Nobo Jibon Program

Baseline Survey Report

October 2010

Conducted by

TANGO International

Acknowledgments

Designing and executing a baseline survey for a large program like Nobo Jibon is an extremely complex process, and requires the coordination of many individuals and organizations. The success of the study has been due to the collaborative effort of many individuals. The survey would not have been possible without support from John Meyer, Chief of Party, and A.K.M. Towfique Aziz, Manager-Monitoring and Evaluation, both of Save the Children Bangladesh. In addition to his invaluable technical support, Towfique also coordinated the logistics and planning very effectively.

Special thanks are due to the survey team of interviewers and supervisors hired to conduct the fieldwork for this study. The field team was able to accomplish their formidable tasks efficiently and effectively. The survey enumerators exhibited great dedication during every day of the survey to reach the required sample and ensure data quality; without their hard work this survey would not have been possible. Most importantly, heartfelt gratitude goes to the households and communities which welcomed survey teams into their homes and lives and provided invaluable information to Save the Children Bangladesh.
Thanks also to Tom Spangler and Laurie Starr of TANGO International, for their usual high level of professional support in putting together the report. Their input was instrumental in ensuring the quality of the final report.

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March 2011

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Acronyms

ANC	Antenatal care
CSI	Coping Strategy Index
HDDS	Household Dietary Diversity Score
GOB	Government of Bangladesh
HAZ	Stunting (variable name)
HH	Household
HKI	Helen Keller International
IPTT	Indicator Performance Tracking Table
JoJ	Jibon o Jibika ("Life and Livelihood" in Bangla)
MAHFP	Months of Adequate Household Food Provisions
MBBS	Bachelor of Medicine and Surgery
MCHN	Maternal and Child Health and Nutrition
NGO	Non Governmental Organization
NJ	Nobo Jibon
PDA	Personal Digital Assistant
PLW	Pregnant or lactating women
PPS	Probability Proportional to Size (technique)
SC	Save the Children USA
SO	Strategic Objective
WASH	Water, Sanitation and Hygiene
WAZ	Underweight (variable name)
WHZ	Wasting (variable name)

Executive Summary

This baseline study provides an analysis of quantitative data that will prove essential in guiding the design and implementation of the Nobo Jibon program. The information obtained in the baseline survey also serves as a benchmark for measuring a wide range of outcomes and impacts of interventions throughout the life of the award. A key function of the baseline is to provide current status for key indicators included in Nobo Jibon's Indicator Performance Tracking Table (IPTT).

Methods

The Nobo Jibon baseline survey utilized an 'adequacy design', or non-experimental design for simple pre-post comparison of results. The survey was population-based with the sample drawn randomly from the sample frame of all households residing within the action areas of Nobo Jibon. The sample size was determined to provide statistically representative results for indicators at the level of household and children under five years of age. A two-stage sample selection process was used to select households to be interviewed. In the first stage, a total of 47 mouzas were selected in each of the three program districts. In the second stage, 36 households were interviewed in each of the selected mouzas. The households were selected using a random walk procedure, adapted to the rural settlement patterns found within the program area. During analysis the sample was weighted to account for the fact that within the three districts, the proportion of sampled households to district population was different.

The survey design and analysis was coordinated by TANGO International and field teams were independently contracted and were not permanent staff of Nobo Jibon or of other Save the Children programs. Nobo Jibon monitoring and evaluation (M&E) staff were responsible for overseeing daily data collection and data quality assessment processes. The evaluation team used factor analysis to construct a proxy indicator of household food security based on a composite of a number of measured household characteristics of household economic status and food security indicators. Factor analysis enables identification of unique factors that summarize several dimensions of the food security status of households. Results from the factor analysis were used to identify three distinct levels of food security status among sample households.

Household Food Security and Vulnerability Status

The overarching goal of Nobo Jibon program is to reduce food insecurity and vulnerability for nearly 1 million people in nine Upazilas the Barisal Division in southern Bangladesh over five years. Critical to realizing this goal are improvements and increases in three key areas: rates of stunting for children between the ages of 6-59 months, household food access, and household resilience, as measured by the CSI.

The survey used anthropometric measures to assess the nutritional status of children under five years old from sample households. Low height for age identifies children who are

stunted and reflects chronic malnutrition.[1] Among sample households, nearly 44 percent of all children age 6-59 months are stunted; 13 percent are severely stunted. Households in Barisal District were found to have the highest rates of stunted (50%) and severely stunted (18%) children. Children under five years old from surveyed households with the lowest food security status are significantly more likely to be stunted (48% compared to 37%) and severely stunted (14% compared to 9%) than children from households in the highest food security group.

The baseline values for the Household Food Insecurity Access Score (HFIAS) and Coping Strategy Index (CSI) are 28.7 and 13.5 respectively. Households in Barguna reported the highest average score on the HFIAS and the CSI. Data on each of these indicators strongly suggest that at the time of the baseline survey, households in Barguna are more food insecure than those in Barisal or Patuakhali. When data is disaggregated by food security category, households with the lowest food security status report much higher HFIAS and CSI scores, signaling that they are substantially more food insecure than households in other categories. Data disaggregated by sex of household head show a number of significant differences between female and male headed households for program goal indicators. Both the HFIAS and CSI scores are significantly higher for female headed households, suggesting that overall they are more food insecure than their male counterparts.

Because one of the primary factors contributing to the vulnerability and food insecurity of households is widespread poverty, the baseline survey also sought information on household income and expenditures. Overall, quantitative data suggest that levels of income pose a challenge to attainment of food security among households in Barisal. Households participating in the baseline survey reported an average income per household member of 1,295 Taka (Tk) per month, and average expenditures per household member of Tk 1,520 per month. Food expenditures represented 62 percent of all reported expenditures. Households in the highest food security category tend to have substantially higher household expenditures and greater asset ownership than those in the middle and lowest food security categories.

Strategic Objectives

Three strategic objectives (SOs) guide Nobo Jobon's program activities. The SOs align with Bangladesh's national health and food security policies and USAID's priorities for Bangladesh, and define a clear approach to realizing the program's overarching goal.

- **SO1: Maternal Child Health and Nutrition (MCHN) -** Improved health and nutritional status of children under the age of 5 years (U5) and Pregnant and Lactating Women (PLW).
- **SO2: Market-based Production and Income Generation** - Poor and extremely poor households have increased production and income.

[1] A deeper discussion of the use of anthropometry in this study follows, but because Nobo Jibon has placed high priority on the reduction of stunting as a means to realize the program's overarching goal, results for this indicator are highlighted here.

- **SO3: Disaster Risk Reduction (DRR)** - Households in targeted communities protect their lives and assets and quickly resume livelihood activities following natural disasters.

Strategic Objective 1: Maternal and Child Health and Nutrition (MCHN)

Anthropometric measurements provide important insight into access to antenatal care, infant feeding practices and child health care related to immunization and treatment of diarrhea and acute respiratory infection (ARI). Importantly, inclusion of anthropometric data in the Nobo Jibon baseline provides a comparative basis by which to measure improvements in each of these areas resulting from nutritional interventions and program activities.

- *Anthropometric measurement*

Child stunting (height for age) 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. Alternatively, measurement of wasting (weight for height) helps identify children suffering from current or acute malnutrition. Finally, weight for age measurements help to determine if children should be classified as underweight.

As mentioned, across the sample more than two-fifths of children under five years old suffer from chronic malnutrition (stunting). Wasting among children 6-59 months was considerably less common than stunting (16% moderately wasted, 2% severely wasted). Among the entire sample, two-fifths of children age 0-59 months were found to be moderately underweight and 10 percent severely underweight. Among both age groups (children under 2, children under 5) children from households in Barguna District were found to have the lowest rates of underweight children. Alternatively, children age 6-59 months from Barisal were found to have the lowest rates of wasting.

In addition to the increased likelihood of being stunted, data show that children in both age groups (under two and under five years old) from surveyed households in the lowest food security group are significantly more likely to be underweight and wasted than children from households in the highest food security group.

- *Child care and feeding practices*

Among the entire sample, approximately ten percent of children under five years of age reportedly had diarrhea in the fifteen days preceding the survey. Incidence of diarrhea among children was found to be highest in Barisal District (12%) and highest among households in the lowest food security category (13%).

Data show that children among households in the lowest food security category were most likely to be exclusively breastfed under seven months of age. At the same time, children from households in the lowest food security category were far less likely than those in more food secure households to have consumed iron-fortified foods, and least likely to consume adequately iodized salt. Similarly, data show that pregnant and lactating women from

households in the lowest food security category were much less likely than those in the "middle" and "highest" categories to consume diets rich in iron, Vitamin A, and calcium.

Data show considerable room for improvement among the survey sample population in terms of hygiene practices. Across the entire sample, less than one-third (31%) of respondents reported practices appropriate personal hygiene practices and one-fifth practice appropriate food hygiene practices. Far fewer households among the sample practice appropriate environmental hygiene behaviors (6%).

- *Water and Sanitation:*

To better understand household hygiene practices, the baseline survey queried about the accessibility and quality of drinking water, knowledge about proper water storage, and the main type of latrine used by households. Small but statistically significant differences exist between the various food security categories, however differences are greater when data is disaggregated by district.

Overall, households from Barguna appear to be most challenged by water access and quality issues; households from Barisal District appear the least challenged by these same issues. Households from Barguna District are least likely to have access to a deep tube well, compared to households from Barisal and Patuakhali (78% compared to 94-96%). They are also most likely to obtain drinking water from a pond. (8% compared to 0.1%). Among surveyed households who do use tube wells to access drinking water, those from Barisal are significantly more likely to have had the well tested, and to have obtained a green tag, indicating safe drinking water, than households in the other two districts.

The majority of households in all districts report that they store water in the home, however surveyed households from Patuakhali appear to be the least informed about safe water storage practices. Slightly more than one-third of households in this district reported storing drinking water in a separate container (36%) and covering stored water (35%). The percentage of households aware of these safe water storage practices was closer to one-half in Barisal and Patuakhali.

Strategic Objective 2: Market-based Production and Income Generation

Nobo Jibon's strategy for improving food access focuses on increasing household productivity and income. The program design incorporates direct approaches related to improved knowledge and skills for production and marketing; improved access to quality inputs, capital, and markets; equitable access to natural resources and/or productive assets, and, as a result of increases in production and income, improved dietary diversity and food access.

Dietary diversity and months of adequate food provisioning are important proxy indicators for SO2 impact. Across the sample the baseline value for the Household Dietary Diversity Score (HDDS) is 4.7 indicating constrained access to food. Geographically, data show that households in Barguna have the lowest dietary diversity. Households in the highest

category enjoy greater dietary diversity than those with lower food security status. When data is disaggregated by sex of household head, dietary diversity is significantly higher for surveyed male headed households (4.7) compared to female headed households (4.4).

Across the sample, the average number of months of adequate household food provisions (MAHFP) is 9.4. Geographically, data show that households in Barguna have the shortest period of adequate food provisioning. Households in the highest food security category enjoy longer periods of adequate food provisioning than those in other categories. Surveyed female headed households experience significantly fewer months of adequate household food provisioning than their male counterparts (8.6 compared to 9.5 months, respectively).

Data clearly show that among the entire sample, the use of improved and sustainable practices is less common than the use of traditional practices: fertilizer and chemical pest control are the most widely accepted agricultural practices (83% and 65%, respectively). With respect to improved practices, use of compost and animal manure are most common among the sample population. Notably, less than five percent of sampled households who reported agriculture production use three or more improved practices. Only nine percent of all sample households involved in agriculture have received any agricultural training.

Local markets are the most commonly cited point of sale for agricultural produce sold by households (80%). Importantly, households with the highest food security status were much more likely than those in the lowest food security category to sell agricultural produce to traders (30% versus 13%, respectively). Notably, less than half of one percent (0.4%) of all sample households reported practicing improved marketing practices, such as bulking products for sale, or selling to a cooperative or collection point.

Across the entire sample, nearly 60 percent of all sampled households have access to agricultural land; a relatively small proportion (10%) has access to *khas* land for agricultural production. Nearly two-thirds (64%) of surveyed households have access to water bodies, ranging from a high of 70 percent in Patuakhali to a low of 57 percent in Barisal. Overall, these findings suggest that households in Patuakhali enjoy the greatest access to productive land and water resources, while households in Barisal have the least access.

Strategic Objective 3: Disaster Risk Reduction

Through SO3, the Nobo Jibon program intends to provide women, children and their families with greater protection from natural disasters. The baseline survey included a range of questions related to losses in past disasters, natural disaster preparedness, and ability to resume livelihood activities in the wake of recent disasters. Data show that less than half (46%) of all surveyed households have a plan in place to protect household members, livestock, or household valuables in the event of a future disaster. Generally speaking, data suggests there is much work to be done in building awareness of disaster preparedness practices: across the sample very few (5%) surveyed households have received disaster preparedness training.

Introduction

The overarching goal of the Nobo Jibon program is to reduce food insecurity and vulnerability for 191,000 direct beneficiary households, or nearly one million people, in nine upazilas of Barisal Division over five years. The program intends to reach this goal via three strategic objectives (SOs), which align with Bangladesh's national health and food security policies and USAID's priorities for Bangladesh. The Strategic Objectives of Nobo Jibon program are as follows:

- **SO1: Maternal Child Health and Nutrition (MCHN) -** Improved health and nutritional status of children under the age of 5 years (U5) and Pregnant and Lactating Women (PLW).
- **SO2: Market-based Production and Income Generation** - Poor and extremely poor households have increased production and income.
- **SO3: Disaster Risk Reduction (DRR)** - Households in targeted communities protect their lives and assets and quickly resume livelihood activities following natural disasters.

The program is designed to have significant overlap, with a large proportion of households participating in all three SOs. The intent of this overlap is to maximize impact on household food security. In total, Nobo Jibon will reach more than 1,300 villages and approximately 89 percent of the total 419,247 households in the nine target upazilas.

Baseline Survey Objectives

The baseline study aims, through a quantitative survey of a representative sample of households in the program impact area, to provide quantitative data vital to determinations about the program's start-up status. The purpose of the baseline survey is to estimate and analyze the status of key outcome and impact indicators, including those found in Nobo Jibon's Indicator Performance Tracking Table (IPTT). Baseline information on each of these indicators will be used for setting short- and long-term targets for tracking progress of the program. Findings may also be used to refine and/or prioritize activities in the program's operational area. Finally, the baseline survey is explicitly designed to enable an evaluation of program performance through implementation of a directly comparable end-line survey. Table 1 presents program indicators for which baseline information was collected.

Table 1: Nobo Jibon Program Indicators[2]

Program Goal: *To reduce food insecurity and vulnerability for 191,000 households in nine upazilas of Barisal Division in southern Bangladesh over five years.*

- % children between 6 and 59 months stunted (height-for-age), disaggregated by gender (<-2SD; <-3SD)
- Average HH Food Insecurity Access Scale Score
- Average coping strategy index

Strategic Objective 1: *Maternal and Child Health and Nutrition (MCHN) - Improved health and nutritional status of children U5 and PLW*

- % children between 6 and 59 months wasted (weight-for-length/height), disaggregated by gender (<-2SD; <-3SD)
- % children between 0 and 59 months underweight (weight-for-age), disaggregated by gender (<-2SD; <-3SD)
- % children between 0 and 59 months with diarrhea during last two weeks
- %of children between 0 and 23 months with diarrhea during last two weeks
- % Children 0-6 months exclusively breastfed
- Children 6-23 mo receiving appropriate frequency/number of foods (WHO IYCF indicators)
- % caregivers demonstrating awareness of proper personal hygiene behaviors
- % caregivers demonstrating awareness of proper food hygiene behaviors.
- % caregivers demonstrating proper knowledge of water hygiene behaviors
- % caregivers demonstrating proper knowledge of environmental hygiene behaviors
- % of children 12-23 months who received Vitamin-A supplementation in the past 6 months
- % of beneficiary children 12-24 months receiving deworming medication in previous 6 months
- % of mothers attended ANC session at least 4 times during last pregnancy
- % of beneficiary women whose husband attends ANC/PNC with her

Strategic Objective 2: *Market-based Production and Income Generation - Poor and extremely poor households have increased production and income.*

- Average HH dietary diversity score
- Average # of months of adequate household food provisioning(MAHFP)
- Average annual income from sale of agricultural products
- Average number of income sources per HH

IR 2.1: *Poor households apply improved knowledge and skills for production and marketing*

- % program HHs using (3 or more) improved/sustainable production practices
- % of households adopting improved marketing practices

IR 2.2: *Poor households access quality inputs, capital, and markets*

- % of HHs bulking products for sale
- % of HHs with access and linkages to functional product collection points for bulking, selling, and purchasing products

IR 2.3: *Extremely poor households access land, water bodies, and/or productive assets*

[2] Baseline values of all indicators are given in Annex 1.

