An Evaluation of the Educational Impact of the *Sisimpur* Community Outreach Project

Prepared for Sesame Workshop

Prepared by

ARC-MODE Limited

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EXECUTIVE SUMMARY

Background and Objectives

Sisimpur is the Bangladeshi co-production of the educational children's program, *Sesame Street*. In addition to the television program, the project also includes an extensive community outreach component. In its first season, the *Sisimpur* outreach team in Bangladesh developed a kit containing materials designed to promote health, hygiene, and nutrition among caregivers and their children. Caregivers received training on how to use the materials with their children in a series of workshops. These caregivers were from disadvantaged communities served by non-governmental organizations (NGOs). This document reports on an evaluation of the impact of the *Sisimpur* outreach program on participants' health, hygiene, and nutrition knowledge and behavior.

Method

The study utilized a design in which participants in the outreach program were compared with non-participants (or the "control" group) who lived in geographically, socially, and economically similar circumstances. Participants attended workshops and received outreach materials, while the control group was not exposed to the materials. In addition to quantitative data on knowledge and behavior, researchers also interviewed caregivers and trainers to uncover in-depth information about outcomes and training. Researchers also conducted observations of households and one training workshop to augment the survey.

The study assessed outcomes across a range of domains, including hygiene behaviors like teeth cleaning, hand washing, bathing, and grooming (i.e., combing and washing hair); and nutrition practices such as consuming a balanced diet.

Sample

The sample comprised a total of 1,801 participants: 600 caregivers and 600 children in the intervention group, and 301 caregivers and 300 children in the control group. Data from the intervention were collected from four sites where *Sisimpur* outreach training occurred: an urban location (Dhaka) and three rural locations (Kurigram, Thakurgoan, and Cox's Bazar). In addition, one-on-one interviews were conducted with 20 caregivers in the intervention group and 5 trainers who conducted training workshops. Household observations were also completed in 150 homes (100 in the intervention group and 50 in the control group) to supplement the findings from the survey.

Analysis

Researchers examined differences among control and intervention groups in health, hygiene, and nutrition outcomes using bivariate analyses and multivariate logistic regressions. In order to control for potentially confounding variables, researchers accounted for several factors in the analyses, including income, education of caregiver and head of the household, urban (vs. rural) residence, time elapsed since training.

Findings

The *Sisimpur* outreach initiative has demonstrated a positive impact on participants' health, hygiene, and nutritional knowledge and practices. Caregivers seem to have applied the educational messages not only to their own daily habits, but also to their children's lives. The following table summarizes the key findings obtained from logistic regressions.[12]

Table I. *Summary of Key Findings of the Impact of* Sisimpur *Outreach on the Outcomes of Interest*

Caregiver Outcomes	Compared with non-participants, caregivers who participated in the *Sisimpur* outreach program reportedly were…
Dental Care	8.4 times more likely to own a toothbrush at home
	5.3 times more likely to own toothpaste at home
	4.0 times more likely to use a toothpaste to clean teeth
	3.8 times more likely to use toothbrush to clean teeth
Hand Washing	2.1 times more likely to have soap in the home
	2.1 times more likely to have a clean towel in the home
	4.4 times more likely to wash their hands with soap before having a meal
Bathing	2.1 times more likely to bathe 7 times or more a week
	3.0 times more likely to bathe with soap 4 times or more a week
Child Outcomes	Compared with non-participants, children of caregivers who participated in the *Sisimpur* outreach program reportedly were…
Dental Care	8.6 times more likely to use a toothbrush to clean teeth
	5.0 times more likely to use toothpaste to clean teeth
	7.8 times more likely to clean teeth more than once a day
	2.8 times more likely to clean teeth after a meal
	10.9 times more likely to clean teeth at night
Hand Washing	8.0 times more likely to use soap to wash hands before a meal
	4.6 times more likely to use soap to wash hands after defecation
Hair Combing	3.0 times more likely to comb hair more than once a day
Nutrition	3.0 times more likely to drink milk at least once a week
	3.0 times more likely to eat eggs daily

The program, however, did not appear to be linked to the likelihood of consistently using soap to wash hands before a meal or preparing food, or child behaviors such as frequency of bathing, use of soap when bathing, hair washing, or their protein and vitamin consumption.

Qualitative interviews with caregivers on their perceptions of the value of the workshops revealed that they were satisfied with the training they received. Generally, participants expressed appreciation for the trainers and found the workshop to be informative. Interviews also indicated that caregivers often retained the information taught at the workshops, even if they had attended it a few months ago. The materials in the kit— particularly the matching card game—were well received and well liked by both adults and children.

Conclusion

Taken together, the results provide significant evidence that *Sisimpur*'s outreach programs can make a demonstrable impact on the health, hygiene, and nutrition practices. After participating in the training workshops, caregivers and children were more likely to engage in sound practices in the areas of teeth cleaning, hand washing, bathing, and nutrition compared to a control group that did not participate in the program. These findings remained robust despite controlling for key socio-demographic factors (like income and education) that are known to strongly influence such outcomes. While more research is needed to determine changes in knowledge and behavior before and after exposure to such interventions, the results of this study provide robust support for the success of *Sisimpur*'s outreach initiative.

[1] All findings are significant at $p < .05$.
[2] These quantitative results were further verified through household observations.

Chapter 1
Introduction

1.1 Background

Sisimpur, a co-production of the acclaimed children's television show *Sesame Street*, is a an educational television program aimed at Bangladeshi children between the ages of 3 and 7 years old. The goal of *Sisimpur* is to improve children's academic, social, and economic futures by increasing their access to authentic learning opportunities early in life. The educators, researchers, and producers on *Sisimpur* work with a curriculum that not only exposes children to academic areas like literacy, math, and science, but also incorporates messages about health, hygiene, respect, understanding, social relations, and cultural knowledge. The program is supported by the Government of Bangladesh and the United States Agency for International Development (USAID).

Since many children in Bangladesh have little or no consistent access to television, *Sisimpur*'s messages are also featured in community outreach materials designed for use in a variety of settings, including early childcare centres, pre-schools, kindergartens, and homes. Local Bangladeshi educators, writers, and illustrators work with Sesame Workshop to produce these materials in the form of *outreach kits*. The kits, which contain books, games, flash cards, and growth charts, are distributed to caregivers from low-income households through a series of three workshops conducted by specialized trainers from 12 non-government agencies (NGOs) reaching. During trainers, caregivers learn effective ways to use outreach materials with children. In season one alone, NGOs distributed these kits to over 9,000 caregivers.

Nayantara Communications, a Bangladesh production company working in collaboration with Sesame Workshop, is responsible for the production of the show and its accompanying outreach materials.

1.2 Rationale for the Study

Distribution of *Kit 1,* which focuses on health, hygiene and nutrition, commenced in 9 selected locations across Bangladesh in November 2005: Chittagaon, Dinajpur, Nilphamary, Netrakona, Sathkhira, Dhaka, Rajshahi, Kurigram and Thakurgaon. Caregivers received these kits through training workshops held at local NGOs. During the workshops, parents learned how to teach their children about health, hygiene and nutrition using the outreach materials in the kit. Trainers who had attended intensive Train-the-Trainer sessions through Nayantara conducted the three-day workshops.

The purpose of this study was to examine the effective of the caregiver training workshops on caregivers and trainers, and the effect of Kit 1 materials among caregivers and 3- to 7-year-old children. In addition, the study investigated whether any actual changes in the health, hygiene and nutritional habits of the beneficiaries had taken place as a result of the outreach. As an independent social research agency in Bangladesh, MRC-MODE was commissioned by Sesame Workshop to undertake this evaluation.

1.3 Objectives of the Study

The study sought to evaluate the outreach program from the perspectives of the providers (trainers) and the recipients (caregivers and their children).

