
Barisal	Muladi	Muladi			Bhangarmona	15
Barisal						
Total	3 upazilas	6 unions	4631		12 mouzas	180

District	Upazila	Union	Children 24-59 months on July 1 st	Cluster No.	Cluster (randomly selected mouza)	Sample size
Bhola	Bhola Sadar	Bapta	1092	6	Char Potka	15
Bhola	Bhola Sadar	Bapta			Char Napta	15
Bhola	Bhola Sadar	Dhania	949	7	Guli	15
Bhola	Bhola Sadar	Dhania			Nabipur (Part)	15
Bhola	Bhola Sadar	Illisha	1728	8	Purba Char Illisha	15
Bhola	Bhola Sadar	Illisha			Char Illisha	15
Bhola	Bhola Sadar	Shibpur	665	9	Shibpur Guchchhagram	15
Bhola	Bhola Sadar	Shibpur			Char ratanpur	15
Bhola	Borhan Uddin	Boro Manika	1115	10	Uttar Batamara	15
Bhola	Borhan Uddin	Boro Manika			Dakshin Batamara	15
Bhola	Borhan Uddin	Pakxia	539	11	Batamara	15
Bhola	Borhan Uddin	Pakxia			Madhyam Lamchhi Dhali	15
Bhola	Borhan Uddin	Tabgi	1038	12	Tabgi	15
Bhola	Borhan Uddin	Tabgi			Mulai Pattan	15
Bhola	Doulatkhan	Charpata	1134	13	Char Dakshin Lamchhi Pata	15
Bhola	Doulatkhan	Charpata			Dakatia Megara	15
Bhola	Doulatkhan	Uttar Joynagar	967	14	Uttar Joynagar	15
Bhola	Doulatkhan	Uttar Joynagar			Madhya Joynagar	15
Bhola	Lal Mohon	Badar Pur	1667	15	Char Titia	15
Bhola	Lal Mohon	Badar Pur			Nazirpur	15
Bhola	Lal Mohon	Lal Mohon	473	16	Char Lalmohan	15
Bhola	Lal Mohon	Lal Mohon			Peshker Hawla	15
Bhola	Lal Mohon	Paschim Char Umed	2799	17	Paschim Char Umed	15
Bhola	Lal Mohon	Paschim Char Umed			Pangashia	15
Bhola	Lal Mohon	Ramganj	739	18	Purba Char Umed	15
Bhola	Lal Mohon	Ramganj			Roychand	15
Bhola	Tazomuddin	Shomvhpur	827	19	Char Lamchhi Koralmara	15
Bhola	Tazomuddin	Shomvhpur			Shambhupur	15
Bhola						
Total	5 upazilas	14 unions	15732		28 mouzas	420

District	Upazila	Union	Children 24-59 months on July 1st	Cluster No.	Cluster (randomly selected mouza)	Sample size
Patuakhali	Bauphal	Boga	807	20	Banajora	15
Patuakhali	Bauphal	Boga			Paschim Kayna	15
Patuakhali	Bauphal	Kalaiya	915	21	Diarakachua	15
Patuakhali	Bauphal	Kalaiya			Saula	15
Patuakhali	Bauphal	Keshobpur	927	22	Bazemahal	15
Patuakhali	Bauphal	Keshobpur			Zafrabad	15
Patuakhali	Bauphal	Surjomoni	673	23	Goaliabagha	15
Patuakhali	Bauphal	Surjomoni			Saneshwar	15
Patuakhali	Golachipa	Dakua	572	24	Chhota Chatra	15
Patuakhali	Golachipa	Dakua			Phulkhali	15
Patuakhali	Golachipa	Golkhali	811	25	Chhota Gabua	15
Patuakhali	Golachipa	Golkhali			Badura	15
Patuakhali	Golachipa	Ranga Bali	1239	26	Jogir Haola	15
Patuakhali	Golachipa	Ranga Bali			Sener Haola	15
Patuakhali	Patuakhali Sadar	Itbaria	685	27	Bhajna Joar	15
Patuakhali	Patuakhali Sadar	Itbaria			Itabaria	15
Patuakhali	Patuakhali Sadar	Komolapur	821	28	Kamalapur	15
Patuakhali	Patuakhali Sadar	Komolapur			Dakshin Chaudhaburia	15
Patuakhali	Patuakhali Sadar	Madar Bunia	718	29	Nandipara	15
Patuakhali	Patuakhali Sadar	Madar Bunia			Uttar Birajala	15
Patuakhali Total	3 upazilas	10 unions	8168		20 mouzas	300

Grand Total	11 upazilas	30 Unions	28531		60 mouzas	900
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Annex 3. Schematic Map of Mouza Showing Households with and without U2 Children



Annex 4. Probability of Selecting Households under U2 Technique

$HH_i =$ Household ($i=1$ to N_{HH}) *All households within a mouza*

$U_{2j} = \{ \text{all } HH_i = U_{2j}; j=1 \text{ to } N_{U2} \}$ *All households with under-2 children within a mouza*

Probability that U_{2j} will be chosen

Procedure for selecting U_{2j}

1. Randomly select number (q) between 1 and k .
2. Starting from HH_q , find the first household that has an under-2 ($HH_{s1} = U_{2j}$)

What is the probability that any household with under-2 children (U_{2j}) will be chosen?

Two possibilities for selecting U_{2j}

- i) $HH_{j-k} = U_{2j}$, or
- ii) $HH_{j-1} \neq U_{2j}$

where k is the skip interval between selected HH .

$$\Pr(HH_i = U_{2j}) = N_{U2}/N_{HH}$$

$$\Pr(HH_i \neq U_{2j}) = 1 - N_{U2}/N_{HH}$$

Suppose q U_{2j} Households will be chosen.