Table 1: Nobo Jibon Program Indicators[2]
- % of extremely poor households using *khas* land/water bodies for production of crops, livestock, and fish
Strategic Objective 3: *Disaster Risk Reduction - Households in targeted communities protect* their *lives and assets and quickly resume livelihood activities following natural disasters.*
- % of HH with a feasible plan to protect human life and productive assets during disaster
- % of HHs with no loss of life in the targeted communities in the event of a disaster
- % of HH with no or minimal asset loss in targeted communities in the event of a disaster
- % of HHs able to resume livelihood activities within 2 weeks following a natural disaster
IR 3.4.: ***Communities receive and respond to early warning for floods and cyclones***
- % of HHs that sought shelter in a timely manner during last disaster.
- % of HHs that received location specific cyclone warning signal with adequate lead time
Indicators of Household Economic Status
- HH assets (Number of different asset categories owned by HH, asset index –based on relative values of different assets
- HH annual income
- HH expenditures by categories

Methodology

In addition to providing the baseline values of program indicators, the baseline survey also provides benchmark information on a range of evaluation questions, such as economic status, access to adequate water and sanitation, and empowerment of vulnerable household members, that will be addressed throughout the life of the program. When compared to endline data, the data collected in the baseline study can be used to analyze the following questions, which will prove essential for Nobo Jibon program's overall evaluation:

- To what extent have program interventions, in combination, contributed to reduced food insecurity for beneficiaries?
- To what extent has Nobo Jibon achieved targets and, if necessary, why have targets not been met?
- What have been changes in key areas of knowledge/awareness among the population in the program intervention areas, comparing participants with non-participants?
- Which types of behaviors promoted by the program have been most widely adopted – both by program participants and non-participants?
- Using multivariate analysis, which factors explain changes in program impact-level indicators over time: district (to account for geographic exogenous factors), knowledge, practices, gender of household head, economic status of households, and/or other?

Sample Size

The Nobo Jibon baseline survey utilized an 'adequacy design', or non-experimental design for simple pre-post comparison of results. This design is consistent with USAID's Office of Food for Peace (FFP) requirements for baseline and end-line survey designs. The survey was population-based with the sample drawn randomly from the sample frame of all households residing within the action areas of the Nobo Jibon program. The sample size was determined to provide statistically representative results for indicators at the level of household and children under five years of age (U5 children). The sample was stratified by district; a 2-stage selection process was followed within each district. First, mouzas[3] were selected using the probability proportional to size (PPS) selection procedure. Households were then randomly selected within each of the selected mouzas. Mouzas those are in the list but there is no existence due to river erosion and with smaller number of HH (less than or equal to the minimum sample size) were eliminated from the sampling frame. Because no sample frame existed for drawing households at the mouza level, a random-walk process was used to select households to be interviewed.

The minimum sample size required per comparison group (district) was computed using the formula for proportions provided in the FANTA Sampling Guide:

(a) $$n = N\,D\,[(Z\alpha + Z\beta)^2 * (P1\,(1 - P1) + P2\,(1 - P2))\,/(P2 - P1)^2]$$

where:

- n = required minimum sample size per survey round or comparison group
- N = non-response factor
- D = design effect
- P_1 = the estimated level of an indicator measured as a proportion at the time of the first survey or for the control area
- P_2 = the *expected* level of the indicator either at some future date or 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
- Z_α = 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 (α - the level of statistical significance), and
- Z_β = 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 (β - statistical power).

The following parameters were used in the calculations:

- N= 1.05 [Based on experience from JoJ baseline and final surveys]
- D = 1.5 [Based on the computed design effect from the JoJ end-line survey]
- P_1 = 0.426 [Based **on stunting rate** (HAZ < 2SD) of 42.6% found in JoJ end-line survey]
- P_2 = 0.362 [a **reduction of 15%** from the baseline value of the stunting rate of 0.426]

[3] In Bangladesh, a **mouza** is a type of administrative district, corresponding to a specific land area within which there may be one or more settlements. Mouzas are the smallest administrative area in rural Bangladesh. Usually, two or three villages constitute a mouza.

$Z_\alpha = 1.645$ [Z value corresponding to 95% confidence level]
$Z_\beta = 0.840$ [Z value corresponding to 80% power]

Using these values, n is computed as 1129 so a minimum required sample size per district was determined to be 1,129. The sample size required some adjustment to ensure that a sufficient number of U5 children were also measured. Assuming that the proportion of households with U5 children is 45 percent[4] and that the average number of U5s per household in those households with U5s is 1.5, the total number of households required to be interviewed to reach 1,129 U5s was 1,694 households (HH) per district, or a minimum total sample of 5,082 in the three districts.[5] The sample was weighted to account for the fact that the proportion of households sampled in each district was different.

Table 2 shows the total number of households per district (in mouzas with more than 100 households) and the number of sampled households in each district. The sample weights were computed as follows: {(Total number of HHs in $district_i$/Number of HHs surveyed in $district_i$)* (Total number of surveyed HHs/Total number of HHs in sample frame)}. Calculating the sample weights in this manner preserves the total sample size in the weighted sample.

Table 2: Sample size and sample weights

	# of HH in district [a]	Surveyed HH in district	Sample weights[b]	Weighted Sample
Barisal	104,785	1,665	0.990474	1,649
Barguna	99,461	1,672	0.936213	1,565
Patuakhali	115,102	1,689	1.072535	1,812
Total sample frame	319,348	5,026		5,026

[a]Total HH in all mouzas with more than 100 HH
[b]weights are computed to preserve the original total sample size.

Selection of Mouzas

The evaluation team used a two-stage sample selection process to select households to be interviewed. In the first stage, a total of 47 mouzas were selected in each of the three program districts. In the second stage, 36 households were interviewed in each of the selected mouzas, to give a targeted total of 1,692 households interviewed in each district. The selection of mouzas was based on a probability-proportional-to-size (PPS) method. This ensured that all households within the districts had an equal chance of being selected.[6] The listing of mouzas was arranged by union in the PPS selection process, to ensure wide geographic coverage of the district in the mouza selection process.

[4] Population based HH baseline survey 2009 for the Enhanced Life and Livelihood (ELL) program in Barisal Division by Save the Children.
[5] Note, all U5s in a selected household will be measured.
[6] In larger mouzas the chance that any single household will be selected is smaller, but this is offset by the fact that larger mouzas have a greater chance of being selected in the PPS procedure.

Selection of Households

The survey team used a random walk procedure, adapted to the rural settlement patterns found within the program area, to select households within each mouza. The procedure is similar to that used in the end-line survey for Jibon-o-Jibika (JoJ). Mouzas are quite compact geographically, with houses clustered along rural roads and pathways. These characteristics make it possible for survey teams to quickly identify the boundaries of the mouza and locate the roads, paths, and pockets of settlements within the mouzas. Another characteristic of most mouzas in the program area is that they have a linear rather than circular geographic layout, often following the line of roads, rivers, or canals. To enable representative household selection, enumerator teams first identified the boundaries of the selected mouza, and the location of different paths and clusters of settlements within the mouza. They then estimated the total number of houses along each pathway. Using this information, the team supervisor selected six starting points or pathways, one for each team member, within the boundaries of the mouza. The supervisor was also responsible for determining the skip value, the number of households that each enumerator needed to skip in the selection process as they moved along their appointed pathway. It is important to note that enumerators were directed to determine the number of households in each structure, and count the number of households, not the number of structures, in the selection process.

Survey Design, Implementation, and Logistics

The survey design and analysis was coordinated by TANGO International per the Terms of Reference (Annex 6). TANGO also provided training on monitoring and evaluation to Save the Children program staff and relevant staff of partner NGOs. Finally, TANGO developed the electronic version of the household questionnaire using The Survey System (TSS) software and provided quality oversight for the first several days of fieldwork.

The independently contracted field teams (household interviewers, anthropometric enumerators, supervisors) were casual staff of Nobo Jibon. TANGO International selected five Survey Team Leaders who in turn selected 41 enumerators with the help of Save the Children and TANGO International. This enabled establishment of five teams for the entire data collection process, each of which included six interviewers and two anthropometric data collectors who were guided by one Team Leader. Team Leaders were responsible for area mapping, sampling households, and management of data collectors' movement during data collection. Team Leaders also took part in practical training sessions as group facilitators and ensured quality data by cross checking interviews on a sample basis. Anthropometric data collectors moved with Team Leaders and conducted anthropometric measurement immediately following the interview of each sampled household.

Interviewers used personal digital assistants (PDAs) for recording the information from both the household interviews and the anthropometric measurements. PDAs were provided to each enumerator, and extra units were available to replace any that malfunctioned during the survey process. The questionnaire was loaded onto the PDAs using The Survey System (TSS) software. This software permits full integration of range rules and interview logic to skip and avoid questions. The questionnaire forms were presented in Bangla on the PDAs.

Nobo Jibon M&E staff were responsible for coordinating the daily collection of the electronic data sets from the field-based survey teams and observed during field visits the sampling and data quality assessment process carried out by Team Leaders. They were also responsible for PDA trouble-shooting and prompt replacement of PDAs as necessary.

Survey Instrument

The household questionnaire was developed to capture baseline information on indicators in Nobo Jibon's IPTT, which includes both FFP and Operating Plan indicators. Additional questions were included to respond to internal interests of the program and reporting requirements of Save the Children or its partners. (The household questionnaire is attached as Annex 4).

Enumerator Training

TANGO International trained all baseline survey team members – household interviewers, anthropometric enumerators, supervisors, and program M&E staff responsible for coordinating the data collection and aggregation. Training took place over a total of seven days, with five days in a workshop and two days for field testing. The workshop component of the training covered the following items:

1. Overview of the Nobo Jibon program
2. Review of the objectives of the Baseline survey
3. Detailed discussion of the questionnaire (question-by question)
4. Training and testing on how to measure children
5. Training on use of PDAs
6. Training on administering the questionnaire with PDAs
7. Mock testing of the questionnaire

All field staff received basic training on the use of PDAs, including how to enter data, recharge batteries, and enter and use the survey software. Supervisors also received training on how to transfer data files from PDAs onto laptop computers. Training modules on PDAs were based on similar materials previously developed by TANGO.

Precise measurement of children is critical to get accurate data for anthropometric indicators. Accordingly, substantial time was allocated to provide training and practice on measuring children. Save the Children identified an appropriate individual with the necessary experience to provide this training to the field anthropometric measurement team, and verified each team member's ability to accurately measure children.

Training included two days for field tests. The first field visit served as a pilot test of the questionnaire and an opportunity to identify necessary revisions to the questionnaire. Following the final round of revisions, the second field test provided interviewers with additional experience in administering the questionnaire and using the PDA in the field.

Data Analysis

TANGO International analyzed household data using SPSS v15.0 software, calculating secondary variables (asset indices, coping strategy index) from primary variables where appropriate. Where appropriate, data were weighted to account for differences in population among the primary sampling units.

In order to measure progress toward achievement of Nobo Jibon's overarching program goal—*reducing food insecurity among nearly 200,000 households in Barisal Division over five years* – the Nobo Jibon monitoring and evaluation design incorporates indicators of food insecurity that have been validated and promoted by food security experts with FANTA-2, the United States Agency for International Development (USAID), and the World Health Organization (WHO). The Household Dietary Diversity Score (HDDS), the Household Food Insecurity Access Scale (HFIAS) and the Coping Strategies Index (CSI) are each indices developed to serve as proxy indicators of food insecurity and are described in greater detail in Annex 2. While there are no global standards or benchmarks for these indices, they do provide a useful tool for the impact of food assistance programs through before/after comparisons.

Factor analysis and results

The evaluation team used factor analysis to construct a proxy indicator of household food security based on a composite of a number of measured household characteristics of household economic status and food security indicators. Factor analysis enables identification of unique factors that summarize several dimensions of the food security status of households. Results (provided in Annex 3) from the factor analysis were used to identify and compare three distinct levels of food security status among sample households. The computed values of the principal component (component 1) were first ranked and then divided into terciles (three groups with an equal number of cases). These categories represent three levels of food security status among sample households.

The elements included in the factor analysis were:

- Household size
- Per capita expenditures
- Per capita asset index
- Share of household expenditures spent on food
- Household Dietary Diversity Score (HDDS)
- Months of adequate household food provisions (MAHFP)
- Household Food Insecurity Access Scale (HFIAS) score
- Coping Strategies Index (CSI)

Table 3 presents data on these indicators of vulnerability, disaggregated according to food security status. By identifying the index scores of households in different food security categories, the Nobo Jibon baseline survey provides a useful tool for measuring the impact

of Nobo Jibon on highly food insecure, and less food insecure households in the program area.

Table 3: Food security variables, by food security category

	Food security category			Total Sample
	Lowest	Middle	Highest	
	mean			
Household size	4.6	4.9*	5.4*	5.0
Per capita expenditures (Tk/month)	1,122	1,368*	2,093*	1,527.6
Per capita asset index	28.9	44.4	82.7*	52.0
Share of food in total expenditures	0.71	0.63*	0.53*	0.62
Household Dietary Diversity Score (HDDS)	3.8	4.5*	5.8*	4.7
Months of Adequate Household Food Provisions (MAFHP)	7.1	9.6*	11.6*	9.4
Household Food Insecurity Access Scale (HIFIAS) score	58.6	25.4*	2.2*	28.7
Coping Strategy Index	28.7	10.8*	0.8*	13.4
N	1,648	1,648	1,647	4,944

** Mean value different from the lowest food security level at the 0.10 significance level.*

Data show that across the entire sample, household size, per capita expenditures, per capita asset ownership, and dietary diversity each increase as household food security status increases and that the differences are statistically significant. Per capita expenditures range from a high of Tk 2,093 per month among households in the most food secure category to Tk 1,122 per month among households in the least food secure category. Data also show that the most vulnerable households devote the largest portion of their income[7] to food expenditures: the food share of total expenditures is highest (71%) among the least food-secure households. As would be expected, households in the lowest food security category reported the fewest months of adequate food provisioning (7.1 months); this difference is statistically significant. Households in the lowest food security category also scored significantly higher on both the HFIAS and CSI, adding further to the assertion that this group includes the most vulnerable households.

[7] In this study, income is defined by cash from sale of products or labor, remittances and/or help from relatives, pensions, and begging.

Figure 1: Food Security Category, by District

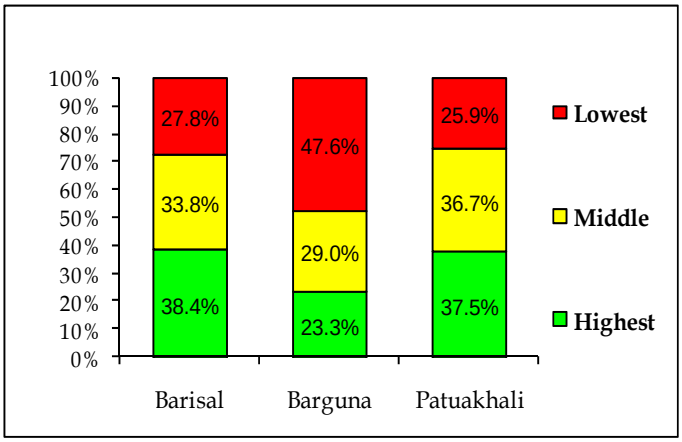
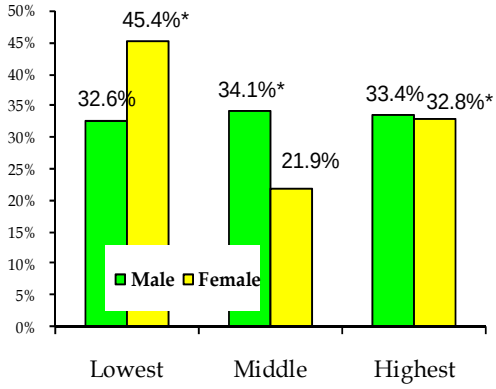


Figure 1 displays the distribution of the three food security categories by district. Close to half (47.6%) of the surveyed population in Barguna fall into the lowest food security category. In the districts of Barisal and Patuakhali, the percentage of households in the lowest food security category is closer to one-fourth of the surveyed population in each district (27.8 and 25.9% respectively).

Figure 2 shows that among surveyed households, a higher proportion of those with a female head fall into the lowest food security category compared to households with a male head (45.4% and 32.6% respectively). Additionally, a lower proportion of female household heads fall into the middle food security category compared to households with a male head (21.9% compared to 34.1%).

Figure 2: Food security category by sex of household head



*Frequency distribution is significantly different

Data Reporting

Data analysis included several relevant comparisons among various groups. The majority of the tables in the main report present comparisons among the food security groups identified using factor analysis. Additionally, data was disaggregated and compared by the three sampled districts: Barisal, Barguna, and Patuakhali. The majority of district comparisons are found in Annex 5. Last, for several key food and economic security indicators, the data is analyzed by sex of household head. These tables are found in the main report.

Throughout this report, baseline values of selected program indicators shown in Table 1 are computed as the mean values of the overall sample. Mean values and 95% confidence intervals of all IPTT indicator variables at the total sample level are provided in Annex 1.

Data presented throughout the report is coded to indicate significant differences. The significance, which statistical tests produced, is referred to as the p-value (probability value). The p-value can be interpreted as the probability of a difference occurring by chance alone. If all other biases are eliminated or accounted for, then one can assume that when this p-value is small, the differences are due to a factor other than chance.