The broad objectives of the study were as follows:

- To evaluate the educational impact of the outreach materials included in Kit 1 on the following:
  - Caregivers' health, hygiene, and nutrition knowledge and practices
  - Children's health, hygiene, and nutrition practices.
- To evaluate the effectiveness of the trainers.
- To evaluate how thoroughly caregivers understood the targeted issues of health, hygiene and nutrition after participating in workshops.

Chapter 2
Methodology

2.1 Study Design

Since the timing of the dissemination of Kit 1 precluded the possibility of collecting pre-exposure information, the study was designed to counter the absence of this baseline data. This was particularly important because studies like this one typically measure impact by measuring changes in the lives of subjects after they are exposed to the material. To compensate, a "control-test" model was followed, whereby primary data was collected from subjects in areas that did not receive materials. This primary data became the basis of comparison used to measure behavior change.

The control and intervention (test) groups were as follows:

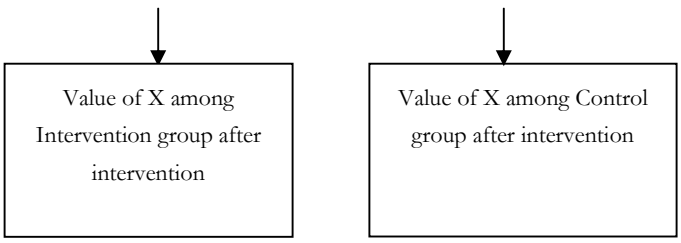
- The "Intervention" group comprised of a set of children and caregivers who participated in the outreach program. In this report, caregivers or households in the intervention group will be referred to as "program households," "program beneficiaries," or "program caregivers."

- The "Control" group comprised of a set of children and caregivers selected from locations that were near/adjacent to the program areas, where the intervention had not taken place. The group was similar in their socio-economic and demographic characteristics to the intervention group. In this report, caregivers in the control group will be referred to as "non-program caregivers/households."

Theoretically, the results of a control-test model can be used to show that test groups change their behavior after an intervention while the behavior of the control group (who has not been a part of the intervention) remains unaffected.

Thus, after an intervention has been carried out, the **Net Impacts of Intervention** can be calculated as:

Net Impacts Of Intervention = $X^I - X^C$



In other words, it is possible to draw conclusions about the effectiveness of the intervention by comparing the values of variables for the "intervention" and the "control" group after the intervention has taken place.

To increase validity, we corroborated the findings from the control-test study by independently asking the "intervention group" to identify changes they noticed in their health, nutrition and hygiene habits due to the outreach program. The use of both qualitative and quantitative proved an effective way of approaching the main goal of the study, which was to help program implementers isolate the "net" impacts of the intervention.

2.2 Research Approach

Before collecting primary data, the research team conducted a desk review of materials to ensure that they had a thorough understanding of the educational messages presented in the outreach kit. The research team also analyzed and summarized relevant studies conducted by private and government-sponsored researchers. Specifically, researchers gathered information about affecting attitudinal and behavioral change among adults and children, and on Bangladeshi caregivers' and children's knowledge of and attitudes about health, hygiene, and nutrition. This information was used to create research designs, questionnaires and protocols.

As mentioned, the study incorporated both quantitative and qualitative methods of data collection in a control-test design. Researchers focused on collecting data on the Knowledge, Attitude and Practices (KAP) of the "control" and "test" respondents regarding health, hygiene and nutrition habits and practices. Researchers also collected data about the inputs and processes of the program so as to understand the effectiveness of knowledge dissemination by the outreach program.

2.3 Selection of Target Groups

The groups of respondents targeted under the evaluation included:

- Trainers
- Caregivers
- Children in the age bracket of 3-7 years of the caregivers

As the program followed a control-test method, researchers collected paired samples of caregivers and their children. Specifically, one caregiver/child sample came from the intervention areas, while the other caregiver/child sample was selected from regions that were socio-economically similar and geographically proximate to the intervention region.

Caregivers selected from the intervention areas were systematically chosen from the list of beneficiaries provided by the client. Children in intervention areas were automatically selected once the caregivers were selected. Caregivers in control areas were selected from households (hereafter called "HHs") that had a similar socio-economic background to those HHs from where the program beneficiaries had been chosen. Again, the selection of children was automatic once the caregivers had been chosen.

The Trainers were selected from program personnel who conducted the workshops in the locations that were chosen for survey.

2.4 Information Gathered from Target Groups

The primary data collected for each groups is presented below:

Target Group	Information sought from Intervention Areas	Information sought from Control Areas
Trainers	• Profile • Ability to disseminate knowledge • General knowledge about health, hygiene and nutrition issues • Awareness about kit materials and contents	N/A
Caregivers	• Socio-economic profile • KAP (knowledge, attitude and practices) about health, hygiene and nutrition pre- and post-intervention • Perceptions of workshops • Perceptions of trainers • Perceptions of outreach kit • Use of outreach kit with children	• Socio-economic profile • KAP (knowledge, attitude and practices) about health, hygiene and nutrition
Children	• Socio-economic profile • KAP (knowledge, attitude and practices) about health, hygiene and nutrition pre- and post-intervention • Awareness of kit messages • Use of outreach kit	• Socio-economic profile • KAP (knowledge, attitude and practices) about health, hygiene and nutrition

2.5 Research Tools

Three data collection techniques were used:

- **In-depth interviews** with selected program caregivers and trainers about the usefulness of the materials and training workshops. Researchers asked open-ended question in an effort to elicit the thoughts, perceptions and opinions of respondents regarding the outreach program. With beneficiaries, interviewers focused on questions regarding perceptions of the workshops, the kit, the trainers, and the program's contribution to improving quality of life. Interviewers also asked for suggestions for improving the program in the future. With trainers, interviewers asked questions about awareness levels about the outreach materials and the kit contents. Like the beneficiaries, trainers were also asked to provide feedback on improving the program. These qualitative interviews were meant to augment the findings from the quantitative study and largely

focus on responses to the outreach program and materials; as such, similar interviews were not conducted with respondents from the control group.

- **The administration of quantitative surveys through one-on-one interviews** with caregivers and their children from both intervention and control groups. Researchers conducted one-on-one interviews using structured questionnaires designed to ascertain the KAP of the respondents (both caregivers and children) as related to health, hygiene and nutrition in both the control and test areas One-on-one interviews with children used simplified questions designed to be understandable to children between the ages of three and seven years old. Additionally, researchers asked caregivers from intervention areas questions related to different aspects of the outreach program so as to understand perceptions of the intervention.

- **Two types of observations** of caregivers, children, and trainers.

a) **The observation of on-going workshops** in order to assess trainers' ability to communicate with workshop attendees.

b) **HH observational studies** carried out in the HHs of the caregivers from the intervention and control areas. These observations were conducted to assess caregivers' general practices as related to health, hygiene and nutrition with and without intervention.

2.6 Coverage Area Rationale

The original coverage area for the *Sisimpur* outreach program was nine locations reaching approximately 10,000 caregivers. As mentioned, partner NGOs implemented the program by conducting workshops throughout assigned locations. NGOs conducted workshops for batches of caregivers selected from their assigned program area. Each batch of 20-25 caregivers attended a series of three sessions. Each session taught parents how to use different components of the outreach kit.

Researchers decided to focus on four out of the nine locations as the primary coverage area for administrating the quantitative survey and in-depth interviews. Researchers selected these locations by considering two factors:

1) The *Sisimpur* outreach program began in October 2005. By the time this study was in its design phase (approximately January 2006), the program had been in operation for about four months. As each NGO was operating under their own time-line, each had covered a varying number of beneficiaries within this period. To create the most comprehensive evaluation possible, researchers decided to survey NGOs that had completed either all or the majority of their training program.