Then the probability that any household with under-2 children, U_{2j} will be chosen is:

$$q/N_{U2} * \Pr(HH_{i-k}=U_{2j}) + q/N_{U2} * \Pr(HH_{j-1} \neq U_{2j}) =$$

$$q/N_{U2} [N_{U2}/N_{HH} + (1 - N_{U2}/N_{HH})] =$$

$$q/N_{U2} \rightarrow \text{same for all } U_{2j}.$$

Annex 5. Procedures for Computing Food Security Indicators

1. Food Access Security Tool (FAST)

FAST¹⁴ consists of nine questions constructed for use in surveys in Bangladesh, as well as instructions to the interviewer on how to provide his/her own rating of the household's food insecurity status. Some of the questions ask about the respondents' perceptions of food vulnerability and stress (e.g. how often did you worry about where food would come from?) and others ask about the respondents' behavioral responses to insecurity (e.g. how often did you yourself skip entire meals due to scarcity of food?). All of the questions ask how often the respondent either felt a certain way or performed a particular behavior over the previous 12 months. The FAST nine questions are listed below.

1. How often have you eaten three 'square meals' (full stomach meals) a day in the past 12 months (not including festival days)?
2. In the past 12 months, how often have you or your family had to eat wheat (or another grain) although you wanted to eat rice (not including when you were sick)?
3. In the past 12 months, how often have you skipped entire meals due to scarcity of food?
4. In the past 12 months, how often have you eaten less food in a meal due to scarcity of food?
5. In the past 12 months, how often has the food that was stored in your home run out when there was no money to buy more that day?
6. In the past 12 months, how often have you worried about where food would come from?
7. In the past 12 months, how often has your family purchased rice?
8. In the past 12 months how often has your family purchased food (rice, lentils etc.) on credit (or loan) from a local shop?
9. In the past 12 months how often has your family had to borrow food from relatives or neighbors to make a meal?

Each individual question is followed by a set of possible responses for the interviewer to choose from after asking the question. These possible responses are expressed as relative frequencies, meaning that they do not seek to capture exactly how many times a respondent did something, but rather the approximate number of times. The possible responses are 'never', 'rarely', 'sometimes', 'often', or 'mostly'.

In order to ascertain how food secure a household has been over the past 12 months, the responses to each question are "dichotomized" (turned into "yes" or "no" answers and scored). Any response of 'rarely' or 'never' is given a code of "1." Any response of 'sometimes,' 'often,' or 'mostly' is given a code of "0." This coding scheme applies to all questions except for the first one, where answering "rarely" or "never" represents a less, rather than a more, food secure situation. For this question, the coding is reversed: any response of 'sometimes,' 'often,' or 'mostly' is given a code of "1," and any response of 'rarely' or 'never' is given a code of "0." Once the coding is complete, the responses for each household are tallied. The maximum score for a household is nine points; the minimum score is zero. The household with higher score is considered more food secure.

2. Coping Strategy Index (CSI)

The coping strategy index is computed on the basis of a series of questions asked to respondents about how frequently they utilize a list of 12 possible strategies.¹⁵ The twelve strategies are the following:

1. Limit portion size at meal times
2. Reduce number of meals eaten per day?
3. Borrow food or rely on help from friends or relatives?
4. Rely on less expensive or less preferred foods?
5. Purchase/borrow food on credit?
6. Gather unusual types or amounts of wild food / hunt?
7. Have household members eat at relatives or neighbors?
8. Reduce adult consumption so children can eat?
9. Rely on casual labor for food?
10. Abnormal migration for work
11. Skip entire day without eating
12. Consume seed stock to be saved for next season

¹⁴ Guidelines For Applying the Food Access Survey Tool (FAST) for Food Security Program Evaluation in Bangladesh" adapted from: Coats, Jennifer, Patrick Webb and Robert Houser. *Measuring Food Insecurity: Going Beyond Indicators of Income and Anthropometry*. Washington, D.C.: Food and Nutrition Technical Assistance Project, Academy for Educational Development, 2003.

¹⁵ Maxwell, Daniel, Richard Caldwell and Mark Langworthy. "Measuring food insecurity: Can an indicator based on localized coping behaviors be used to compare across contexts?" *Food Policy*, Volume 33, Issue 6, December 2008

The frequency of adoption of each category is coded according to the following categories:

- 0 = never
- 1=seldom
- 2=sometimes
- 3=often
- 4=daily

The coded frequency response for each strategy is then weighted by the severity weight of each strategy. Average severity weights across several coping strategies conducted in countries around the world¹ are then applied to each coping strategy, using the following formula:

$$CSI = \sum(\text{frequency category}_i * \text{severity weight}_i) \quad i=1 \text{ to } 12$$

The severity weights are as follows:

Strategy	Severity weight
Limit portion size at meal times	2.3
Reduce number of meals eaten per day?	2.7
Borrow food or rely on help from friends or relatives?	2.5
Rely on less expensive or less preferred foods?	1.8
Purchase/borrow food on credit?	2.9
Gather unusual types or amounts of wild food / hunt?	2.9
Have household members eat at relatives or neighbors?	3.3
Reduce adult consumption so children can eat?	2.6
Rely on casual labor for food?	3.4
Abnormal migration for work	3.4
Skip entire day without eating	4.6
Consume seed stock to be saved for next season	3.6

In this study the CSI is adjusted so that 100 represents the maximum possible value that could be attained. Note that if the frequency categories to all of the strategies were 4 (daily), the total, unadjusted, CSI value would be 144, which represents the maximum possible value of the unadjusted score. The adjusted CSI score is computed by multiplying by (100/144).