*	$p < 0.1$

**Mean value is different between groups at the .10 significance level.*

The presentation of the results begins with the goal level indicators. The Nobo Jibon program seeks to directly and indirectly address a number of factors that constrain food security and general welfare of the target population. Because one of the primary factors contributing to the vulnerability of households is widespread poverty, the baseline survey sought information on household income and expenditures. The results of this analysis follow the presentation of goal level indicators.

The remainder of the analysis follows the order of the Strategic Objectives: maternal and child health and nutrition (SO1); market-based production and income generation (SO2); and disaster risk reduction (SO3).

Baseline Survey Results

Household Food Security and Vulnerability Status

The overarching goal of Nobo Jibon program is to reduce food insecurity and vulnerability for nearly 1 million people in nine Upazilas of the Barisal Division in southern Bangladesh over five years. Critical to realizing this goal are improvements and increases in three key areas: rates of stunting for children between the ages of 6-59 months, household food access, and household resilience, as measured by the CSI.

The survey used anthropometric measures to assess the nutritional status of U5 children from sample households. Low height for age 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.[8]

Among sampled households, nearly 44 percent of all children age 6-59 months are stunted; 13 percent are severely stunted (Table 4). Surveyed households from Barisal District have a significantly higher proportion of children (6-59 months) who were stunted at the time of the survey compared to children from households in Barguna and Patuakhali (50.0%, 37.7%, and 42.8%, respectively). These households also have higher rates of severely stunted children (18% compared to 10-11%).

The baseline values for the HFIAS and CSI are 28.7 and 13.5 respectively. Both scores are substantially higher in Barguna, suggesting that households in that district are more food insecure than their counterparts in Barisal and Patuakhali.

Table 4: Program goal indicators, by district

	Barisal		**Barguna**		**Patuakhali**		**Total**	
	Mean	N	Mean	N	Mean	N	Mean	N
% of stunted (HAZ<-2SD) children 6-59 (95% C.I.)	50.0 (46.5-53.5)	802	37.7* (33.8-41.5)	614	42.8* (39.5-46.1)	879	43.9 (41.9-46.0)	2,296
% of children 6-59 stunted (HAZ<-3SD)	17.7 (15.0-20.3)	802	9.8* (7.4-12.1)	614	10.7* (8.7-12.8)	879	12.9 (11.5-14.3)	2,296
Household Food Insecurity Access Scale (HFIAS)	26	1,636	37*	1,563	24*	1,810	28.7	5,009
Coping Strategy Index	12.0	1,623	17.8*	1,561	10.9*	1,785	13.5	4,969

** mean value different from Barisal at 0.10 significance level*

[8] A deeper discussion of the use of anthropometry in this study follows, but because Nobo Jibon has placed high priority on the reduction of stunting as a means to realize the program's overarching goal, results for this indicator are highlighted here.

Data relating rates of severe malnutrition by food security category (Table 5) show that children 6-59 months of age from surveyed households in the lowest food security group are significantly more likely to be stunted (48% compared to 37%) and severely stunted (14% compared to 9%) than children from households in the highest food security group.

A likely contributor to this finding is that households in the lowest food security category also have much higher HFIAS and CSI scores, signaling that they are substantially more food insecure than households in other categories. The HFIAS score for the lowest food security group is 59, compared to 2 for the highest food security group. The wide difference is similar when comparing the CSI: the score is 29 for households with the lowest food security status and one for households with the highest food security status.

Table 5: Program goal indicators, by food security category

	Lowest		**Middle**		**Highest**		**Total**	
	Mean	N	Mean	N	Mean	N	Mean	N
% of moderately stunted (HAZ<-2SD) children age 6-59 months (95% C.I.)	47.8 (44.1-51.5)	705	45.8 (42.3-49.3	782	37.3* (33.8-40.8)	726	43.6 (41.2-46.0)	2213
% of severely stunted (HAZ<-3SD) children age 6-59 months	14.3 (11.7-16.9)	705	14.4 (11.9-16.8)	782	9.0* (6.9-11.1)	726	12.6 (11.5-14.3)	2213
Household Food Insecurity Access Scale (HFIAS)	58.6	1648	25.4*	1648	2.2*	1647	28.7	4944
Coping Strategy Index	28.7	1648	10.8*	1648	0.8*	1647	13.4	4944

** mean value different from Barisal at 0.10 significance level*

Data in Table 6 indicate a number of significant differences between female and male headed households for program goal indicators. Both the HFIAS and CSI scores are significantly higher for female headed households, suggesting that overall they are more food insecure than their male counterparts.

Table 6: Program goal indicators, by sex of household head

	Female Headed HH		**Male Headed HH**		**Total**	
	Mean	N	Mean	N	Mean	N
Household Food Insecurity Access Scale (HIFIAS) score	34.7*	304	28.3*	4705	28.7	5009
Coping Strategy Index	15.9*	303	13.3*	4666	13.5	4969

** mean value different at 0.10 significance level*

Household Income and Expenditures

Data on household income and expenditures show that on average, surveyed households have two sources of income, with an average monthly household income of Tk 6,088 (Table 7). Household income was found to be highest in Barisal (Tk 6,387) and lowest in Barguna (Tk 5,544). Alternatively, *per capita* income is reportedly highest in Patuakhali (Tk 1,332) and significantly different from that in Barisal. Surveyed households in Barisal reported the highest level of monthly household expenditures (Tk 7,865), whereas *per capita* expenditures are highest in Patuakhali (Tk 1,546). Spending on food as a percentage of total household expenditures averages 62 percent and is reportedly highest in Barisal (64%).

Data in Table 7 illustrate some important patterns with respect to income and expenditure. Across all districts, expenditures exceed income at both the household and per capita levels. The relationship between households' income and expenditures is likely due to under-reporting of income; however, this relationship may also suggest an accumulation of debt. If so, it is likely that debt contributes to increased vulnerability to both food and livelihood insecurity for surveyed households. The disparity between expenditures and income, at both the household and per capita levels, is largest among surveyed households in the Barisal District. Additionally, on average surveyed households in Barisal scored much higher on the asset index than their counterparts in Barguna and Patuakhali.

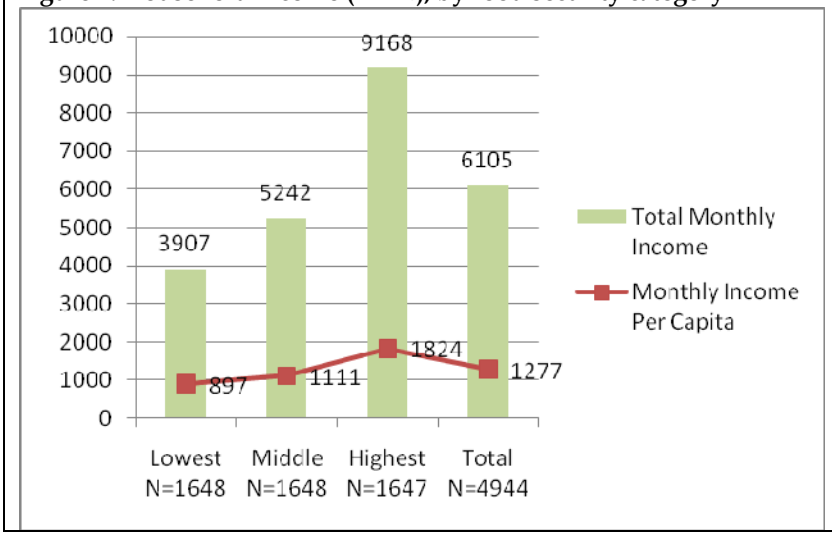
Table 7: Household income and expenditures (in Tk), by district

	Barisal		**Barguna**		**Patuakhali**		**Total**	
	Mean	**N**	**Mean**	**N**	**Mean**	**N**	**Mean**	**N**
Total Monthly Income	6371	1,649	5,544*	1,565	6,387	1,812	6,088	5,026
Monthly Income Per Capita	1236	1,649	1,247	1,565	1,332*	1,812	1,274	5,026
Total Monthly Expenditures	7,865	1,649	6,609*	1,565	7,488	1,812	7,338	5,026
Monthly Expenditures Per Capita	1,520	1,649	1,490	1,565	1,546	1,812	1,520	5,026
Food Share of Total Expenditures	0.64	1,647	0.62*	1,562	0.61*	1,805	0.62	5,014
Asset Index	307	1,649	219	1,565	224*	1,812	250	5,026
Asset Index Per Capita	60	1,649	49*	1,565	47*	1,812	52	5,026

**** Mean value different from Barisal at 0.10 significance level***

When data on household income are disaggregated by food security category, total monthly income reported by households with the lowest food security status is significantly lower than reported income of households in both the middle and highest food security categories. In fact, reported income of those with the highest food security status it is more than twice that of households in the lowest food security category (Tk 9168 compared to Tk 3907). The level of disparity is similar for per capita monthly income and differences are statistically significant. On average households in the lowest food security category report Tk 897 monthly per capita income; households in the highest group report, on average, Tk 1277.

Figure 2: Household income (in Tk), by food security category



When disaggregated by sex of household head, data on household income and expenditures show that surveyed female headed households have significantly fewer household members than male headed households (Table 8), and also have significantly fewer sources of income. As one might expect, given these findings, total reported income is lower and significantly different than that of male-headed households (Tk 5628 compared to Tk 6118). Female headed households also reported significantly lower levels of total monthly household expenditures compared to their male counterparts. Finally, the survey found that for female headed households a greater proportion of household expenditures are devoted to food (67% compared to 63% for male headed households).

Table 8: Household income and expenditures, by sex of household head

	Female Headed HH		**Male Headed HH**		**Total**	
	Mean	**N**	**Mean**	**N**	**Mean**	**N**
HH size	3.7*	304	5.1*	4721	5.0	5025
Total Monthly Income	5628*	304	6118*	4722	6,088	5026
Monthly Income Per Capita	1515	304	1258	4722	1,274	5026
Total Monthly Expenditures	5173*	304	7477*	4722	7,338	5026
Monthly Expenditures Per Capita	1413	304	1527	4722	1,520	5026
Food Share of Total Expenditures	0.67*	303	0.62*	4711	0.62	5014
Per capita asset index	50	304	52	4722	52	5026

** Mean value different at 0.10 significance level*

Strategic Objective 1: Maternal Child Health and Nutrition (MCHN)

The MCHN component of the Nobo Jibon program aims to build on progress made through the JoJ program by contributing to improvements in antenatal care (ANC), infant feeding practices, and child healthcare related to immunization and treatment of diarrhea and acute respiratory infection (ARI). Findings from the baseline survey provide a comparative basis by which to measure improvements in knowledge and practices in these health-seeking behaviors.

Anthropometric Indicators

Anthropometric indicators are a critical component of the Nobo Jibon baseline survey; these indicators will reflect the combined impacts of nutritional interventions and program activities, with the exception of those focused on disaster preparedness. In the baseline survey, U5 children were measured in terms of the three standard indices of physical growth: height for age (HAZ), weight for height (WHZ), and weight for age (WAZ). These indices are widely used to assess the general nutritional status of an individual or a population group (a discussion of height for age (stunting) is not included here, as it has was discussed with program goal indicators in the section titled Household Food Security and Vulnerability Status). These measures provide the following specific information about the nutritional status of children:

Weight for age (underweight)**:** 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.)

Weight for height (wasting)**:** This index identifies whether a child has low weight for her/his height, 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.

Data in Tables 9-12 provide survey data on indicators of child malnutrition. Table 9 presents data on moderately wasted and underweight U5 children (less than -2 standard deviations from the 2006 World Health Organization growth standards) by district, whereas Table 10 presents the same data disaggregated by food security category. Table 11 presents data on severe wasting and underweight (less than -3 standard deviations) for the same age groups, by district; Table 12 the same data by food security category.

At the time of the survey, among the entire sample, nearly a third (31.9%) of children 0-23 months were underweight (Table 9). Moderate wasting among children 6-23 months was considerably less common (15.1%).

Rates of moderate wasting and underweight are considerably higher when accounting for all U5 children. Nearly 40 percent of all children among sample households age 0-59 months are underweight. Among the entire sample, 15.9 percent of children 6-59 months are moderately wasted.

Table 9: Moderate child malnutrition indicators, by district

	Barisal		Barguna		Patuakhali		Total	
	% (95% C.I.)	N	% (95% C.I.)	N	%% (95% C.I.)	N	%% (95% C.I.)	N
Children under 2 years (0-23 months)								
% of children 0-23 under weight (WAZ <-2SD)	30.7 (25.2-36.2)	274	29.0 (23.0-35.0)	223	35.2 (29.7-40.7)	293	31.9 (28.6-35.1)	790
% of children 6-23 wasted (WHZ<-2SD)	13.6 (9.5-17.7)	269	14.8 (10.1-19.6)	221	16.7 (12.3-21.0)	290	15.1 (12.6-17.6)	780
Children under 5 years (0-59 months)								
% of children 0-59 under weight (WAZ<-2SD)	40.1 (36.7-43.5)	808	37.4 (33.6-41.3)	615	40.1 (36.9-43.3)	883	39.4 (37.4-41.4)	2,306
% of children 6-59 wasted (WHZ<-2SD)	15.0 (12.6-17.5)	803	15.3 (12.4-18.1)	613	17.1 (14.6-19.6)	879	15.9 (14.4-17.4)	2,296

C.I. = confidence interval

**** Mean value different from Barisal at the 0.10 significance level.***

Data show that children in both age groups (under two and under five years old) from surveyed households in the lowest food security group are significantly more likely to be underweight and wasted than children from households in the highest food security group. Table 10 excludes cases where food security is undefined.

Table 10: Moderate child malnutrition indicators, by food security category

	Lowest		Middle		Highest		Total	
	% (95% C.I.)	N	% (95% C.I.)	N	% (95% C.I.)	N	% (95% C.I.)	N
Children under 2 years (0-23 months)								
% of children 0-23 under weight (WAZ <-2SD)	38.1 (32.1-44.0)	258	31.8 (26.0-37.5)	253	26.7* (21.3-32.2)	260	32.7 (28.9-35.5)	770
% of children 6-23 wasted (WHZ<-2SD)	18.2 (13.4-22.9)	256	16.5 (11.8-21.2)	248	11.4* (7.5-15.4)	257	15.4 (12.8-17.9)	760
Children under 5 years (0-59 months)								
% of children 0-59 under weight (WAZ<-2SD)	42.4 (38.8-46.1)	707	41.3 (37.8-44.7)	790	34.2* (30.8-37.7)	727	39.4 (37.3-41.4)	2223
% of children 6-59 wasted (WHZ<-2SD)	16.8 (14.0-19.5)	705	18.3 (15.6-21.1)	784	13.3* (10.8-15.8)	724	16.2 (14.7-17.7)	2213

C.I. = confidence interval

**** Mean value different from the lowest food security category at the 0.10 significance level.***

Regarding rates of severe malnutrition (less than -3 standard deviations), Table 11 shows that 7.6 percent of all sampled children age 0-23 months are severely underweight. Among children under two years of age, rates of both severe underweight (0-23 months) and severe wasting (6-23 months) are significantly greater in Patuakhali (10.6 and 5.2%, respectively), compared to rates in Barisal (6.5 and 1.1% respectively).

For all children 0-59 months old, the percentage who are severely underweight is significantly greater in Barisal compared to Barguna (11.4% and 7.9% respectively). The rate of severe wasting is similar across districts (2.0% average).

Table 11: Severe child malnutrition indicators, by district

	Barisal		**Barguna**		**Patuakhali**		**Total**	
	%	N	%	N	%	N	%	N
Children under 2 years								
% of children 0-23 under weight (WAZ <-3SD)	6.5 (3.6-9.4)	274	5.0 (2.1-7.9)	223	10.6* (7.1-14.2)	293	7.6 (5.8-9.5)	790
% of children 6-23 wasted (WHZ<-3SD)	1.1 (-0.2-2.4)	269	2.5 (0.5-4.6)	221	5.2* (2.6-7.8)	290	3.0 (1.8-4.2)	780
Children under 5 years								
% of children 0-59 under weight (WAZ<-3SD)	11.4 (9.2-13.6)	808	7.9 * (5.8-10.1)	615	9.8 (7.9-11.8)	883	9.9 (8.7-11.1)	2,306
% of children 6-59 wasted (WHZ<-3SD)	1.5 (0.6-2.3)	803	2.0 (0.9-3.1)	613	2.6 (1.5-3.6)	879	2.0 (1.5-2.6)	2,296

C.I. = confidence interval

**** Mean value different from Barisal at the 0.10 significance level.***

Data relating rates of severe malnutrition by food security category (Table 12) show that rates of severe underweight for children in both age groups are significantly different between lowest and highest food security categories. Table 12 excludes cases where food security is undefined.