2) Another factor the research team considered was the time lag between trainings. Specifically, since some batches of caregivers had received training earlier than others, there was the possibility that the time elapsed between the training and the evaluation could influence behavior. Researchers decided to include caregivers from different phases of the training program (i.e. both "old" and "new" batches) to account for this possibility. Thus, the sample was distributed so that it included an equal number of trainees from October, November, December and January.

In line with these criteria, the following four locations (zillas/districts) were selected for survey:

1. Dhaka (Dhaka Division), covered by the NGO Aparajeyo Bangladesh
2. Kurigram (Rajshahi Division), covered by the NGO Chinnumukul Bangladesh
3. Thakurgaon, (Rajshahi Division), covered by the NGO ESDO
4. Cox's Bazar (Chittagong Division), covered by the NGO ISDE

As Kurigram and Thakurgaon were the only two locations where caregivers received training in October, they were automatically selected. The other two locations were chosen because they had a high number of trainees and were geographically distant.

Additionally, researchers sought to investigate the possibility of differences between rural and urban programs. Dhaka was included in the survey because it was the only urban location.

In addition to choosing intervention samples, researchers chose control samples in all four locations. The control samples were chosen from adjoining villages/areas that were socio-economically comparable to the program areas. For Dhaka, where the NGO Aparajeyo Bangladesh was primarily working with slum children, control groups were selected from adjoining slums.

2.7 Sample Size by Location

The quantitative survey had two components: interview and observation.

The household sample size for the interview was estimated using Fisher's formula, in which the design effect was assumed to be 1.5:

$$N/\text{domain} = (z^2 \times p.\, q) / d^2 \times \text{design effect}$$

Using this formula, the sample size for the HH coverage for interviews was 600 for the four intervention areas (150 in each area). The sample size of the control group was equal to 50% of the intervention sample, *i.e.*, 300 HHs for the four control areas (75 in each area). In each of these 900 HHs, one caregiver plus one child in the age bracket of three to seven years old were contacted for the one-on-one interviews.

For the household observation component 75 households were randomly selected from the already interviewed households (50 in intervention areas and 25 in control areas). Another 75 households were randomly selected (50 in intervention areas and 25 in control areas) which were not part of the interviews to offset any sensitization due to interviews. Thus, in all 150 households were covered for the observation component.

Researchers conducted in-depth interviews with another sub-sample of 20 HHs randomly selected from the 600 HHs in the intervention areas.

The Tables A, B and C show the realized sample sizes of caregivers and children:

Table A: Sample Size for Caregivers and Children

Research Tools	Intervention	Control	Total
HH quantitative survey			
Caregivers	600	301*	901
Children	600	301*	901
Total interviews	**1200**	**602**	**1802**
In-depth interviews	20	-	20
Observational sessions	100	50	150 HHs

** An extra household was covered in the control sample.*

Sample Size by NGO

As mentioned, the survey investigated training sessions at four partner NGOs in four locations. Researchers decided to equally distribute the 600 test group subjects in the quantitative survey across the four locations. Consequently, the sample included 150 subjects at each NGO in each location. The sample was also equally distributed according to date of training in order to factor for the time lag. Since the survey was carried out four months into the program, the sample for caregivers was spread out as 150 receiving training in October, 150 receiving training in November, 150 receiving training in December and 150 receiving training in January.

Chinnumukul Bangladesh in Kurigram and ESDO in Thakurgaon were selected because they were the only two NGOs to have trainings in October. Seventy-five respondents were selected from the October trainees of these two NGOs to fulfill the quota of 150 for the first month. Twenty-five respondents each were selected from the November, December, and January trainings at these organizations.

Aparajeyo Bangladesh and ISDE did not provide substantial training in October. Therefore, their sample was distributed as 50 for November, 50 for December and 50 for January to fulfill the requisite quota.

Therefore the sample distribution across NGOs was as follows:

Table B: Sample Size Realized by NGOs

NGO	October	November	December	January	Total
Aparajeyo Bangladesh, Dhaka (Dhaka)	0	50	50	50	150
Chinnumukul Bangladesh, Kurigram (Rajshahi)	75	25	25	25	150
ESDO, Thakurgaon (Rajshahi)	75	25	25	25	150
ISDE, Cox's Bazar (Chittagong)	0	50	50	50	150
Total	**150**	**150**	**150**	**150**	**600**

For the control group, a sample of 75 HHs was selected from adjoining villages/areas located in each of the four study sites.

Program Process Review

As mentioned, the attempted to investigate the process elements of the outreach program in order to determine how effectively the workshops were implemented.

In this regard, researchers designed one workshop study intended to assess the process of knowledge dissemination between trainers and participants. This for workshop observation took place in Chakaria, Cox's Bazar, during the second week of February. The survey team supplemented this data with an "informal" observation of a workshop conducted by Aparajeyo Bangladesh in Dhaka to compare the process in an urban setting.

Additionally, researchers conducted in-depth interviews with five program personnel selected from the study's four program areas. Researchers interviewed two trainers working for Aparajeyo Bangladesh in Dhaka and one trainer each from Kurigram, Thakurgaon and Cox's Bazar.

Therefore, the final sample sizes realized across different target groups are as follows:

Table C: Sample Size by Target Groups

Target Group		One-on-One	In-depth	Observation
Trainers		-	5	1
Caregivers	Test	600	20	100
	Control	301	-	50
Children	Test	600	-	-
	Control	300	-	-
Total		**1801**	**25**	**151**

2.8 Sample Selection Procedure and Survey

In the four survey locations, researchers conducted the HH quantitative survey and observational sessions among HHs of caregivers who participated in the workshops. These caregivers were randomly selected from the list of workshop attendees provided by the four selected NGOs.

Before starting fieldwork, the survey team contacted the selected NGOs and asked for complete lists of the caregivers who received training under their particular program, separated by batch.

The survey team followed a stratified sample selection approach in which the initial sampling occurred at the batch level followed by the individual level. That is, the survey team first randomly selected a requisite number of "batches" from the list the NGOs provided. Since the sample size for each NGO was 150, the survey team initially selected approximately 12 batches.

Next, the survey team asked each NGO to provide with the full contact information for the 20-25 caregivers included in each selected batch. The survey team used the addresses provided to visit the

locality of each batch, where they systematically selected the names of 12-13 caregivers for interviews.[3] The survey team contacted these caregivers at their households so as to complete the required interviews. During these HHs contacts, the survey team also interviewed one child member of the HH who fell in the age bracket of three to seven years old and had used the kit. If there was more than one child with these characteristics, then the KISH method[4] was used to randomly select one respondent for interviews.

The survey team selected a sub-sample of 100 HHs out of the 600 HHs selected for the quantitative survey for the observational studies. Out of these 100 observational studies, half of the sessions were conducted in households that had already been selected for caregiver interviews. The remaining observational sessions were conducted in households of caregivers whose names and addresses appeared in the NGO list, but had not been chosen for the one-on-one interviews.

In these 100 households, the survey team observed the members' general habits as related to health, nutrition and hygiene. Half the households were visited in the morning and half the households were visited in the evening to elucidate the lifestyle and habits of these households as related to a full-day's time. In households that had also been selected for the interviews, it was always ensured that the observation was carried out first to avoid sensitizing the respondents.

After the field team chose a particular locality for the test area survey, they noted all of the villages/areas located nearby that were socio-economically and geographically similar to the program area. From these adjoining areas, the team randomly chose one area for a control area survey. In the selected area, the survey team chose a random starting point. Following a left-hand side rule of fieldwork, the team knocked on every 2nd household and checked whether there were any three to seven year old children in the HH. If such a child was found, the survey team contacted an adult household member and asked him or her to provide information on the socio-economic background of the household. If it was found that the HH was largely socio-economically similar to the program area HH, then the HH in question was considered for interview.[5] One caregiver and

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[3] These caregivers were systematically selected to ensure that an even spread was maintained in the sex distribution of their children. That is, half of the caregivers selected belonged to households with at least one male child in the age bracket of 3-7 years, while the other half belonged to households with at least one female child in the age bracket of 3-7 years. This process of caregiver selection ensured that the child sample had a male to female ratio of 50:50.