Table 12: Severe child malnutrition indicators, by food security category

	Lowest		**Middle**		**Highest**		**Total**	
	%	N	%	N	%	N	%	N
Children under 2 years								
% of children 0-23 under weight (WAZ <-3SD)	8.9 (5.4-12.4)	258	8.5 (5.0-12.0)	253	5.3* (2.6-8.0)	260	7.6 (5.7-9.4)	770
% of children 6-23 wasted (WHZ<-3SD)	3.2 (1.0-5.4)	256	4.5 (1.9-7.1)	248	1.6 (0.1-3.2)	257	3.1 (1.9-4.3)	760
Children under 5 years								
% of children 0-59 under weight (WAZ<-3SD)	10.8 (8.5-13.1)	707	11.7 (9.5-14.0)	790	6.8 * (5.0-8.7)	727	9.8 (8.6-11.1)	2233
% of children 6-59 wasted (WHZ<-3SD)	2.1 (1.1-3.2)	705	2.7 (1.6-3.8)	784	1.4 (0.6-2.3)	724	2.1 (1.5-2.7)	2213

C.I. = confidence interval

**** Mean value different from the lowest food security level at the 0.10 significance level.***

Childhood Illness, Child Feeding Practices and Antenatal Care

Table 13 provides data on incidence of diarrhea among children in surveyed households in the two weeks preceding the survey. It shows that incidence of diarrhea is highest among children in Barisal and lowest in Barguna. Interestingly the disparity in incidence of diarrhea among the two age groups is greatest in Barguna (9.8% among children 0-23 months, 8.4% among U5 children). When disaggregated by food security category (Figure 3), data on diarrhea incidence reveals significant differences: among children in both age groups, incidence is highest in the lowest category. Data also demonstrate that among both age groups, incidence of diarrhea is considerably lower among households in the highest food security category.

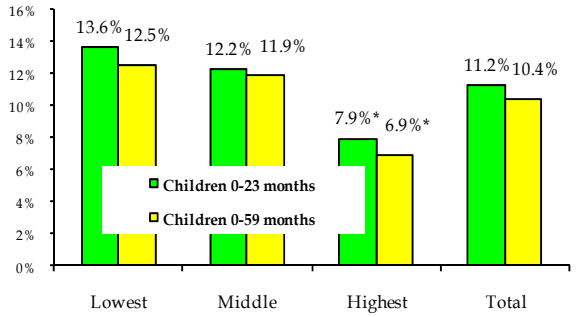
Table 13: Incidence of diarrhea among children, by district

	Barisal		Barguna		Patuakhali		Total	
	%	N	%	N	%	N	%	N
Children 0-23 months with diarrhea during last two weeks	12.3	392	9.8	278	10.6	405	11.0	1,076
Children 0-59 months with diarrhea during last two weeks	12.3	821	8.4*	634	10.1	925	10.4	2,379

** mean value different from Barisal at 0.10 significance level*

Among households with U5 children who were afflicted with diarrhea in the past 15 days, the majority (73.0%) sought treatment for their children (Table 14). While little difference is noted between food security categories with respect to seeking treatment, differences are noted with respect to the source of treatment. A larger proportion of households in the 'highest' food security category reported first seeking treatment for diarrhea from a pharmacy (52.4%) compared to households in the middle category (37.9%) and the lowest category (42.3%). The next most often cited source of treatment for the total sample is a village doctor. This source was more often mentioned by those in the lowest food security category (36.8%) and the middle category (42.7%), than it was by those in the highest food security category (23.2%). Interestingly, for respondents in the middle category a village doctor is most frequently mentioned compared to other sources of diarrhea treatment. Other sources of treatment for diarrhea mentioned by the sample are a family welfare center (7.6%), relatives and neighbors (3.4%), a homeopathic doctor (2.8%), a Bachelor of Medicine and Surgery (MBBS) doctor (2.8%), and a hospital or medical college (2.7%).

Figure 3: Incidence of diarrhea among children, by food security category



*Mean value different from "lowest" food security category at 0.10 significance level

Table 14: Incidence of and source of treatment for child diarrhea, by food security category				
	Lowest	**Middle**	**Highest**	**Total**
% of children under 5 with diarrhea in last 15 days	12.7	12.0	7.0	10.5
N (all U5 children)	718	824	773	2,315
% of afflicted children who sought treatment	73.9	70.4	75.9	73.0
N (all afflicted U5 children)	92	98	54	244
Source of treatment:	*% children under 5 suffering from diarrhea*			
Pharmacy	42.5	37.9	52.4	43.0
Village doctor	36.8	42.7	23.2	36.0
FWC (family welfare center)	7.7	7.5	7.5	7.6
Relatives/neighbors	3.1	4.4	2.4	3.4
Homeopathic doctor	3.0	2.9	2.3	2.8
MBBS doctor	2.8	1.4	5.0	2.8
Hospital/Medical college	4.2	1.4	2.4	2.7
Upazila health complex	2.9	1.5	0.0	1.7
Satellite/EPI outreach centre , clinic/hospital, MCWC, VHC	3.1	0.0	0.0	1.2
NGO satellite clinic, field worker, static clinic, or hospital	0.0	1.5	0.0	0.6
Health assistant, FWV, CHV	0.0	0.0	0.0	0.0
Other	4.4	4.4	4.7	4.5
N	68	69	41	178

Data in Table 15 shows that across all food security categories, the majority of households (52.9%) reported that their U5 children had suffered from fever in the 15 days prior to the survey (data disaggregated by district can be found in Annex 5). Of this group, the majority (72.4%) reported that they sought treatment for their child's fever, with little difference between food security categories. Sources of treatment did not differ among categories. The most cited sources for fever treatment were a village doctor (39.7%) and a pharmacy (35.3%). Other sources infrequently mentioned include homeopathic doctor (7.2%), MBBS doctor (6.4%), a family welfare center (5.1%), and the Upazila health complex (4.9%).

Table 15: Incidence of and source of treatment for child fever, by food security category				
	Lowest	**Middle**	**Highest**	**Total**
% of children under 5 with fever in last 15 days	56.3	54.7	47.7	52.9
N (all children under 5)	717	823	773	2,313
% of afflicted children who sought treatment	69.6	73.1	74.8	72.4
N (all afflicted children under 5)	404	450	369	1,223
Source of treatment:	*% children under 5 suffering from fever*			
Village doctor	42.0	42.5	34.0	39.7
Pharmacy	34.5	33.8	37.9	35.3
Homeopathic doctor	6.7	7.7	7.0	7.2
MBBS doctor	5.9	3.9	9.8	6.4
FWC (family welfare center)	4.9	7.0	2.9	5.1
Upazila health complex	5.7	5.0	4.0	4.9
Satellite/EPI outreach centre , clinic/hospital, MCWC, VHC	1.0	2.1	4.9	2.6

Table 15: Incidence of and source of treatment for child fever, by food security category				
	Lowest	**Middle**	**Highest**	**Total**
Hospital/Medical college	3.5	1.5	1.8	2.2
Health assistant, FWV, CHV, Relatives, neighbors	0.7	1.6	0.0	0.8
Other	1.5	0.3	0.4	0.7
NGO satellite clinic, field worker, static clinic, or hospital	0.0	0.3	0.7	0.4
N	281	329	276	886

Many (54.8%) surveyed households also reported that U5 children in their home had suffered from a cough and/or a cold in the past 15 days (Table 16). Those in the lowest food security category were slightly more likely to report a child with a cough or cold compared to those in the 'highest' food security category (58.9% and 49.2% respectively). Similar to other reported ailments, when children are afflicted with a cough/cold, most household members (66.0%) report they seek treatment for the child. A slightly higher percentage of households in the highest food security category (70.5%) report seeking treatment compared to those in the lowest food security category (61.7%). Similar to other reported ailments, most households reported a village doctor (38.6%) or a pharmacy (37.6%) as the source of treatment. Households in the middle food security category were more likely to report seeking treatment for a cough/cold at the village doctor; households in the highest category were more likely to report seeking treatment for a cough/cold at a pharmacy. Other sources mentioned infrequently include homeopathic doctor (6.8%), MBBS doctor (6.3%), a family welfare center (5.0%), and the Upazila health complex (4.6%). Data disaggregated by district is presented in Annex 5.

Table 16: Incidence of and source of treatment for child cough/ cold, by food security category				
	Lowest	**Middle**	**High**	**Total**
% of children under 5 with cough/cold in last 15 days	58.9	56.6	49.2	54.8
N (all children under 5)	717	824	772	2,313
% of afflicted children who sought treatment	61.7	66.2	70.5	66.0
N (all afflicted children under 5)	420	465	380	1,265
Source of treatment:	*% children under 5 suffering from cough/cold*			
Village doctor	39.2	43.1	32.7	38.6
Pharmacy	37.7	35.3	40.2	37.6
Homeopathic doctor	6.4	6.4	7.5	6.8
MBBS doctor	5.3	4.2	9.8	6.3
FWC (family welfare center)	5.7	6.8	2.2	5.0
Upazila health complex	5.4	5.0	3.4	4.6
Satellite/EPI outreach centre , clinic/hospital, MCWC, VHC	1.1	2.3	5.4	2.9
Hospital/Medical college	3.0	1.6	1.9	2.1
Health assistant, FWV, CHV, Relatives, neighbors	0.8	1.4	0.4	0.9
NGO satellite clinic, field worker, static clinic, or hospital	0.4	0.0	0.4	0.2
Other	0.8	0.0	0.3	0.4
N	259	308	268	835

Table 17 provides information specific to breastfeeding practices among households. It shows that while infants from households in the lowest food security category were least likely to have been placed on the breast within one hour of birth (25.1%), they are most likely to be *exclusively* breastfed under seven months of age. Infants from households in the middle food security category are least likely to have been *exclusively* breastfed under seven months of age. Data disaggregated by district can be found in Annex 5.

Table 17: Breastfeeding practices, by food security category

	Lowest		Middle		Highest		Total	
	%	N	%	N	%	N	%	N
Infants and toddlers who were put to the breast within one hour of birth	25.1	359	27.5	382	34.1*	385	29	1126
Infants under 6 months exclusively breastfed	40.4	75	37.7	104	38.0	97	38.6	276
Infants under 7 months exclusively breastfed	36.7	85	33.0	122	34.3	108	34.5	315

** mean value different from lowest food security category at 0.10 significance level*

Data in Table 18 demonstrate substantial differences in the quality of child food consumption among households in different food security categories. Children from households in the lowest food security category are significantly less likely than those from households in the highest food security category to have consumed iron-fortified foods, and significantly less likely to consume adequately-iodized salt. Notably, data show that across the entire sample, just under six percent of children 6- 23 months of age receive a minimally acceptable diet. Again, a significant difference is noted between children from households in the lowest food security category and children from households in more food-secure households. Data disaggregated by district can be found in Annex 5

Table 18: Child feeding and care giving practices, by food security category

		Lowest	Middle	Highest	Total
Infants/toddlers 6-23 months who receive a minimally acceptable diet (apart from breast milk)[a]		1.6	5.0*	10.7*	5.8
Infants/toddlers older than 6 months who received iron rich/iron fortified foods during the previous day		44.8	48.9	62.5*	52.1
	N	261	261	263	784
Households consuming adequately iodized salt (20-40ppm)		62.6	78.0*	89.2*	76.6
	N	1,648	1,648	1,647	4,944

** mean value different from lowest food security category at 0.10 significance level*
a Used WHO definition of minimally acceptable diet.

The Nobo Jibon program seeks to make a positive contribution to the health and nutrition practices of pregnant and lactating women (PLW)[9]. Accordingly, the survey queried PLW in about their intake of important nutrients. Data in Table 19 show significant differences

[9] PLW includes pregnant women and mothers of children up to six months of age.

between PLW from households in the lowest food security category and PLW from households in the highest food security category with respect to nutrient-rich diets. Across the entire sample, nearly one-third (31.5%) of PLW consumed foods rich in iron the previous day, yet reported consumption of iron-rich foods was significantly lower for PLW from households in the lowest food security category (23.8%) than for PLW in more food-secure households. Consumption of foods rich in Vitamin A and calcium is less common among PLW in surveyed households (22 and 12%, respectively). Again, PLW from households in the lowest food security category were significantly less likely than their counterparts in the highest food security category to have consumed foods rich in either Vitamin A or calcium. Across the entire sample, consumption of iron/iron folate supplements within the previous day was rare (2%), with a significant difference between PLW from households in the lowest food security category compared to PLW from households in the highest food security category. Data disaggregated by district can be found in Annex 5.

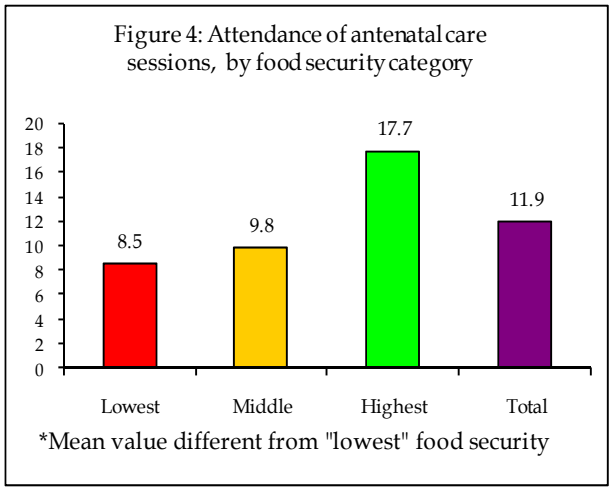
Post-partum Vitamin A supplementation for women is a key MCHN service that the Nobo Jibon program intends to promote in order to improve diet and reduce illness. The baseline survey found that just over one-fourth (26.3%) of women who are mothers to children 6-23 months of age had received a high-dose Vitamin A supplement within eight weeks of giving birth Table 19. Differences between households from the three food security categories were not noted.

Table 19: Nutrient consumption among PLW, by food security category

Percentage of PLW who:	**Lowest**	**Middle**	**Highest**	**Total**
		Mean		
Consume food rich in iron	23.8	35.4*	34.1*	31.5
Consume food rich in vitamin A	15.1	22.4	29.5*	22.4
Consume food rich in calcium	8.7	10.6	18.2*	12.4
Have taken iron or iron folate supplements in the last 7 days	0.8	1.9	3.8*	2.1
N	126	161	132	419
% of mothers of children aged 6-23 months who received high-dose Vitamin A supplement within 8 weeks postpartum (6 weeks if not exclusively breastfeeding) in last pregnancy	26.5	23.7	28.7	26.3
N	236	229	230	696

** mean value different from lowest food security category at 0.10 significance level*

Recognizing the importance of adequate Antenatal Care (ANC) to health and wellbeing of both infants and mothers, the Nobo Jibon program seeks to support greater access to appropriate medical care among PLW. Figure 4 demonstrates statistically significant differences in access to ANC according to food security category. Throughout the entire sample, approximately 12 percent of pregnant women and mothers of children under two years of age have attended ANC sessions at least four times during their current or last pregnancy. However, data show a significant disparity in access to ANC care among women in different food security categories. Data from the survey suggest that only 8.5 percent of women in the lowest food security category and 9.8 percent of women in the middle food security category attended ANC sessions at least four times during their current or last pregnancy (compared to 17.7 percent of women in the highest category).



Vitamin A supplementation and deworming services are also part of Nobo Jibon's plan to improve diet and reduce illness. Data in Table 20 show that approximately 43 percent of all children age 12-23 months in surveyed households have received Vitamin A supplementation within the last six months. Children from households in the middle food security category were significantly less likely to have received Vitamin A supplementation (37.7%) than children from households in the other two food security categories. Alternatively, children from households in the lowest food security category were significantly less likely to have received deworming treatment within the six months preceding the baseline survey (16.6%), than children from households in the highest food security category. Data disaggregated by district can be found in Annex 5.

Table 20: Percentage of children 12-23 months who received Vitamin-A supplementation, deworming treatment w/in last 6 months, by food security category

	Lowest	Middle	Highest	Total
% of children 12-23 months who received Vitamin-A supplementation w/in last 6 months				
Yes	47.4	37.7*	44.3	43.2
No	52.6	61.1	54.1	55.8
Don't know	0.0	1.2	1.6	1.0
% of children 12-23 months who received deworming w/in last 6 months				
Yes	16.6	18.4	21.0*	18.7
No	81.7	80.4	79.0	80.3
Don't know	1.8	1.2	0.0	1.0
N	168	163	186	518

** mean value different from lowest food security category at 0.10 significance level*

Water, Sanitation and Hygiene (WASH)

Data in Table 21 provide insight into important hygiene practices of those responsible for caring for U5 children in surveyed households. The baseline survey shows that nearly a third of caregivers (31%) practice proper personal hygiene (hand washing) behavior.[10] Caregivers throughout the entire sample were more likely to practice proper water hygiene procedures (44%), but less likely to practice appropriate food and environmental hygiene behaviors (20.3% and 5.8%, respectively). Data reveal that practice of all hygiene practices is most common among caregivers in the highest food security category, with the exception of water hygiene behavior, which was highest among caregivers in the middle food security category. Each of the hygiene practices was significantly less common among those in the lowest food security category. Data disaggregated by district can be found in Annex 5.

Table 21: Caregiver hygiene practices, by food security category

%age of caregivers demonstrating: [a]	**Lowest**	**Middle**	**Highest**	**Total**
		Mean		
Proper personal hygiene behaviors	22.1	32.6*	38.3*	31.2
Food hygiene behaviors	16.6	20.3*	24.0*	20.3
Proper water hygiene behaviors	39.8	46.7*	45.1*	44.0
Environmental hygiene behaviors	1.8	2.6*	13.2*	5.8
N	730	831	781	2,331

[a] Caregivers defined as individuals caring for children under five years of age
** mean value different from lowest food security category at 0.10 significance level*

To better understand household hygiene practices, the baseline survey queried about the accessibility and quality of drinking water, knowledge about proper water storage, and the main type of latrine used by households. Small but significant differences exist between the various food security categories, however differences are greater when data is disaggregated by district. For this reason, several findings of the food security category comparisons are presented here, with corresponding tables located in Annex 5. The remainder of this section focuses on data disaggregated by district.

Households from the lowest food security category are less likely to have access to a deep tube well, than households from higher categories (86% compared to 91-92%). This more vulnerable group is also more likely to use a shallow tube well as the main source of drinking water than surveyed households in higher food security categories. With respect to the safety of tube wells used by the surveyed population, the lowest food security group is significantly less likely to have had their tube well tested for arsenic (46.2%) compared to the middle (50.3%) and highest food security group (60.1%). (Annex 5).

Households from the highest food security category are less likely to store water in their home compared to their counterparts; it is plausible that this is due to better-off households having piped water to the home, precluding the need to store water within the home.

[10] For the Nobo Jibon baseline survey, proper personal hygiene is indicated by the respondents' ability to identify at least eight of ten hygienic hand washing practices (see Annex 3).

Households from the lowest food security category appear to have less knowledge about appropriate water storage practices. This group is slightly less likely to store drinking water in a separate container than those in the middle and highest food security categories (42% compared to 47% and 49% respectively), and are also less likely to cover stored water (Annex 5).

With respect to latrine use, significantly fewer surveyed households in the lowest food security category reported using a latrine with a water seal (both broken and working) than households in middle and higher food security categories. As might be expected, those in the lowest food security group more often reported using a hanging or open latrine, or having no toilet facility, than their better-off counterparts (Annex 5).

When disaggregated by district, data on water accessibility and quality show statistically significant differences (Table 22 and Table 23). Overall, households from Barguna appear to be most challenged by water access and quality issues; households from Barisal District appear the least challenged by these same issues. Households from Barguna District are least likely to have access to a deep tube well, compared to households from Barisal and Patuakhali (78% compared to 94-96%). They are also most likely to obtain drinking water from a pond. (8% compared to 0.1%).

Table 22: Main source of drinking water, by district

	Barisal	Barguna	Patuakhali	Total
	Mean			
Deep tube well	96.1	77.9*	94.1	89.6
Shallow tube well	3.4	6.1*	5.7*	5.1
Pond sand filter	0.0	4.4	0.0	1.4
Rainwater	0.2	2.8	0.0	0.9
Pond	0.1	7.7*	0.1	2.5
River/canal	0.1	0.6	0.0	0.2
Other	0.1	0.4	0.1	0.2
N	1646	1563	1811	5020

** mean value different from Barisal at 0.10 significance level*

Table 23 shows that among surveyed households who do use tube wells to access drinking water, those from Barisal are significantly more likely to have had the well tested than households in the other two districts (70% compared to 42-43%). For surveyed households who reported their well had been tested,

Table 23: Safety of tube well, by district

	Barisal	Barguna	Patuakhali	Total
	Mean of HH who use well as primary source of drinking water			
Tube well has been tested for arsenic	70.2	42.3*	43.3*	52.2
No	15.8	23.2	29.0	22.9
Don't know	14.0	34.5	27.8	24.9
N	1639	1313	1808	4760
Status of testing	Mean of HH where well was tested			
Green	58.6	30.9*	39.3*	46.4
Red	0.8	1.3	0.6	0.8
Not marked	40.6	67.9	60.1	52.8
N	1151	554	782	2487

** mean value different from Barisal at 0.10 significance level*

the survey team observed a statistically higher prevalence of green (safe) tags on the wells in Barisal (59%) than they did in Barguna (31%) or Patuakhali (39%).

The majority of households in all districts reported that they store water in the home, however surveyed households from Patuakhali appear to be the least informed about safe water storage practices (Table 24). Slightly more than one-third of households in this district reported storing drinking water in a separate container (36%) and covering stored water (35%). The percentage of households aware of these safe water storage practices was closer to one-half in Barisal and Patuakhali.

Table 24: Water storage practices, by district

	Barisal	Barguna	Patuakhali	Total
		Mean		
Store water in home	89.9	98.5*	91.1	93.0
Collect and store drinking water in separate container	49.8	52.1	35.6*	45.4
Water is covered	48.3	49.8	34.6*	43.8
N	1649	1565	1812	5026

** mean value different from Barisal at 0.10 significance level*

Differences between districts for access to a sanitary latrine were not so large, but do exist (Table 25). Fewer households in Barguna district reported using a latrine with a water seal (both broken and working) than households Barisal and Patuakhali. Given this finding, as one might expect, households in Barguna are also more likely to use a hanging or open latrine, a pit latrine, or to have no toilet facility at all.

Table 25: Type of latrine, by district

	Barisal	Barguna	Patuakhali	Total
		Mean		
Ring slab /offset latrine (broken water seal)	57.8	50.3*	56.1	54.9
Hanging/open latrine	12.4	21.4*	15.5*	16.3
Ring slab /offset latrine (working water seal)	17.6	12.8*	16.8	15.8
Pit latrine (uncovered)	3.6	4.9	4.3	4.3
No toilet facility	2.7	5.2*	4.2	4.0
Septic latrine	4.1	1.2*	2.0*	2.4
Pit latrine (covered)	1.8	4.2*	1.1	2.3
N	1649	1565	1812	5026

** * mean value different from Barisal at 0.10 significance level*

Empowerment of Vulnerable Household Members

Two of four major root causes of food insecurity identified for the program area are: a) erratic and low-paying income earning opportunities, especially for asset-poor households; and b) social exclusion and low status of women and children. Nobo Jibon intends to address both by building on successes realized in the JoJ program. First, the strong association between income and nutrition was clear in JoJ: households benefiting from both MCHN and livelihoods strengthening activities realized significantly greater reductions in child stunting than those not able to participate in income earning opportunities.[11] Nobo Jibon aims to build on the accomplishments of JoJ by contributing to an enabling environment for income generation and improved household economies.

Second, the social exclusion and low status of women in the program area calls for a greater understanding of women's participation in household decision making. Women's decision-making power relative to men can contribute to a myriad of outcomes linked to food insecurity. "Women with low status tend to have weaker control over household resources, tighter time constraints, less access to information and health services, poorer mental health, and lower self-esteem. These factors are thought to be closely tied to women's own nutritional status and the quality of care they receive, and, in turn, to children's birth weights and the quality of care they receive".[12] In response, the Nobo Jibon program is committed to promoting women's engagement in household decisions.

To better understand the livelihoods and decision making power of women, the baseline survey asked women who earned cash by working on a regular basis outside the home about the source of their income. Additionally, female adult respondents who worked on a regular basis were asked to rate their level of participation in five common household decisions. Women were considered to have a voice in a decision if they could make it alone or jointly with their husband.

Across the sample, the majority (75.7%) of women earning income do so through poultry sales (Table 26). This is particularly true for women in the middle and highest food security categories (88.9 and 85.5% respectively). Handicrafts are the second most cited income activity; seven percent of women who work engage in this activity. A higher percentage of women from the lowest food security category earn income through low-paying jobs such as daily labor (10.2%) or by working in other households (9.1%), compared to very few women in the middle and highest food security categories who cited these low-paying jobs as income sources. Women in the lowest food security category were also more likely than their counterparts in other categories to earn income from handicraft/handlooms. Women in the highest food security category however, more often cited being employed in 'services' compared to women in the other groups.

Table 26: Women's income earning activities and decision making, by food security

[11] TANGO International (for Save the Children USA). Jibon-o-Jibika Final Evaluation Report. 2009.

[12] Smith, Lisa C. et al. 2000. *The Importance of Women's Status for Child Nutrition in Developing Countries.* International Food Policy Research Institute (IFPRI).

category				
	Lowest	*Middle*	*Highest*	*Total*
		Mean		
N= HH with a woman who earns income	486	537	486	1,508
Type of activity	% HH with women who earn income			
Poultry	73.8	88.9	85.5	75.7
Handicrafts/handloom	12.0	6.0	5.1	7.1
Daily wage earner	10.2	3.1	0.6	4.2
Work in other household	9.1	0.8	0.0	3.0
Services	0.6	2.0	7.3	3.0
Agriculture/farmer	1.1	2.1	1.0	1.3
Business	1.5	1.3	1.0	1.2
Private tutor	0.0	0.4	1.5	0.6
Other	5.0	4.0	4.4	4.1
Women have voice in determining: [a]	% women responding			
Family visits	77.8	83.6	87.0	82.8
Expenditures on children's health	75.2	75.1	80.8	77.0
How to spend women's income	75.3	74.1	81.7	76.9
Major household purchases	69.0	68.3	74.8	70.7
Purchases of daily household needs	60.2	66.7	72.4	66.4
Women's economic empowerment score	**3.6**	**3.7.**	**4.0**	**3.7**
Percent of all HH with a woman who earns income	29.7	33.0	29.9	30.9
N	1,635	1,628	1,623	4,886

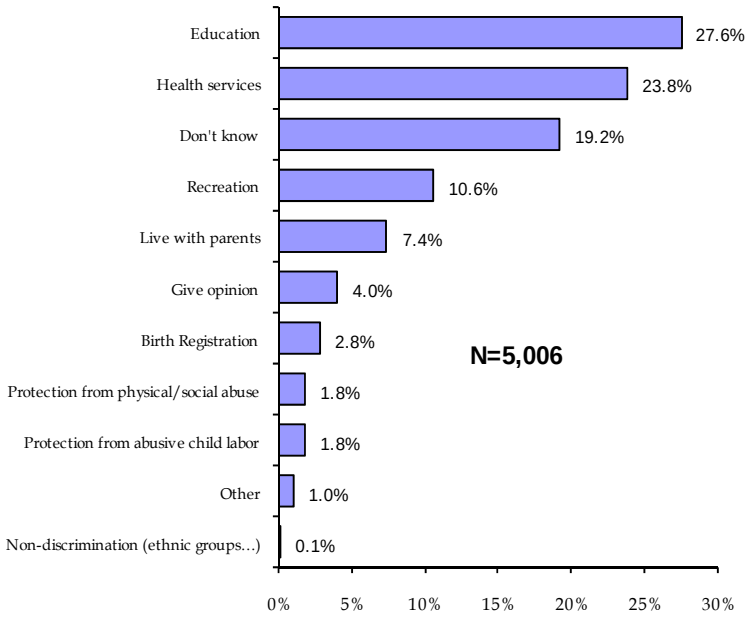
[a] *response of 'wife' or 'husband and wife' (Note: these questions were only asked to women earning income)*

Data in Table 26 also show the percentages of women who have a voice in a range of household decisions. There is little difference between the three food security categories. Overall, 82.8 percent of surveyed women who work stated they have a voice in making visits to family. More than three-fourths contribute to decision making with respect to expenditures for children's health (77%) and spending the cash that they themselves earn (76.9%). A voice in decisions about major household purchases and daily household needs were less frequently mentioned, however the majority of working women are contributing to these decisions (70.7 and 66.4% respectively). Data disaggregated by district can be found in Annex 5.

Child rights and Protection

Activating or organizing Village Development Committees (VDC) is a fundamental aspect of the Nobo Jibon program. VDCs often contribute to consciousness-raising about legal rights, campaign and network to protect human rights, and mitigate domestic conflicts. For this reason, the Nobo Jibon baseline survey was designed to provide specific information on the level of household awareness and beliefs about child protection issues. Figure 5 displays the results.

Figure 5: Reported rights of children acknowledged by parents



Across the sample awareness of children's rights is low. Approximately one-fourth of surveyed parents reported they were aware that children had the right to education (27.6%) and health services (23.8%). Almost one-fifth of parents were not aware of any children's rights. A small percentage of parents reported that children had the right to recreation (10.6%), to live with their parents (7.4%), and to give an opinion (4.0%). Fewer still were aware of children's rights with respect to birth registration, protection from abusive child labor or physical and/or social abuse, or non-discrimination.

As depicted in Figure 6 surveyed parents from all food security categories generally believe that it is wrong to hit a child for misbehaving. Although this data provides insight on attitudes toward household child abuse, it may or not reflect actual practice: data in Figure 7 shows that very few (14%) parents believe it is necessary to protect children from physical abuse.

Figure 6: Percentage of responses to question: "It is wrong to hit children whenever they do something bad?"

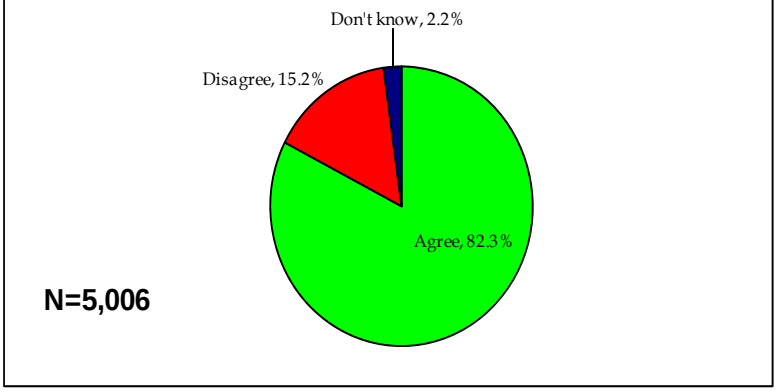
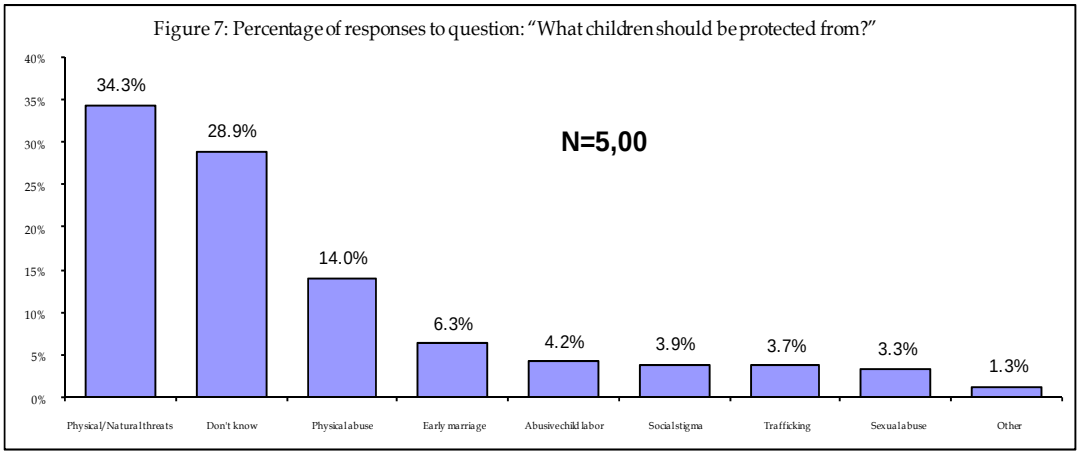


Figure 7 provides additional information about parents' beliefs regarding child protection. Just over one-third (34.3%) of surveyed parents responded that children should be protected from physical and natural threats. Importantly, twenty-nine percent reported they did not know what children should be protected from. Very small percentages of parents mentioned early marriage (6.3%), abusive child labor (4.2%), social stigma (3.9%), trafficking (3.7%), and sexual abuse (3.3%) as things that children should be protected from.



Strategic Objective 2: Market-based Production and Income Generation

Nobo Jibon's second SO aims to enhance both household productivity and income in order to improve food access for poor households. Specific activities are designed to improve the productivity of agriculture and aquaculture, while strengthening access to, and competitiveness within markets. Additionally, the Nobo Jibon program seeks to empower some extremely poor households to achieve greater food and livelihood security by improving access to land, water bodies, and productive assets.

In addition to indicators designed to measure each Intermediate Result (IR) under SO2, the Nobo Jibon program uses several comprehensive indicators to estimate increased market-based production and income generation. They include dietary diversity, months of adequate food provisioning; average annual income from the sale of agricultural products, and average number of income sources per household. The baseline survey results for these broad indicators are reported first; they are followed by the findings relevant to each of the program's intermediate results under SO2.

Data in Table 27 show that for all economic and food access indicators included in SO2, values increase as food security improves. Surveyed households in the highest food security category reported an average of 2.4 income sources compared to 2.0 reported by households in the lowest food security category. Vast differences were noted in the amount of income households earn from agricultural product sales; the average among households in the lowest food security category was approximately one-fifth the income earned by households

in the highest food security category (Tk 3942 compared to Tk 20216). And as might be expected, those in the lowest food security category have enough food for the household in just over half the year (7.1 months), while households in the highest food security enjoy close to a full year of adequate food provisions (11.6 months).