[4] When more than one household member is a member of the target population and hence eligible for being surveyed, an objective procedure is utilized to make the selection of an individual a probability selection rather than a convenience selection based on who happens to be available or based on the discretion of the interviewer. KISH method is such a useful method of selecting one person from a household.
Steps for making the selection are: 1. For each dwelling unit the interviewer records the name, gender, and age of all the persons living in the household 2. The interviewer should number the list of eligible persons sequentially 3. Males first in order of decreasing age 4. Then, females in order of decreasing age 5. the interviewer should then refer to a selection table, (named as Kish Table) to see which individual they should choose to interview 5. each schedule has a table with instructions for which person to select

[5] While a variety of parameters- such as income, consumption, nutrition, health, education, housing, level of food security etc. can be used to assess socio-economic background, the most observable indicator is usually "income level". Consequently, the most important criterion used to assess socio-economic levels was average family monthly income. Access to media was another focal point used by the survey team to match households, as this parameter is consequential given the format of the intervention. Additionally, a host of other observable parameters- such as access to water, gas and electricity, education background of household head and structure of housing- was used to carry out the required comparative analysis between control area and test area households, and check if they are socio-economically coherent.

one child were interviewed in each selected HH until the requisite sample size for the control area was realized. Again, the field team chose a portion of the HHs (50) from the control areas as a sub-sample for the observational studies. Half of the sessions were conducted in households where caregivers were interviewed, while the other half was carried out in "un-interviewed" households.

2.9 Recruitment of Research Field Staff

All the field personnel and selected data collection manpower were recruited and appointed temporarily. The recruitment was done using the following procedure.

- All the field posts were advertised and circulated to different institutes and NGOs.
- Candidates were selected according to their performance on an interview
- The recruitment criteria for different categories of field staff were as follows:
    - Education: Graduation in Social Science/ Biological Science
    - Work experience: Experience in related field

2.10 Training of research field staff

The research field staff attended a seven-day participatory training program with focus on the purpose of *Sisimpur* communication in general and in particular the outreach initiative and its implementation process. The training imparted skill on rapport building and communication skills, observation and interview techniques.

At the beginning of the training, participants attended a presentation on some programs for the socially disadvantaged people in Bangladesh. This was followed by detailed presentation on the *Sisimpur* activities. After each presentation, there were question-answer sessions and open discussions. Facilitators found these information exchanges very helpful for designing the sessions. The training extensively utilized analytical, explorative, and action-oriented participatory methods. Although lecture discussions were the predominant method for the theoretical sessions, practical methods like mock interviews, field enumeration, observation techniques, were also taught to strengthen the quality of training.

The pre-set questionnaires for data collection were discussed in the later part of the training. The participants were trained on issues like how to communicate and to avoid possible biases at field level by crosschecking of collected data by team members and supervisors.

2.11 Pre Testing

Before fieldwork commenced, a sample of caregivers and children chosen from the beneficiaries of Aparajeyo, Bangladesh participated in a pre-test. The purpose of the pre-test was to test the single elements of the research instrument and to uncover unanticipated 'mechanical' problems of the instrument. During pre-testing, the research team observed the interviewing process to ensure that the respondents (particularly children) and interviewers both had clear understandings of the questions. The research team discussed the feedback from the field tests, with Dr. June Lee of Sesame Workshop. It was ultimately used to prepare final versions of the instruments for data collection.

2.12 Quality Control and Monitoring

Field investigators submitted daily observation sheets to the research supervisor. The supervisor would use these sheets identify gaps in data collection and provide field investigators with the necessary guidance to fill these gaps. All collected data were checked and verified at the field level, and research supervisors checked each other's data at the field level in order to ensure accuracy. The answers in the questionnaire were coded and entered into the SPSS program-version 11.5. The Data Entry Operator entered all the data collected by the field investigators. Some qualitative information was also analyzed manually

2.13 Data Processing and Analysis

Data checking was done twice. First, the field investigators checked completed questionnaires for completeness and correctness prior to leaving the place of interview. Secondly, the supervisor rechecked the questionnaires for completeness, correctness and consistency. Every attempt was made to correctly code the data. Then the field team transferred the entire data set to the data analyst who entered data into the computer and conducted one final round of checking and cleaning before analysis. Next, researchers calculated frequency distribution and proportion of important variables. Statistical analysis was performed using SPSS for Windows. T-tests for measured data and chi-square tests for categorical data were performed to ascertain statistical differences between groups. Statistical modeling using Binary Logistic regression was carried out to assess the impact of various independent factors on behavioral outcomes of interest.

Control and test groups were compared using appropriate statistical techniques based on the null hypothesis that the groups are similar in their behavior. T-tests have been used to test this null hypothesis for means and proportions, while chi-square tests have been used to test categorical variables.

Chapter 3
Profile of Respondents

3.1 Analysis

Separate chapters have been prepared for "Health and Hygiene" (Chapter 4) and "Nutrition" (Chapter 5). Each chapter presents data gathered from caregivers followed by data from children.

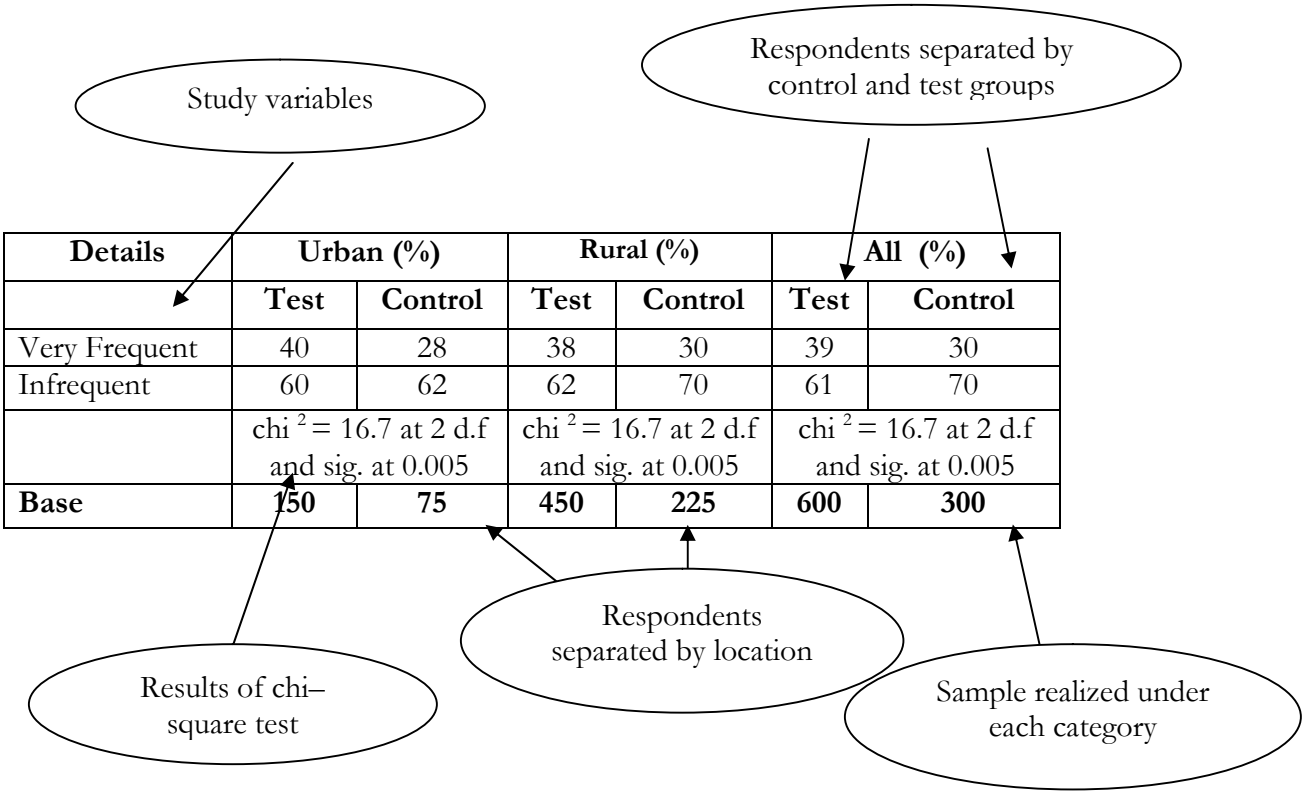
The report begins with socio-economic profiles of the respondents based on information gathered from the caregivers. In addition to helping us understand the background of the program beneficiaries, this information shows us how the control and test groups are matched in their socio-economic backgrounds.

The report also contains a separate chapter (Chapter 6) on the process elements of the program, where we outline the program beneficiaries' perceptions about the outreach kits and the workshops, as well as their opinions on how participation in the outreach project has affected their lives.

In each chapter, we attempted to triangulate our quantitative survey findings with data gathered from household observations and in-depth interviews with caregivers. Secondary data have also been used in relevant cases as a reference for validating primary findings.

An example of how survey data will be displayed in tabular format throughout this report is presented below (see Table D):

Table D: Hand Washing Habits



Details	Urban (%)		Rural (%)		All (%)	
	Test	Control	Test	Control	Test	Control
Very Frequent	40	28	38	30	39	30
Infrequent	60	62	62	70	61	70
	chi ^{2} = 16.7 at 2 d.f and sig. at 0.005		chi ^{2} = 16.7 at 2 d.f and sig. at 0.005		chi ^{2} = 16.7 at 2 d.f and sig. at 0.005	
Base	**150**	**75**	**450**	**225**	**600**	**300**

3.2 Demographic Profile

The initial task of the survey was to ascertain respondents' demographic profile and socio-economic background, including age, education level, and occupation, among other factors. In addition to revealing the background of the program beneficiaries, this analysis was required to observe how well the control sample matched the test sample (see Table 1).

Table 1: Distribution of Respondents by Age and Gender

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Age Distribution- Caregivers						
Upto 20	11	9	5	6	7	7
21-30	66	68	60	70	61	70
31-40	19	20	31	20	28	20
41-50	3	3	4	3	4	3
50+	1	0	•	•	1	•
	chi ^{2} = 1 23 at 4 d f and sig at 0 872		chi ^{2} = 9 45 at 4 d f and sig at 0 051		chi ^{2} =7 29 at 4 d f and sig at 0 121	
Average Age In years ***	28.6	27.7	29.8*	27.8	29.5*	27.8
	t = .924, sig. at .356;		**t = 3.742, sig. at .001**		**t = 3.659, sig. at .001;**	
Age Range					16-70	18-60
Age Distribution- Interviewed Children						
03 yrs	19	9	11	12	13	11
04 yrs	23	29	18	19	19	22
05 yrs	28	25	22	31	24	29
06 yrs	23	19	26	21	25	21
07 yrs	7	17	23	17	19	17
Average age In years ****	4.8	5.1	5.3	5.1	5.2	5.1
	t = -1.58, sig. at .115;		**t = 1.85, sig. at .065**		**t = .85, sig. at .396;**	
Sex of Caregiver s						
Male	0	0	3	0	2	0
Female	100	100	97	100	98	100
Sex of Children						
Male	50	48	50	49	50	49
Female	50	52	50	51	50	51
Base (n)	**150**	**75**	**450**	**226**	**600**	**301**

Note-

i) The symbol "•" refers to figures that are less than 1%

ii) Due to rounding up of digits, the percentage figures given the columns sum up to between 99-101 percent.

Note: * refers to figures that are statistically significantly higher or lower between the test and control groups by urban, rural and all areas

The survey findings reveal that the control and test groups are closely matched in their age distribution, with the majority of the caregivers for both groups falling into the age range of 21-30 years. The average age for the test group was 29.5 years, which appears to be very close in magnitude to that of the control group (27.8 years), but is actually a statistically significant difference. Female respondents were almost always the primary caregivers (98 percent for test sample and 100 percent for the control sample).

The test and control samples of children also have closely matched distribution. The average for both groups is approximately 5 years. The male to female child ratio is 50:50[3] for the test sample and 49:51 for the control sample (see Table 2).

Table 2: Relationship of Caregivers with Children

figure in (%)

Relationship	Test	Control
Mother	92	97
Father	2	*
Aunt	1	*
Grand mother	3	2
Siblings (female)	1	*
Base	**600**	**301**
	chi ^{2} = 11.43 at 4 d.f and sig. at 0.022	

Ninety-two percent of the sampled caregivers who have participated in the *Sisimpur* outreach program are mothers, while 2 percent were fathers. Apart from parents, some of the caregivers who have attended the workshops are aunts (1%), grandmothers (3%) and female siblings (1%) of the children.

Similarly, in the control sample, 97 percent of the caregivers interviewed were mothers to the children, two percent were grandmothers and one percent were sisters. (see Table 3)

Table 3: Relationship of Caregivers with Household (HH) Head

figure in (%)

Status	Test	Control
Self	6	2
Spouse	88	95
Parent	3	2
Daughters	2	0
Sister	1	0
Son	0	1
Base	**600**	**301**
	chi ^{2} = 16.93 at 5 d.f and sig. at 0.005	

Most caregivers (mothers) to the children were usually spouses to the household heads (most households in Bangladesh are headed by male members, especially in the rural areas). Eighty-eight percent of caregivers in the test sample and ninety-five percent of caregivers in the control sample had spousal relationships with the HH head. Only six percent of the program beneficiaries were primary caregivers as well as primary breadwinners for the HH (this figure is two percent for the control sample).

Three percent of the program caregivers are parents of the household head. Two percent are the daughters of household heads while another one percent were sisters of household heads.

Table 4: Marital Status of Caregivers

figure in (%)

Status	Test	Control
Married	95	98
Unmarried	2	1
Divorced	1	0
Widow	2	1
Base	**600**	**301**
	chi ^{2} = 6.74 at 3 d.f and sig. at 0.08	

[3] As mentioned, the 50:50 sex ratio for the program children was achieved by setting equal quotas for each sex.

Ninety five percent of participants were married, while the remaining 5 percent were not married. Out of these respondents, 2 percent had never been married, 1 percent was divorced and 2 percent were widows (see Table 4). For the control sample, 98 percent of the respondents were currently married, 1 percent had never been married, while the remaining 1 percent are were widows (see Table 4).

These analyses show that the caregivers who participated in the *Sisimpur* Outreach program are mostly dependent mothers between the ages of 20 and 30 years old.

3.3 Education and Occupational Background

After ascertaining the demographic background of the program caregivers, the survey uncovered the socio-economic profile of the households. Respondents were asked to provide information on the educational and occupational background of the main breadwinner in their households. Table 5 below summarizes their answers.