Table 27: Economic and food access indicators, by food security category

	Lowest		Middle		Highest		Total	
	Mean	N	Mean	N	Mean	N	Mean	N
Number of Income Sources	2.0	1648	2.2*	1648	2.4*	1647	2.2	4944
Average value of agricultural product sales (Taka)	3942	1648	7410*	1648	20216*	1647	10521	4944
Household Diet Diversity Score (HDDS)	3.8	1648	4.5*	1648	5.8*	1647	4.7	4944
Months of Adequate Household Food Provisions (MAHFP)	7.1	1648	9.6*	1648	11.6*	1647	9.4	4944

** mean value different from Barisal at 0.10 significance level*

Dietary diversity is an important proxy indicator for food access. Across the sample the baseline value for the Household Dietary Diversity Score (HDDS) is 4.7 indicating relatively low levels of dietary diversity (Table 27). Geographically, data show that households in Barguna have the lowest dietary diversity. Households in the highest category enjoy greater dietary diversity than those in the lower food security category. When data is disaggregated by sex of household head, dietary diversity is significantly higher for surveyed male headed households (4.7) compared to female headed households (4.4).

Data disaggregated by sex of household head that show dietary diversity is higher for surveyed male headed households (4.7) compared to female headed households (4.4). Surveyed female headed households also experience fewer months of adequate household food provisioning than their male counterparts (8.6 compared to 9.5, respectively), and have fewer sources of income (2.0 compared to 2.2). All differences are significant.

Table 28: Economic and Food access indicators, by sex of household head

	Female Headed HH		Male Headed HH		Total	
	Mean	N	Mean	N	Mean	N
Number of Income Sources	2.0*	304	2.2*	4722	2.2	5026
Household Dietary Diversity Score (HDDS)	4.4*	304	4.7*	4722	4.7	5026
Months of Adequate Household Food Provisions (MAFHP)	8.6*	304	9.5*	4722	9.4	5026

** Mean value different at 0.10 significance level*

Agricultural production and marketing practices

In order to provide a snapshot of current issues affecting the production of agriculture, livestock, and fish in the target area, the baseline survey included a range of questions related to knowledge of agricultural production and marketing practices, access to quality

inputs, capital, and markets; access to natural resources and/or productive assets; and as a proxy indicator of improved household productivity and income, questions about dietary diversity. Results are presented in this section.

The Nobo Jibon baseline survey sought information about use of improved agricultural techniques among surveyed households. Data in Table 29 clearly show that among the entire sample, the use of improved and sustainable practices is less common than the use of traditional practices: fertilizer and chemical pest control are the most widely used agricultural practices (83.2% and 65.1%, respectively). With respect to the use of improved practices, use of compost (37%) and animal manure (29%) are most common among the sample population. Data also show that households in the highest food security category more often reported the use of each one of the improved agricultural techniques compared to those in the lowest food security category. Interestingly, an integrated approach to improved agricultural production seems very uncommon among the sample given that only five percent of all households producing agriculture are currently practicing three or more improved techniques. Data disaggregated by district can be found in Annex 5.

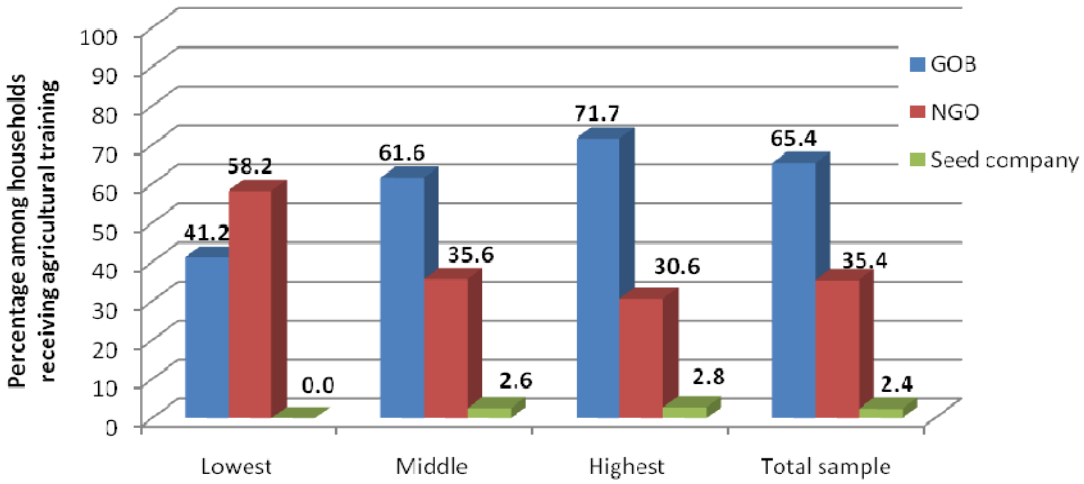
Table 29: Use of improved agricultural techniques, by food security category

	Lowest	**Middle**	**Highest**	**Total**
N = households reporting agricultural production	394	661	956	2011
Production techniques		*% HH reporting production*		
Fertilizer	77.4	83.6	85.3	83.2
Chemical Pest Control	54.0	62.8	71.3	65.1
Improved techniques [a]				
Compost	28.1	34.8	41.1	36.5
Animal manure	29.2	27.6	28.8	28.5
Integrated Pest Management	7.0	10.3	16.1	12.4
Biological Pest Control	4.0	5.6	7.6	6.2
Crop Rotation	3.3	2.9	4.9	3.9
Improved Irrigation	1.2	2.6	4.0	3.0
Mechanical Pest Control	2.2	0.9	2.4	1.9
% HH adopting 3 or more improved practices	**5.9**	**3.8**	**5.1**	**4.9**

[a] Multiple response – 7 answers allowed
**** mean value different from lowest food security category at 0.10 significance level***

To better understand choices made by those participating in agricultural production, the survey asked respondents about the source of agricultural training received. Among those in the entire sample who are involved in agricultural activities only nine percent reported they have received any agricultural training. Data on source of training should thus be treated with caution given the relatively small sample sizes involved. Among those that have received training, Figure 11 shows that the government is the most common source.

Figure 11: Source of agricultural training reported by households, by food security category



N = households reporting receipt of agricultural training (lowest = 22, middle = 39, highest = 109)
Multiple response allowed

In addition to increasing market-based production and income through improved knowledge and skills, the Nobo Jibon program intends to expand access to quality inputs, capital, and markets. Accordingly, households involved in agriculture were asked about sales to a range of potential buyers and sources of agricultural inputs.

Local markets are widely used by surveyed households for both product sales and input purchases. Table 30 shows that local markets are the most common buyers of agricultural produce for all households in the sample (78.9%). Sale to local markets was reportedly much more common among households in the lowest category than among those in the highest category (90.2% versus 73.8%, respectively). Households in the lowest category were also more likely to sell agricultural produce to neighbors (23.5%) or relatives than those in the other categories. Alternatively, households in the highest food security category were most likely to sell agricultural produce to traders (29.7%). Notably, less than half of one percent (0.4%) of all sample households reported practicing improved marketing practices, such as bulking products for sale, or selling to a cooperative or collection point. Data disaggregated by district can be found in Annex 5.

Table 30: Types of buyers for agricultural produce, by food security category

	Lowest	Middle	Highest	Total
N= households selling agriculture products	194	349	627	1,170
Types of buyers:	*% HH selling agricultural products*			
Local Market	90.2	81.6	73.8	78.9
Traders	12.5	20.2	29.7	24.0
Neighbors / relatives	23.5	18.4	16.6	18.3
Local broker	4.2	7.6	10.0	8.3
Itinerant buyer	2.6	0.8	1.6	1.5
Other (Collection point, NGO, Cooperative, Sales Company	0.0	0.3	0.8	0.5

Table 30: Types of buyers for agricultural produce, by food security category				
% HH adopting improved marketing practices	**0.0**	**0.0**	**0.8**	**0.4**
% HH bulking products for sale	**0.0**	**0.0**	**0.8**	**0.4**

Note: improved marketing practices: sell to cooperative/farmers group or at collection point

Bulking products: sell at collection point
**** mean value different from lowest food security category at 0.10 significance level***

Additionally, local markets were by far the most common source of inputs for households in each of the food security categories (79.4% among the entire sample), followed by neighbors, relatives, or other individuals (Table 31). Interestingly, households in the highest food security category were the most likely to receive inputs from the government (10.6%). Data disaggregated by district can be found in Annex 5.

Table 31: Use and source of agricultural inputs, by food security category				
	Lowest	**Middle**	**Highest**	**Total**
N = households who purchase or receive inputs	306	530	769	1,605
Sources of inputs:	*% of HH purchasing inputs*			
Local markets	77.6	80.8	79.2	79.4
Neighbors/relatives/individuals	19.9	18.0	15.5	17.1
GOB	3.4	6.8	10.6	7.9
Trained input retailers	6.9	6.3	7.7	7.1
NGOs	2.0	2.3	2.6	2.4
Other (Coops/farmer groups, itinerant merchants, VDC, companies)	2.2	1.9	3.6	2.8
Other	3.5	5.4	5.0	4.8

Table 32: presents findings on access to land and water resources among surveyed households in the three target districts. It shows that across the entire sample, nearly 60 percent (59.2) of all surveyed households have access to agricultural land, ranging from a high of 63 percent in Barguna, to a low of 53 percent among households in Barisal. Average land size was found to be greatest in Patuakhali (93.1 decimals) and least in Barisal (82.2 decimals). The survey found that across the entire sample, relatively few (10.1%) households currently have access to *khas* land, again ranging from a high of 13 percent in Patuakhali to a low of seven percent among surveyed households in Barisal. Nearly two-thirds (64.1%) of surveyed households have access to water bodies, ranging from a high of 70 percent in Patuakhali to a low of 57 percent in Barisal. Overall, these findings suggest that surveyed households in Patuakhali enjoy the greatest access to productive land and water resources, while surveyed households in Barisal have the least access.

Table 32: Access to agricultural land and water, by district								
	Barisal		**Barguna**		**Patuakhali**		**Total**	
	Value	N	Value	N	Value	N	Value	N
% HH with agricultural land	52.9	1,649	63.4	1,564	61.2	1,812	59.2	5,025
Average land area (decimals)	82.2	87	87.6	991	93.1	1,109	88.0	2,970
% HH with access to khas land	6.9	1,649	10.2	1,564	13.0	1,812	10.1	5,025
% HH with access to water bodies	57.3	1,648	64.3	1,564	70.2	1,810	64.1	5,022

Table 33 presents several key statistics related to agricultural production, disaggregated by food security category. Data shows a significant difference in access to land,[13] ranging from a high of 75 percent among households in the highest category to a low of 48 percent among those in the lowest category. Households in the lowest food security also had substantially lower average land area and a significantly lower average value of crop, livestock, and animal product sales compared to their counterparts in the middle and highest categories. Interestingly, households in the middle category reported the highest use of *khas* land and water bodies for agriculture and aquaculture.

Table 33: Summary statistics for agriculture, by food security category

	Lowest		Middle		Highest		Total	
	%	N	%	N	%	N	%	N
% of households with agricultural land	47.7	1,648	55.6	1,647	74.8	1,647	59.2	4,942
Average land area (decimals)	43.9	783	70.2	915	129.6	1,232	88.1	2,930
Average value of agricultural product sales (Tk)	3942	1648	7410*	1648	20216*	1647	10521	3752
% of households using khas land/water bodies for production of crops, livestock, and fish	59.7	1,648	68.6*	1,648	57.3	1,647	61.8	4,944

**** mean value different from lowest food security category at 0.10 significance level***

In order to capture information on the food and livelihood status of households in a dynamic context, the household questionnaire asked respondents to share their perceptions regarding recent trends in household production. Table 34 shows that among the entire sample, just over 40 percent of households reported having agricultural production within the last year. Alternatively, 61.7 percent of households reportedly own livestock and 22.8 percent of surveyed households were engaged in fish production within the last year.

Overall, 75.9 percent of households engaged in agriculture, livestock, or fish production over the same period. Among households reporting agricultural production within the last year, 39.1 percent reported that agricultural production had increased over the previous year. Increases in agricultural production were more common among households in the highest food security category than among those in the middle and lowest category. The same pattern is observable regarding increases in livestock production. Alternatively, fish production was reportedly most common among households in the lowest food security category, and least common among those in the middle category (17.1% and 14.4%, respectively). Overall, households in the highest and middle food security categories were significantly more likely to report increased production in any category compared to those in the lowest categories (45.6 and 39.1% versus 31%, respectively). Data disaggregated by district can be found in Annex 5.

[13] Differences between type of land access (i.e. sharecropping, leasing, or owning) were not captured in the survey.

Table 34: Household production , by food security category								
	Lowest		**Middle**		**Highest**		**Total**	
	Value	N	Value	N	Value	N	Value	N
Agriculture								
% HH with agricultural production last year	23.9	1,648	40.1	1,648	58.0	1,647	40.7	4,944
% reporting increased production [a]	36.5	394	38.1	661	42.8	956	40.0	2,011
Livestock								
% HH with livestock	60.7	1,648	60.1	1,648	64.1	1,647	61.7	4,944
% reporting increased production [a]	23.1	1,001	28.8	991	29.4	1,056	27.1	3,048
Fish								
% HH with fish production	10.6	1,648	20.1	1,648	37.8	1,647	22.8	4,944
% reporting increased production	17.1	174	14.1	331	15.5	622	15.3	1,127
Agriculture, livestock, or fish								
% HH engaged in at least one category	68.6	1,648	74.5	1,648	84.6	1,647	75.9	4,944
% reporting increased production, any category [a]	31.0	1,131	39.1*	1,228	45.6*	1,393	39.1	3,752

a % of HH with production
** mean value different from lowest food security category at 0.10 significance level*

Strategic Objective 3: Disaster Risk Reduction

Global experience in disaster risk reduction has enabled many people to adjust to the rising threats of natural disasters and greatly minimize their negative impact in recent years. Although Bangladesh has made crucial strides in this regard, natural disasters still pose a threat to household food security. Through SO3, the Nobo Jibon program intends to provide greater protection for children and their families as through contingency planning and improved emergency response. The baseline survey included a range of questions related to behaviors during past disasters, natural disaster preparedness, and ability to resume livelihood activities in the wake of recent disasters. Table 35 presents the results.

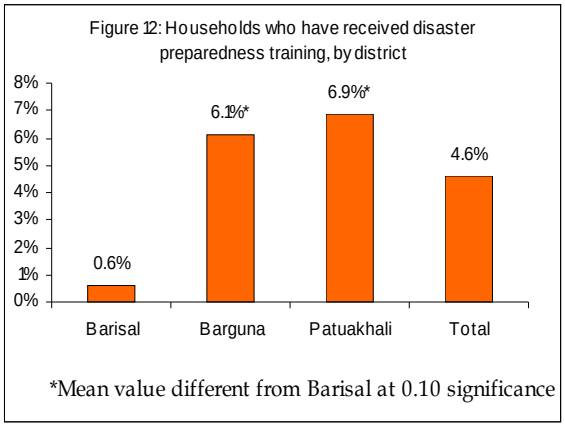
Table 35: Household preparedness and impact of recent disaster, percentage by district

	Barisal	Barguna**	Patuakhali**	Total
		Mean		
Households with a plan to protect members, livestock, or assets in the event of a disaster	26.3	56.1*	54.8*	45.8
Households with loss of life during last disaster	0.4	1.3*	0.3	0.7
Minimal asset loss in last disaster	4.9	0.5*	5.6	3.7
Able to resume livelihood activities within 2 weeks following a natural disaster	75.2	72.5*	73.8	73.8
N	1,649	1,565	1,812	5,026

**mean value different from Barisal at 0.10 significance level*
***Cyclone Preparedness Program (CPP) area*

Less than half (45.8%) of surveyed households have a plan in place to protect household members, livestock, or household valuables in the event of a future disaster. The percentage is significantly lower for households in Barisal: only 26.3 percent of households in this district reported having a disaster plan in place. Very few (0.7%) of those surveyed reported that someone in the household had died in the last disaster. However, across all districts, the vast majority reported they had lost their home, livestock, or productive households; only 3.7 percent of the sample reported minimal asset loss (only losing household items, documents, cash or jewelry); for those in Barguna, this figure was significantly lower (0.5%). Despite these losses, almost three-fourths (73.8%) of the sample was able to return home and restart a normal life within two weeks of the last disaster. Data disaggregated by food security category can be found in Annex 5.

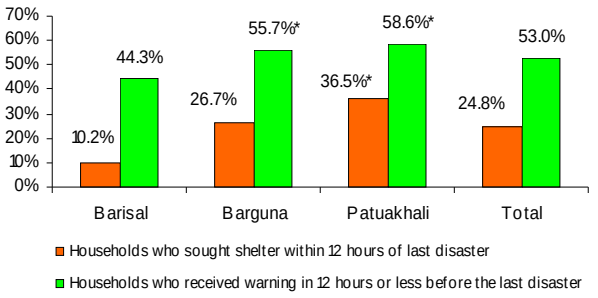
Generally speaking, data suggests there is much work to be done in building awareness of disaster preparedness practices. Figure 12 shows that across the sample very few (4.6%) surveyed households have received disaster preparedness training, particularly in Barisal. In that district, less than one percent of households mentioned receiving training compared to 6.1 percent of



households in Barguna and 6.9 percent in Patuakhali. Data disaggregated by food security category can be found in Annex 5.