Table 5: Education and Occupation Background of Household Heads

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Education Background *						
Illiterate	28	20	36	39	34	34
Literate with no formal schooling	15	8	21	25	19	21
Primary - till class V	37	48	26	24	29	30
Secondary – till class X	18	20	12	8	14	11
SSC degree or higher	2	4	3	4	3	4
	chi ^{2} = 5 030 at 4 d f and sig at 0 284;		chi ^{2} = 4 786 at 4 d f and sig at 0 310		chi ^{2} = 1 630 at 4 d f and sig at 0 803;	
Occupation Background**						
Agriculture	0	0	32	24	24	18
Day laborer	11	1	33	40	28	33
Support level Staff/domestic help	6	4	*	2	3	2
Rickshaw puller	28	28	6	4	11	10
Skilled worker	27	28	6	6	11	12
Petty trader/shopkeeper	14	14	17	16	17	16
Service Sector Work	5	3	2	1	3	1
Business	3	5	0	0	1	1
	chi ^{2} = 7 599 at 12 d f and sig at 0 816;		chi ^{2} = 24 823 at 13 d f and sig at 0 024		chi ^{2} = 20 885 at 14 d f and sig at 0 105	
Base	**150**	**75**	**450**	**226**	**600**	**301**

Note: Only "major" occupations have been listed

As the table above reveals, the intervention and the test groups were well matched in terms of basic demographic characteristics such as education and occupation of the household head in both urban and rural locations.

Caregivers who participated in the outreach program were primarily selected from households with extremely low levels of education. Thirty-four percent of the program caregivers come from

households where the main breadwinner is illiterate, while another 19 percent belongs to households where the main breadwinner has only basic reading and writing skills.

Only 45 percent of the caregivers reported belonging to households where the main breadwinners have some levels of education. Those respondents who had education often had acquired only a low level of education: 29 percent had completed some levels of primary education (up to class V) and 14 percent had completed some levels of secondary education (up to Class X). Therefore, only three percent of the program sample reported attaining an education equivalent to an HSC degree[4] or higher.

The control group's educational background is similar to that of the test group. Thirty-four percent of control respondents belong to "illiterate" households, while 21 percent belong to households where the main breadwinners have "no formal schooling". A sizeable portion also belongs to households with some levels of primary education (34%) and secondary education (11%). Again, the proportion of respondents completing an HSC degree or higher is only four percent, which is extremely low.

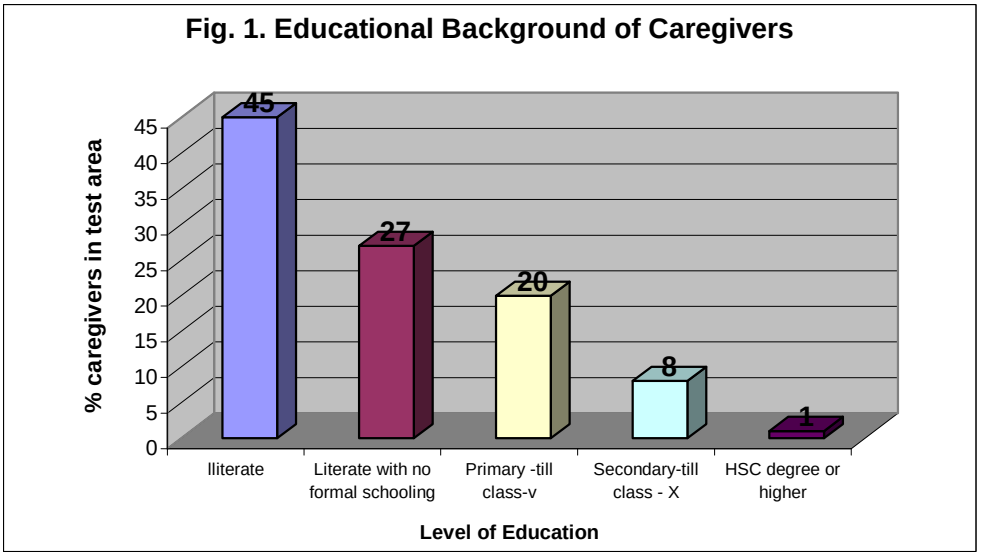
The program beneficiaries from the urban locations tended to belong to households that were marginally better educated than rural ones. The illiteracy rate for the urban test sample is 28 percent, compared to 36 percent for the rural test sample. Additionally, a higher proportion of the urban sample belong to households where the head of household attained some level of primary education (37% of urban households compared to 26% of rural households) and secondary or higher education (20% urban compared to 15% rural).

Note:

1) These differences in the education background of urban and rural beneficiaries are relevant because the level of education might be a "confounding" factor influencing the health, hygiene and nutrition habits of households. Subsequent chapters of this report discuss the relevant cross analysis carried out to test whether this is, indeed, the case.
2) The discrepancies in the rural and urban illiteracy rates are also present at the national level. According to the Bangladesh Bureau of Statistics (BSS), the adult literacy rate for urban population in 2002 was 66.5%, compared to 45.3% for the rural population.

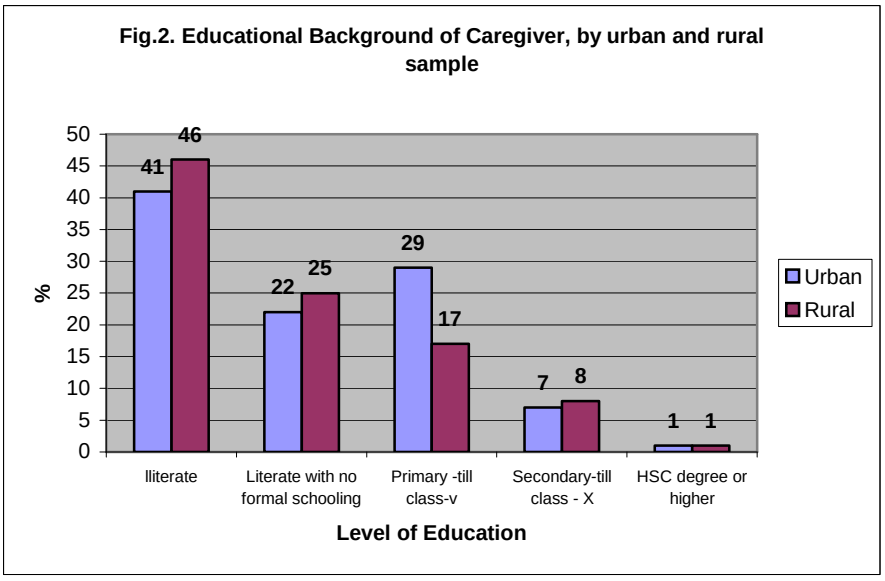
The data on the occupational background of household heads further reveals socio-economic discrepancies along a rural-urban split. Caregivers in both control and test groups drawn from the urban location (Dhaka) mostly belong to household predominantly headed by urban professionals such as rickshaw pulling (28%), skilled labor (27%) and petty trade (14%). On the other hand, rural caregivers mostly come from households headed by "day laborers"[5] (33%) and agricultural workers (32%).

In addition to the education background of the household heads, the survey also investigated the level of education attained by the caregivers themselves. Again, this analysis was considered important because trained caregiver's educational background could possibly influence the process by which caregivers disseminated knowledge to their children.



*chi^2=12.94 at 4 d.f and sig. at 0.012

The survey shows that 45 percent of the program caregivers were illiterate, while another 27 percent d only basic reading and writing skills. Out of the remainder with some levels of education, 20 percent had completed between grades one and five, while another eight percent of the program caregivers completed between grades five and ten. Only one percent of the respondents reported completing an H.S.C. degree (see Fig. 1).



* chi ^{2} = 11.062 at 4 d.f and sig. at 0.026

[4] In Bangladesh, an HSC degree is equivalent to completing high school.

[5] The term "day laborers" usually refer to unskilled labor employed in various types of work like construction, brick-breaking and agriculture, who are paid on a day-to-day basis.