Efficient early warning systems and contingency planning are important elements to mitigating the negative impact of disasters on livelihoods, food stocks, and human suffering. Figure 13 shows that 53 percent of surveyed households received a warning or disaster signal at least 12 hours before the last disaster. Fewer households (24.8%) sought shelter within 12 hours of the last disaster, adding weight to the earlier finding that showed very low percentages of households who had received disaster training. In line with the finding that households in Barisal were significantly less likely to have received disaster preparedness training, households in this district were significantly less likely to seek shelter in a timely manner in the last disaster. Only 10.2 percent of surveyed Barisal households reported doing so, compared to 26.7 percent of surveyed households in Barguna and 36.5 percent in Patuakhali. These findings may also reflect limited household access to or availability of safe disaster shelters. Data disaggregated by food security category can be found in Annex 5.

Figure 13: Household early warning and response, by district



*Mean value different from Barisal at 0.10 significance level

Summary

The factor analysis used for the baseline survey of the Nobo Jibon program enables delineation of three categories among sample households – lowest, middle and highest – corresponding to varying levels of food security. Findings clearly show that households in the lowest food security are more vulnerable than their counterparts in other food security categories. Data disaggregated by district shows that Barguna is home to the largest percentage of households in the lowest food security category (47.6% of households surveyed in Barguna fall into the lowest category). Barguna is also home to the lowest percentage of households in the highest food security category. Meanwhile, households in Patuakhali have the lowest percentage of households in the lowest food security category (25.9%). Several notable trends can also be seen when looking in closer detail at indicators pertaining to specific strategic objectives.

- *Household Economic and Food Security Status*

When disaggregated by food security category, data show that those in the highest category tend to have substantially higher household expenditures and greater asset ownership than those in the middle and lowest food security categories. Those in the highest category also enjoy greater diet diversity and longer periods of adequate food provisioning than those in other categories. Alternatively, households in the lowest food security category report much higher scores on the Household Food Insecurity Access Scale (HFIAS) and the Coping Strategies Index (CSI), signaling that they are substantially more food insecure than households in other categories (see Table 4).

Across all districts, expenditures exceed income at both the household and per capita levels. Average monthly income among beneficiary households is lowest in Barguna. Households in Barisal report the highest monthly expenditures and the highest portion of total expenditures dedicated to food purchases. Data show that households in Barguna have the fewest assets, the lowest dietary diversity, and the shortest period of adequate food provisioning. Similarly, households in Barguna reported the highest average score on the HFIAS and the CSI. Data on each of these indicators strongly suggest that at the time of the baseline survey, households in Barguna are more food insecure than those in Barisal or Patuakhali.

- *Strategic Objective 1: Mother and Child Health and Nutrition (MCHN)*

Data show that among the entire sample population, one-third of children age 6-23 months are moderately stunted and 9 percent are severely stunted. Wasting among children 6-23 months was considerably less common than stunting (15% moderately wasted, 3% severely wasted). Nearly one-third of all children age 0-23 months in sample households were found to be moderately underweight and 7.6 percent severely underweight. Malnutrition among children under two years of age appears to be most common in households from Patuakhali, with the exception of severe stunting which is highest in Barguna. Alternatively, data suggest that among children under five, malnutrition is particularly common among children in Barisal.

Children in both age groups (under two and under five years old) from surveyed households in the lowest food security group are significantly more likely to be stunted, underweight, and wasted than children from households in the highest food security group.

Incidence of diarrhea among children was found to be highest among households in the lowest food security category and highest in Barisal district. Of those reporting diarrhea among children under five in the previous two weeks, nearly three-quarters reportedly sought treatment for the affected child. Pharmacies were the most common source of treatment followed by village doctors. Responses to the survey show that cough and/or fever among children under five is much more common than diarrhea. For both fever and cough, village doctors were slightly more common as a source of treatment than were pharmacies, with the exception of households in the highest food security category.

Children from households in the lowest food security are far less likely than those in more food secure households to have consumed iron-fortified foods, and least likely to consume adequately iodized salt. Similarly, data show that pregnant and lactating women from households in the lowest food security category are much less likely than those in other categories to consume nutrient rich diets or regularly attend ante-natal care sessions. Finally, among the entire sample, relatively limited percentages of households adhere to appropriate hygiene practices.

Analysis shows that among the entire sample nearly one-third of women in participating households earn an income. Of those earning income, over three-quarters earn their income from poultry sales. Importantly, the baseline survey shows that women in the highest food security are more likely than those in other categories to have a role in household decisions regarding spending the income they earn, including health expenditures on children, major households expenditures and purchases of daily household needs.

When data is disaggregated by sex of household head, the survey found a number of significant differences between female and male headed households for primary food security variables. Both the HFIAS and CSI scores are significantly higher for female headed households, suggesting that overall they are more food insecure than their male counterparts. This finding is further supported by data that show dietary diversity is significantly higher for surveyed male headed households (4.7) compared to female headed households (4.4). Surveyed female headed households also experience significantly fewer months of adequate household food provisioning than their male counterparts (8.6 compared to 9.5, respectively).

- *Strategic Objective 2: Market-based Production and Income Generation*

Across the sample, HDDS values are relatively low (4.7). The average value for MAHFP is 9.4. Data disaggregated by district show that households in Barguna, have lower dietary diversity scores and shortest periods of adequate food provisioning. Female-headed households have values for these food security status variables than male-headed households.

Data clearly show a preference for traditional agricultural practices over improved practices. Among households who do report using improved practices, use of compost and animal manure are most common. Only nine percent of all sample households involved in agriculture have received any agricultural training.

Local markets are by far the most common source of inputs among households engaged in agricultural production, followed by neighbors /relatives/individuals. Local markets are also the most commonly cited point of sale for agricultural produce sold by households (80%). Notably, less than half of one percent (0.4%) of all sample households reported practicing improved marketing practices, such as bulking products for sale, or selling to a cooperative or collection point.

Across the entire sample, nearly 60 percent of all sampled households have access to agricultural land; a relatively small proportion (10%) has access to *khas* land for agricultural production. Data show a significant difference in access to land according to food security categories, ranging from a high of 75 percent among households in the highest category to a low of 48 percent among those in the lowest category. Nearly two-thirds (64%) of surveyed households have access to water bodies, ranging from a high of 70 percent in Patuakhali to a low of 57 percent in Barisal. Overall, findings suggest that households in Patuakhali enjoy the greatest access to productive land and water resources, while households in Barisal have the least access.

- *Strategic Objective 3: Disaster Risk Reduction*

Data show that less than half of all surveyed households have a plan in place to protect household members, livestock, or household valuables in the event of a future disaster. The percentage is much lower for households in Barisal than among households in other districts. While very few households reported death of household members resulting from the most recent disaster, the vast majority reported they had lost their home, livestock, or productive households. Despite these losses, almost three-fourths of sample households were able to return home and restart a normal life within two weeks of the last disaster. The baseline survey reveals that across the sample very few households have received disaster preparedness training.

Annexes

Annex 1: Mean Values and Confidence Intervals for Indicator Performance Tracking Table (IPTT) Indicators

Annex 2: Description of Principal Component Analysis

Annex 3: Procedures for Computing Household Economic and Food Security Status Indicators

Annex 4: Nobo Jibon Baseline Survey Household Questionnaire

Annex 5: Additional quantitative data disaggregated by District and Food security Category

Annex 6: Terms of Reference, Baseline Survey

Annex 1: Mean Values and Confidence Intervals for Indicator Performance Tracking Table (IPTT) Indicators

Indicator Required for	Indicator Number	Indicator		Indicator Type	Desired direction of change (+) or (-)	Baseline[3]	95% C.I.
Goal: Reduced food insecurity and vulnerability for 191,000 households (direct beneficiaries) in nine Upazilas of Barisal Division in southern Bangladesh over five years							
FFP, NJ	G.1.	Percentage of stunted (HAZ<-2) children aged 6-59 months [1]	<-2SD	Impact	-	43.9%	41.6 - 46.3%
			<-3SD		-	12.9%	11.2-14.6%
NJ	G.2.	Average HH Food Insecurity Access Scale score		Impact	+	28.7%	27.3 - 30.2%
NJ	G.3.	Average HH coping strategy index		Impact	+	13.5%	12.7 - 14.2%
SO1 MCHN: Improved health and nutritional status of children U5 and PLW							
FFP	S.1.4 (1)	Percentage of underweight (WAZ<-2) children aged 0-59 months [1]	<-2SD	Impact	-	39.4%	37.2 - 41.5%
			<-3SD		-	9.9%	8.6 - 11.2%
NJ, FFP	S.1.4 (2)	Percentage of underweight (WAZ<-2) children aged 0-23 months [1]	<-2SD	Outcome	-	31.9%	28.5 - 35.2%
			<-3SD		-	7.6%	5.7 - 9.5%
NJ	S.1.5 (1)	Percentage of wasted (WHZ<-2) children aged 6-59 months [1]	<-2SD	Impact	-	15.9%	14.4 - 17.4%
			<-3SD		-	2.0%	1.5-2.6%
NJ, FFP	S.1.5 (2)	Percentage of wasted (WHZ<-2) children aged 6-23 months [1]	<-2SD	Outcome	-	15.1%	12.6-17.6%
			<-3SD		-	3.0%	1.8-4.2%
NJ	S.1.6 (1)	% of children between 0 and 59 months with diarrhea during last two weeks		Impact	-	10.4%	9.0 - 11.8%
NJ	S.1.6 (2)	% of children between 0 and 23 months with diarrhea during last two weeks		Outcome	-	11.0%	9.1 - 12.9%

IR 1.1.: PLW and care-givers of children U5 practice improved MCHN and environmental health behaviors

Indicator Required for	Indicator Number	Indicator	Indicator Type	Desired direction of change (+) or (-)	Baseline[3]	95% C.I.
FFP, NJ	IR.1.1.7 (1)	% of infants 0-5 months of age who are fed exclusively with breast milk[2]	Outcome	+	38.4%	32.3 - 44.5%
OP	IR.1.1.7 (2)	% of children 0-6 months of age exclusively breastfed	Outcome	+	34.2%	28.6 - 39.8%
FFP, NJ	IR.1.1.8	% of children 6-23 months of age who receive a minimum acceptable diet (apart from breastmilk)[2]	Outcome	+	5.8%	4.1 - 7.5%
FFP	IR.1.1.9	% of caregivers demonstrating proper personal hygiene behaviors	Outcome	+	30.9%	28.6 - 33.3%
FFP	IR.1.1.10	% of beneficiary caregivers demonstrating food hygiene behaviors	Outcome	+	20.2%	17.9 - 22.6%
FFP	IR.1.1.11	% of PLW who consume food rich in iron	Outcome	+	31.5%	26.7 - 36.4%
FFP	IR.1.1.12	% of PLW who consume food rich in Vitamin A	Outcome	+	22.3%	17.9 - 26.7%
FFP	IR.1.1.13	% of PLW who consume food rich in Calcium	Outcome	+	12.2%	9.1 - 15.3%
FFP	IR.1.1.14	% of PLW taking iron or iron folate supplements in the last 7 days	Outcome	+	2.1%	0.7 - 3.5%
OP	IR.1.1.15	Number of people in target areas with access to improved drinking water supply as a result of USG assistance	Outcome	-	N/A[14]	
OP	IR.1.1.16	Number of people in target areas with access to improved sanitation facilities as a result of USG assistance	Outcome	-	N/A	
FFP	IR.1.1.17	% of caregivers demonstrating proper water hygiene behaviors	Outcome	+	43.5%	39.3 - 47.7%
FFP	IR.1.1.18	% of beneficiary caregivers demonstrating environmental hygiene behaviors	Outcome	+	15.5%	13.4 -17.5%

[14] N/A indicates data not available from household survey.

Indicator Required for	Indicator Number	Indicator	Indicator Type	Desired direction of change (+) or (-)	Baseline[3]	95% C.I.
NJ	IR.1.1.19	% of children 6-23 months of age who received an iron rich food or iron fortified food that is specially designed for infants and young children the previous day[2]	Outcome	+	51.6%	47.9 - 55.4%
NJ	IR.1.1.20	% of beneficiary children born in the past 24 months who were put to the breast within one hour of birth[2]	Outcome	+	28.9%	25.7 - 32.2%
NJ	IR.1.1.21	% of households consuming adequately iodized salt (20-40ppm)	Outcome	+	76.5%	74.2 - 78.8%
NJ/IYCF	IR.1.1.22	% beneficiary caregivers who practice appropriate sick child feedings methods[4]	Outcome	+	94.2%	91.6 - 96.7%
FFP	IR.1.1.23	Number of Water/Sanitation (Non-HIV) beneficiaries	Output	+	N/A	
NJ	IR.1.1.24	Number of HHs provided with PM2A ration	Output	+	N/A	
IR 1.2.: Households have improved access to integrated health, family planning and nutrition services						
NJ	IR.1.2.25	% of children 12-23 months who received Vitamin-A supplementation in the past 6 months	Outcome	+	42.3%	37.4 - 47.3%
NJ	IR.1.2.26	% of mothers of children aged 6-23 months who received high-dose Vitamin A supplement within 8 weeks postpartum (6 weeks if not exclusively breastfeeding) in last pregnancy	Outcome	+	21.0%	17.5 - 24.4%
NJ	IR.1.2.27	% of mothers attended ANC session at least 4 times during last pregnancy	Outcome	+	11.8%	9.1 - 14.5%
NJ	IR.1.2.28	% of beneficiary children 12-24 months receiving antehelminth (deworming) medication in previous 6 months	Outcome	+	18.8%	15.1 - 22.5%
NJ (QMS)	IR.1.2.29	% of VHC following appropriate CCM protocals for SAM for children under the age of 5 years	Outcome	+	N/A	

Indicator Required for	Indicator Number	Indicator	Indicator Type	Desired direction of change (+) or (-)	Baseline[3]	95% C.I.
NJ (QMS)	IR.1.2.30	% of VHC following appropriate CCM protocals for diarrhea for children under the age of 5 years	Outcome	+	N/A	
NJ (QMS)	IR.1.2.31	% of VHC following appropriate CCM protocals for ARI for children under the age of 5 years	Outcome	+	N/A	
NJ	IR.1.2.32	% of Upazila Health Complexes in target areas that track core nutrition indicators on a monthly basis	Outcome	+	N/A	
FFP	IR.1.2.33	Number of Health and Nutrition (Non-HIV) beneficiaries	Output	-	N/A	
OP	IR.1.2.34	Number of Children U2 reached by USG supported nutrition program	Output	-	N/A	
IR 1.3. : Equity increased within households and communities						
NJ	IR.1.3.35	Number of VDCs with appropriate/equitable representation and participation (women, extreme poor, adolescents).	Outcome	+	N/A	
NJ	IR.1.3.36	% of beneficiary women whose husband attends ANC/PNC with her[5]	Outcome	+	48.6%	39.4 - 57.7%
NJ	IR.1.3.37	% of men who score an 80% or higher on a knowledge test of correct care practices for PLW and children under 5	Outcome	+	N/A	
NJ	IR.1.3.38	Average score of trained women on a multi-item psychometric scale of leadership skills	Outcome	+	N/A	
NJ	IR.1.3.39	Average score of beneficiary population on the DHS indices of women's participation in decision making and attitude towards wife beating (disaggregated by gender)	Outcome	+	N/A	
NJ	IR.1.3.40	Average score of population on the DHS indices of women's participation in decision making and attitude towards wife beating (disaggregated by gender)	Outcome	+	N/A	

Indicator Required for	Indicator Number	Indicator	Indicator Type	Desired direction of change (+) or (-)	Baseline[3]	95% C.I.
NJ	IR.1.3.41	Number of people (male and female) who received gender awareness training	Output	+	N/A	
NJ	IR.1.3.42	Number of awareness raising events organized by youth volunteer groups	Output	+	N/A	
SO2 Market-based Production and Income Generation: Poor and extremely poor households have increased production and income						
FFP	S.2.43 (1)	Average HH dietary diversity score (HDDS)	Impact	+	4.7	4.6 - 4.8%
NJ	S.2.43 (2)	Average HH dietary diversity score (HDDS)	Outcome	+	4.7	4.6 - 4.8%
FFP	S.2.44 (1)	Average number of months of adequate household food provisioning (MAHFP)	Impact	+	9.4	9.3 - 9.6
OP	S.2.44 (2)	Average # of months that HHs benefitting from USG supported social assistance have enough food	Outcome	+	N/A	
NJ	S.2.45	% of HHs reporting increase in production of one or more products	Outcome	+	38.8%	36.8 - 40.8%
NJ	S.2.46	Average annual income from sale of agricultural products	Outcome	+	5,284	5,023 - 6,626
NJ	S.2.47	Average number of income sources per HH	Outcome	+	2.20	2.15 - 2.24
FFP	S.2.48	Number of non-agric income generation (Non-HIV) beneficiaries	Output	+	N/A	
FFP	S.2.49	Number of Agriculture/NRM (Non-HIV) beneficiaries	Output	+	N/A	
OP	S.2.50	Number of enterprise participating in USG assisted value chain	Output	+	N/A	
OP	S.2.51	Number of USG social assistance beneficiaries participating in productive safety nets	Output	+	N/A	

Indicator Required for	Indicator Number	Indicator	Indicator Type	Desired direction of change (+) or (-)	Baseline[3]	95% C.I.
IR 2.1.: Poor households apply improved knowledge and skills for production and marketing						
FFP, NJ	IR.2.1.52 (1)	%of beneficiaries (farmers) using 3 or more sustainable/improved production practices.	Outcome	+	4.8%	3.8 - 5.9%
OP	IR.2.1.52 (2)	Numbers of farmers, processor and others who have adopted new technologies or management practices as result of USG assistance	Outcome	+	N/A	
NJ, OP	IR.2.1.53	% of targeted HHs adopting improved marketing practices	Outcome	+	N/A	
OP	IR.2.1.54	Number of individuals who have received USG supported short term agriculture sector productivity training	Output	+	N/A	
NJ, OP	IR.2.1.55	Number of cluster groups trained in basic business skills	Output	+	N/A	
IR 2.2.: Poor households access quality inputs, capital and markets						
NJ	IR.2.2.56	% of HHs bulking products for sale	Outcome	+	0.4%	0.0 - 0.8%
NJ	IR.2.2.57	% of HH with access to functional product collection points for bulking, selling and purchasing products	Outcome	+	N/A	
NJ	IR.2.2.58	% of trained VSLs functioning as a sustainable group	Outcome	+	N/A	
NJ	IR.2.2.59	Number of produce collection points established	Output	+	N/A	
NJ	IR.2.2.60	% of participant HHs/cluster groups with linkages to suppliers, buyers and technical support services	Output	+	N/A	
NJ	IR.2.2.61	Number of VSLs established	Output	+	N/A	
IR 2.3.: Extremely poor households access land, water bodies, and/or productive assets						
NJ, OP	IR.2.3.62	Number of VDCs engaged in assisting extremely poor to access khas land and/or water bodies	Outcome	+	N/A	

Indicator Required for	Indicator Number	Indicator	Indicator Type	Desired direction of change (+) or (-)	Baseline[3]	95% C.I.
NJ	IR.2.3.63	Number of extremely poor HHs using khas land/water bodies for production of crops, livestock, and fish	Output	+	59.7%	55.9 - 63.5%
NJ	IR.2.3.64	Number of extremely poor HHs using distributed assets for sustainable production and income generation	Output	+	N/A	
SO3 DRR: Households in targeted communities protect their lives and assets and quickly resume livelihood activities following natural disasters						
NJ	S.3.65	% of HHs with a feasible plan to protect human life and productive assets during disaster	Impact	+	45.9%	43.5 - 48.2%
NJ	S.3.66	% of HHs with no loss of life in the targeted communities in the event of a disaster.	Impact	-	99.4%	99.2 - 99.6%
NJ	S.3.67	% of HHs with no or minimal asset loss in targeted communities in the event of disaster.	Impact	-	3.8%	2.9 - 4.7%
NJ	S.3.68	%of HHs able to resume livelihood activities within 2 weeks following a natural disaster.	Impact	+	73.8%	70.2 - 77.4%
IR 3.1.: Communities manage functional emergency preparedness and response plans						
FFP	IR.3.1.69	Number of assisted communities with improved community capacity as a result of project assistance	Outcome	+	N/A	
NJ	IR.3.1.70	Number of villages with VDC members and volunteer groups trained on DRR	Output	+	N/A	
OP	IR.3.1.71	Number of people trained in disaster preparedness as result of USG assistance	Output	+	N/A	
NJ	IR.3.1.72	% of targeted HH members trained on disaster preparedness	Output	+	4.6%	3.7 - 5.4%
NJ	IR.3.1.73	% of VDCs with functional DRR contingency plan	Output	+	N/A	
IR 3.2.: Communities access appropriate infrastructure for protecting lives and assets in emergencies						

Indicator Required for	Indicator Number	Indicator	Indicator Type	Desired direction of change (+) or (-)	Baseline[3]	95% C.I.
FFP	IR.3.2.74	Number of assisted communities with improved physical infrastructure to mitigate the impact of shocks, in place as a result of project assistance	Outcome	+	N/A	
NJ	IR.3.2.75	% of VDCs and other groups actively participating in the management and maintenance of DRR infrastructure	Outcome	+	N/A	
FFP	IR.3.2.76	Number of communities with safety-nets to address the needs of their most vulnerable members, in place as a result of project assistance.	Outcome	+	N/A	
OP	IR.3.2.77	% of USG communities that have constructed/ developed physical infrastructure to mitigate the effect of shocks.	Outcome	+	N/A	
NJ	IR.3.2.78	Number of small community infrastructure projects completed through FFW/CFW	Output	+	N/A	
NJ	IR.3.2.79	Number of shelters/*killa* rehabilitated	Output	+	N/A	
NJ	IR.3.2.80	Number of mini shelter/community centers built	Output	+	N/A	
IR 3.3.: Improved and effective coordination among SC and Nobo Jibon partners to respond to emergencies						
NJ	IR.3.3.81	Number of Nobo Jibon implementing partners with a functional emergency contingency plan	Outcome	+	N/A	
NJ	IR.3.3.82	% of disaster-affected communities in which SC and one or more I-Ps implemented a coordinated response	Outcome	+	N/A	
NJ	IR.3.3.83	Number of Nobo Jibon implementing partners are prepared for disaster response	Output	+	N/A	
IR 3.4.: Communities receive and respond to early warning for floods and cyclones						
FFP, OP	IR.3.4.84	Number of assisted communities with disaster early warning and response (EWR) systems, in place as a result of project assistance	Outcome	+	N/A	

Indicator Required for	Indicator Number	Indicator	Indicator Type	Desired direction of change (+) or (-)	Baseline[3]	95% C.I.
NJ	IR.3.4.85	% of HHs that sought shelter in a timely manner during last disaster.	Outcome	+	24.8%	21.1 - 28.5%
NJ	IR.3.4.86	% of HHs that received location specific cyclone warning signal with adequate lead time	Output	+	36.9%	34.2 - 39.5%

Note: confidence intervals computed adjusting for complex sample design

[1]*Stunting, Underweight, and Wasting values will analyzed and reported according to the WHO 2006 growth standards*

[2]*The 2008 WHO infant and young child feeding practice indicators will be used.*

[3]*The estimated baseline values and targets will be modified based upon results in the Baseline survey. The information given based on the DHS 2007, JOJ Endline and other health surveys in Bangladesh*

[4] *Children with diarrhea who are given fluid from ORS packet, homemade sugar/water solution, salt water solution, zinc syrup, zinc tablet, fluid from special saline (rice), or continued to breastfeed child*

[5] *Percent of mothers with ANC card*

Annex 2: Procedures for Computing Household Economic and Food Security Status Indicators

1. Asset Index

This index is computed by multiplying the number of each type of household asset by the index value for that particular asset type. Index values of household assets used for construction of the asset index are presented in Table A 1. A higher value of the asset index indicates that households have been able to accumulate assets over time. Households are able to accumulate assets if income is greater than the necessary expenditures to meet household subsistence requirements. Assets also provide households with a cushion to adjust to shortfalls in incomes, or sudden increases in necessary expenditures. Thus, households with a higher asset index are less vulnerable than households with lower asset index values.

Table A 1: Estimated Average Values (in USD) used in Calculating Household Asset Indices

Asset	Index value
Almirah	50
Table/chair/bench	10
Watch/clock	30
Cot/bed	20
Working radio	30
Working TV	100
Bicycle	100
Motorcycle	800
Phone	50
Rickshaw/van	300

2. Household Dietary Diversity Score (HDDS)

This indicator is computed by summing the number of different food categories reported eaten by the household in day prior to the interview. This indicator was measured as recommended by FANTA, using the following 12 food groups: cereals, tubers, legumes, dairy, meat, fish, oils, sugar, fruits, eggs, vegetables, and others. The HDDS provides a measure of a particular household's food access. A higher HDDS represents a more diverse diet, which is empirically highly correlated with a household's income level and access to food.[15]

3. Months of Adequate Household Food Provisioning (MAHFP):

This indicator reflects a household's ability to obtain food from their own production, stocks, purchases, gathering, or through food transfers from relatives, members of the community, the government or donors. As a household manages its resources over the course of a year, the ability to meet its food needs may vary due to any number of factors such as inadequate crop production by the household due to poor soils or lack of labor, loss or decrease in income sources such as employment, social obligations or natural disaster. Measuring the MAHFP has the advantage of capturing the combined effects of a range of interventions and strategies, such

[15] Swindale, Anne, and Paula Bilinsky. *Household Dietary Diversity Score (HDDS) for Measurement of Household Food Access: Indicator Guide (v.2)*. Washington, D.C.: Food and Nutrition Technical Assistance Project, Academy for Educational Development, 2006.

as improved agricultural production, storage and interventions that increase the household's purchasing power. [16]

4. Household Food Insecurity Access Scale (HFIAS)

This indicator has been developed by FANTA, and is based on household access to food and responses to shortages in access to food over a 30-day recall period. This indicator is based on the household's: i) perceptions of uncertainty over food access in the past 30 days; ii) perceptions of insufficiency in quantity and quality of food over the past 30 days; iii) reported reductions in food intake; and iv) reported consequences of reductions in food intake. A higher value of this index indicates a higher degree of food insecurity. In tabulating the HFIAS score, a HFIAS score variable is calculated for each household by summing the codes for each frequency-of-occurrence question. The maximum score for a household is 27 (the household response to all nine frequency-of-occurrence questions was "often", coded with response code of 3); the minimum score is 0 (the household responded "no" to all occurrence questions, frequency-of-occurrence questions were skipped by the interviewer, and subsequently coded as 0 by the data analyst.) The higher the score, the more food insecurity (access) the household experienced. The lower the score, the less food insecurity (access) a household experienced. [17]

5. 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.[18] 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

The frequency of adoption of each category is coded according to the following categories:

0 = never
1=seldom
2=sometimes
3=often
4=daily

[16] Bilinsky, Paula, Anne Swindale. 2007. *Months of Adequate Household Food Provisioning (MAHFP) for Measurement of Household Food Access: Indicator Guide*. FANTA. June 2007.

[17] Coates, Jennifer, Anne Swindale, and Paula Balinsky. *Household food insecurity access scale (HFIAS) for measurement of food access: Indicator guide*. FANTA, August 2007.

[18] 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 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 world[i] are then applied to each coping strategy, using the following formula:

$CSI = \Sigma(\text{frequency category}_i * \text{severity weight}_i)$ i=1 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

6. Personal hygiene behavior

Personal hygiene practices are based on the following appropriate hand washing behaviors

Appropriate times to wash hands:

1. Before food preparation
2. Before eating
3. Before feeding children
4. After defecation
5. After cleaning babies bottoms

Appropriate washing practices

6. Use water
7. Use soap or ash
8. Wash both hands
9. Rubs hands at least 3 times
10. Dries hands by air or with clean cloth

"Proper personal hygiene behavior" is defined as following at least 8 out of these 10 practices (80%). Note that this is consistent with the definition used in the Jibon o Jibika baseline and end-line surveys.

7. Food hygiene behaviors
"Proper food hygiene behaviors" is defined as applying all three of the following practices: washing hands before food preparation, and washing hands before eating, washing hands before feeding children .

8. Water hygiene behaviors
"Proper water hygiene behaviors " is defined as all applying all three of the following three practices: water stored at home, drinking water stored in separate containers, and water is kept covered.

9. Environmental hygiene behaviors
"Proper environmental hygiene behaviors" is defined as applying at least 5 of the 6 following practices:

Use hygienic latrine (ring slab/offset latrine with water seal, covered open pit latrine, or septic latrine)
Latrine is functioning
Latrine shows signs of use
Latrine (pan and slab) is clean
Area surrounding latrine is clean
Infants' feces disposed of in latrines

10. Minimally acceptable diet

A 'minimum acceptable diet apart from breastmilk' is calculated as follows:

Breastfed children 6–23 months of age who had at least the minimum dietary diversity and the minimum meal frequency during the previous day

and

Non-breastfed children 6–23 months of age who received at least one milk feeding and had at least the minimum dietary diversity not including milk feeds and the minimum meal frequency during the previous day.

This calculation differs slightly from that described in the World Health Organization's guidelines for assessing and measuring infant and young child feeding practices (2008), which states non-breastfed children 6–23 months of age should receive at least *two* milk feedings and have at least the minimum dietary diversity not including milk feeds and the minimum meal frequency during the previous day.

Minimum dietary diversity is defined as receiving four or more of the following foods:

Rice, bread, porridge, other foods made from grain
Tubers: white potatoes, white yams, other foods from roots

Foods from beans, nuts, lentils
Milk or milk products
Liver, kidney, heart, fish, dried fish, seafood, any meat (chicken, beef, goat, duck, etc.)
Eggs
Pumpkin, carrots, orange sweet potatoes, dark green leafy vegetables, Ripe mangoes, ripe papayas, ripe jackfruits
Any other fruits or vegetables

11. Economic empowerment index

The scores for economic empowerment are calculated by taking the mean sum of scores for individual decisions. If the response indicated that a woman made a decision alone, or jointly with her husband, the score value is one. If the response indicated that the decision was made by her husband, somebody else, or her husband and somebody else, the score value is zero. The maximum score is five.

Annex 3: Results of factor analysis on food security variables

```
WEIGHT
  OFF.


FACTOR
  /VARIABLE HHsize assetindex_pc exp_month_pc food_share HDDS MAHFP
HFIAS_index csi_index
  /MISSING LISTWISE
  /ANALYSIS HHsize assetindex_pc exp_month_pc food_share HDDS
MAHFP HFIAS_index csi_index
  /PRINT INITIAL EXTRACTION
  /PLOT EIGEN
  /CRITERIA MINEIGEN(1) ITERATE(25)
  /EXTRACTION PC
  /ROTATION NOROTATE
  /SAVE REG(ALL)
  /METHOD=CORRELATION .
```

Factor Analysis

Communalities

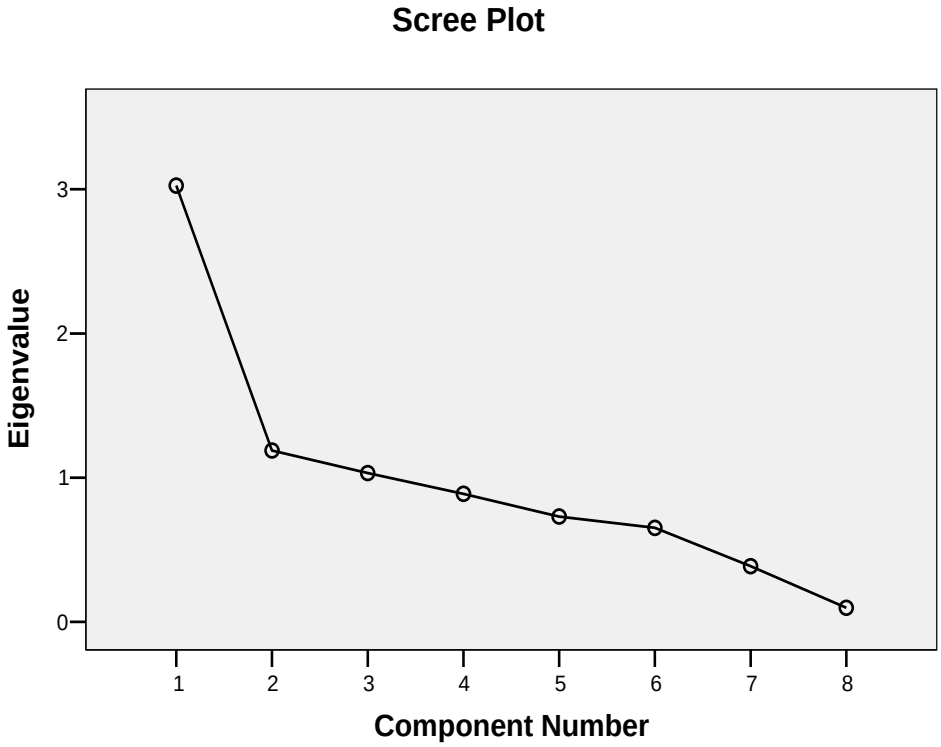
	Initial	Extraction
HHsize	1.000	.836
assetindex_pc	1.000	.413
exp_month_pc	1.000	.556
food_share	1.000	.596
HDDS	1.000	.399
MAHFP	1.000	.703
HFIAS_index	1.000	.889
csi_index	1.000	.852

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.025	37.815	37.815	3.025	37.815	37.815
2	1.188	14.850	52.665	1.188	14.850	52.665
3	1.032	12.897	65.562	1.032	12.897	65.562
4	.888	11.102	76.664			
5	.730	9.131	85.794			
6	.652	8.153	93.947			
7	.386	4.829	98.776			
8	.098	1.224	100.000			

Extraction Method: Principal Component Analysis.



Component Matrix[a]

	Component		
	1	2	3
HHsize	.214	-.369	.809
assetindex_pc	.369	.465	-.247
exp_month_pc	.254	.689	.128
food_share	-.411	-.475	-.449
HDDS	.600	.106	.165
MAHFP	.806	-.193	-.130
HFIAS_index	-.911	.199	.143
csi_index	-.878	.216	.186

Extraction Method: Principal Component Analysis.

a. 3 components extracted.