Although a comparative analysis of urban and rural caregivers indicates that illiteracy rates between the two groups are close (42 percent for urban caregivers and 46 percent for rural caregivers), the chi square test reveals an association between location and education level. The difference between the proportion of individuals in the urban group who have completed their primary education and their rural counter parts is statistically significant (29% for urban program caregivers compared to 17% for rural caregivers; see Fig. 2).

Discussion

Overall, the survey findings indicate that program beneficiaries mostly belong to households with poorly educated household heads engaged in low-income work such as day labor, agriculture, and rickshaw pulling. The caregivers themselves also have low levels of education: nearly half of them are illiterate. However, it appears that there is a statistically significant difference between the education levels of urban and rural groups (urban groups tend to have more education), although these differences only appear in the lower stratums of educational attainment. The proportion of respondents with more than 10 years of schooling is very minimal, for all groups concerned.

These findings are compatible with the intentions of the outreach program design, which was targeted at improving hygiene and nutrition habits of children in vulnerable communities.

3.4 Access to Education for Children

In addition to collecting data on the educational background of caregivers and household heads, the survey also investigated the educational status of all school-aged children (between five and seven years old) in the program households.

The 600 households included in the test sample included 692 children between the ages of there and seven years old. Out of these 692 children, 557 children fall in the school-going age bracket of 5-7 years (102 urban and 455 rural).

Table 6: Educational Status of Children aged between 5-7 years

	Urban (%)	Rural (%)	All (%)
Ever Attended School			
Yes	78	58	62
No	22	42	38
Base (number of children)	102	455	557
Currently Attending School			
Yes	99	99	99
No	1	1	1
Base (ever attended school)	80	264	344
Level Completed			
First	38	73	64
Second	2	16	13
Third	2	3	3
Nursery	52	6	18
Playgroup	5	0	1
Madrasa	0	2	1
Type of School			
Formal	81	35	46
Non-Formal Education	19	65	54

The survey reveals that 62 percent of school- aged children in program households have never attended school. School attendance rates are higher in urban areas in rural ones (78 percent of urban children had ever attended schools compared to 58 percent of the rural children). Nearly all of the children who ever attended school were currently attending school at the time of the study (see Table 6).

Forty-six percent of current school-goers reported participating in formal education, while the remainder is enrolled in non-formal schools. The high proportion of NFE school attendees may be attributable to the fact that the partner NGOs working with the *Sisimpur* Outreach projects have early education programs. Thus, it is possible that some of the beneficiaries come from the non-formal school programs of the NGOs.

The portion of NFE school attendees is also considerably higher among the rural sample, where 35 percent of the children report attending NFE schools compared to 19 percent in urban areas.

3.5 Household Size & Structure of Dwelling

In order to obtain a clearer picture of the demographic conditions of the respondents, an inquiry was made to uncover the HH composition, in terms of average family size (see Table 7).

Table 7: Average Household Size

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Avg. Size	4.8	5.1	5.9	5.6	5.6	5.5
Base	**150**	**75**	**450**	**226**	**600**	**301**

Note : No significant differences were noted in the average household size of control and test respondents in rural or urban location.

The figures show that the average family size for program households is 5.6. Rural caregivers who participated in the outreach program come from much larger households than their urban counterparts. The average family size for urban caregivers is 4.8, compared to 5.9 at the rural level. However there is no statistical difference in family sizes in urban or rural locations.

National estimates provided by the Bangladesh Bureau of Statistics (BBS) based on the 2001 population census show that the average household size for the Bangladesh is 4.8 nationally, 4.5 in urban areas and 5.1 in rural areas. Our sample estimates indicate that caregivers who participate in *Sisimpur* outreach programs in both urban and rural locations come from households where the average family size is larger than national averages (this pattern holds at the zila/district level, as shown by Table 8). Again, these figures indicate the socio-economic vulnerability of the program caregivers.

Table 8: Average Household (HH) Size, by location

Upazilla	Average HH Size	Avg. HH Size at Zila Level, BBS 2001
Dhaka	4.7	4.8
Kurigram	6.0	4.4
Thakurgaon	5.2	4.6
Cox's Bazar	6.4	5.9
All	**5.6**	**5.1**

After uncovering details on the HH composition of the respondents, the next task of the investigation was to collect data on the nature of the dwellings where respondents commonly reside. Table 9 presents a description of these dwellings in terms of home ownership status (owned or rented) and materials used to construct these dwelling:

Table 9: Type and Structure of Dwelling

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Home Ownership Status						
Rented	90	87	2	2	24	23
Owned	3	12	86	78	66	61
Own house in others land	5	1	8	15	7	11
	chi ^{2} = 9 098 at 3 d f and sig at 0 028;		chi ^{2} = 9 753 at 4 d f and sig at 0 045		chi ^{2} = 5 520 at 4 d f and sig at 0 238;	
Common Materials Used to Construct Roof						
Brick	9	7	3	0	4	2
Tin	88	92	71	73	76	78
Thatched	0	0	24	26	18	20
	chi ^{2} = 1.136 at 3 d.f and sig. at 0.768;		chi ^{2} = 9.721 at 5 d.f and sig. at 0.084		chi ^{2} = 7.898 at 5 d.f and sig. at 0.162;	
Type of Wall						
Brick	43	43	2	1	12	12
Tin	43	45	8	4	17	15
Thatched	11	11	82	88	64	69
Soil	0	1	8	6	6	5
	chi ^{2} = 4.065 at 5 d.f and sig. at 0.540;		chi ^{2} = 6.195 at 5 d.f and sig. at 0.288		chi ^{2} = 5.643 at 5 d.f and sig. at 0.343;	
Type of Floor						
Concrete	25	16	1	0	7	4
Brick	48	60	*	*	12	15
Soil	19	24	98	98	78	80
	chi ^{2} = 10.040 at 5 d.f and sig. at 0.074;		chi ^{2} = 2.318 at 4 d.f and sig. at 0.677		chi ^{2} = 8.948 at 5 d.f and sig. at 0.111	
Base N	**150**	**75**	**450**	**226**	**600**	**301**

The analysis demonstrates clear variations in home ownership patterns between urban and rural populations. While a majority of the rural program beneficiaries (78%) own their homes, the reverse is true for urban residents, where most live in rented homes (90%). Furthermore, chi-square tests reveal that, between the test and control group of each location, the home ownership pattern is statistically significantly associated. However, there is not much meaningful variation between the test and the intervention group. For example, 71% of houses have tin roofs regardless of their location. The pattern does not depend on locations. Nationally, the difference is not statistically significant. Additional tests show no differences between the test and control groups in the structures of their homes in each location.

The data also indicate further similarities between the test and control samples. When the groups are compared (urban test vs. urban control and rural test vs. rural control), they are very closely matched

in terms of their home ownership patterns and dwelling structures. These similarities verify the socio-economic coherence between the two samples.

3.6 Monthly Income and Expenditure

Table 10: Average Monthly Income and Expenditure (in Taka)

	Urban		Rural		All	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Average Monthly Family income	3996	3812	3658*	3004	3742*	3205
Median Income	4000	3500	3000	3000	3000	3000
Average Monthly family expenses	3643	3612	3276*	2804	3367*	3005
Base	**150**	**75**	**450**	**226**	**600**	**301**

Note: * refers to figures that are statistically significantly higher or lower between the test and control groups by urban, rural and all areas

The average monthly family income was Tk. 3742 (about US$54) for program households and Tk. 3205 (about US$46) for control area households. In urban areas, test and control samples are closely matched and income does not vary significantly according to T-test results. However, in rural areas and at combined level it appears that test groups statistically have higher incomes and expenditures than their control counterparts (see Table 10).

Considering that the average HH income for Bangladesh is approximately Tk. 7825 per month (according to the Bangladesh Bureau of Statistics, 2001), the survey findings confirm that most HHs that participated in the outreach program earn considerably less than the national average. This is an important detail, as income could be an influential exogenous variable that affects household health and nutrition practices. Specifically, families with lower incomes may lack access to materials needed for good hygiene and nutrition habits.

The effect of income on the health, hygiene and nutrition habits of program beneficiaries will be ascertained later in this report through appropriate multivariate analysis.

The average monthly HH expenditure was Tk. 3367 for program households and Tk. 3005 for test area households. (see Table 10)

It can be inferred from average income levels that most HHs covered by the survey are likely to have very low or non-existent savings levels. This is yet another indicator that signifies the economic vulnerability of these households, and may yet again restrict their ability to engage in positive health, hygiene and nutrition habits.

3.7 Access to Services

Table 11: Access to Basic Services

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Electricity	96	97	8	7	30	30
Piped Gas	41*	27	1	1	11	7
Land Phone	7	9	1	*	3	3
None	**3**	**0**	**90**	**92**	**69**	**69**
Base	**150**	**75**	**450**	**226**	**600**	**301**

Note: * refers to figures that are statistically significantly higher or lower between the test and control groups by urban, rural and all areas

Program caregivers were asked to provide details on their households' level of access to basic services like electricity, gas, and telephone.

Overall, 69 percent of program caregivers reported that they do not have access to any basic services, while the remainder has access to one or more of the listed services. Among this last group, 30 percent have access to electricity, 11 percent have access to gas, and 3 percent have access to land-line phones.

Particularly important is the large variations that exist in service utilization levels between the urban and rural areas which the analysis reveals. Almost all the program beneficiaries who lack access to basic services come from rural areas: 90 percent of rural program respondents reported they do not have access to any basic services. On the other hand, service utilization for urban caregivers is significantly higher, where 97 percent of respondents said that they have access to one or more of the basic services (96% have electricity, 41% have gas and 7% to telephones).

The analysis also shows that the data across the control and test samples are closely matched, except for piped gas availability in urban location.

3.8 Access to Media and Media Habits

Another goal of the study was to elucidate the media habits of the program beneficiaries. Particularly, the study investigated participants' access to media and frequency of media use. This was considered important not only from the perspective of the researchers, but also and the perspective of the outreach staff for the *Sisimpur* project. Since the outreach staff designed the outreach program to reach populations without proper access to media, they were interested in determining if workshop attendees actually fit this media profile. Access to media was one of the primary criteria used to match the control and test samples.

The table below summarizes information on the media habits of the survey respondents:

Table 12: Media Appliance Ownership, Media Access and Media Habits

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Ownership of Media Appliances						
TV	**57**	**56**	**6**	**4**	**19**	**17**
Radio	13*	23	10	7	11	11
Access to Media						
Radio	11*	21	26*	14	22*	16
TV	**58**	**56**	**47**	**38**	**50***	**41**
Newspaper	1	0	1	0	1	0
None	37	37	45	57	43	52
Base	**150**	**75**	**450**	**226**	**600**	**301**
Frequency of TV viewer-ship						
Daily	**92**	**92**	**19**	**9**	**40**	**35**
Once in a fortnight	6	5	31	27	24	20
Once a week	1	3	38	42	27	30
Once in 3/4 days	1	0	12	22	9	15
Base	**87**	**38**	**211**	**86**	**298**	**124**
	chi ^{2} = 1.250 at 4 d.f and sig. at 0.870		chi ^{2} = 8.515 at 3 d.f and sig. at 0.036		chi ^{2} = 5.444 at 4 d. and sig. at 0.245	
Frequency of Radio Listener-ship						
Daily	59	75	49	34	50	48
Once in a fortnight	18	13	23	38	23	29
Once a week	6	13	16	19	14	17
Once in 3/4 days	0	0	10	6	9	4
	chi ^{2} = 4.613 at 4 d.f and sig. at 0.329		chi ^{2} = 3.825 at 4 d.f and sig. at 0.430		chi ^{2} = 2.524 at 5 d.f and sig. at 0.773	
Base	**17**	**16**	**115**	**32**	**132**	**48**

Note: * refers to figures that are statistically significantly different from their corresponding test or control value in the title location.

The respondents were initially asked whether they owned any media appliances. In response, 19 percent of program caregivers reported that they have television sets, while 11 percent reported owning a radio. Ownership of television sets was considerably higher among urban caregivers, where 57 percent of the program caregivers said that they own televisions, compared to only 6 percent of the rural program beneficiaries. The above table shows that the samples are very closely matched in terms of possession of TV sets (see Table 12).

Low levels of TV ownership did not necessarily mean that rural caregivers had limited access to TV. While only 6 percent of rural caregivers reported owning a television, nearly 47 percent of them reported having "access" to television. This can be explained by the existence of "community" televisions.

In Bangladeshi villages, very few individuals own expensive electronic appliances like television. However, this does not mean that community members who do not own electronic media appliances are not exposed to them. In fact, during popular TV programs, viewing often becomes a "community" affair, as many village members gather at the house of a TV owner to watch the show. Consequently, even non-TV owners can be exposed to the electronic medium, although the frequency of their exposure may be low.

The findings from our survey support this trend. Urban respondents who reported owning television sets tend to have high levels of exposure to television: 92 percent of them said they watch TV everyday. This pattern generally holds across control and test groups in urban locations. However, rural respondents who often depend on "community" televisions for exposure, have much lower viewership rates: only 19 percent of them said they can watch TV everyday. Instead, TV viewership is more of a weekly (38 %) or fortnightly (31%) affair. TV viewership is statistically higher among test group than the control group in rural areas.

Box 1
Access to Media in Bangladesh

According to the latest National Media Survey* (2002) conducted jointly by Bangladesh Center for Communication programs (BCCP) and Social Marketing Company (SMC), 25 percent of the population in Bangladesh owned a television. The rate of TV ownership rate was 52 percent in urban areas and 14 percent in rural population areas. Using data from the National Media survey of 1998, it appears that TV ownership in Bangladesh almost doubled between 1998 and 2002 (from 14% to 25%). Thus, even conservative estimates put current levels of ownership of TV in Bangladesh around 30-35 percent. We have calculated that about 18 percent of our total sample owns a television, which is well below the "conservative" national estimate.

In contrast, the National Media Survey of 2002 reports access to TV for the total population of Bangladesh to be around 60 percent. The survey estimated that around 80 percent of the urban population and 50 percent of the rural population had access to TV in 2002. Again, there was a significant increase in TV accessibility rates from 1998 (42%) to 2002 (61%). This increase had occurred at both urban (from 69% to 80%) and rural (from 34% to 50%) levels.

We calculated that around 45 percent of our total sample has access to television. This figure is much lower than the 2002 estimate of 60 percent.

Thus, it is evident that access to media for our sample is limited compared to the rest of the population.

Thus, overall, only 40 percent of caregivers have reported that they can watch TV on a daily basis.

In addition to investigating the media habits of caregivers, the survey attempted to uncover test group children's exposure to television. During the child interviews, children were asked if they watch TV, and if they do, where they usually watch it (see Table 13).

Table 13: TV viewing habits of children

	Urban (%)	Rural (%)	All (%)
Do you watch TV?			
Yes	79	66	69
No	21	34	31
	chi ^{2} = 9.693 at 1 d.f and sig. at 0.002		
Base	**150**	**450**	**600**
Place of Watching TV			
At home	62	7	21
At neighbors home	33	74	64
At friend/relatives home	5	7	7
Community center	0	13	9
	chi ^{2} = 59.388 at 4 d.f and sig. at >0.001		
Base	**47**	**127**	**169**

Sixty-nine percent of children said they watch TV (79% of urban children and 66% of rural children). Urban children usually watch TV at their own homes, while rural children usually watch TV at a "neighbor's home". Thus, the findings show that both the program caregivers and children are not completely without access to television, although the frequency of exposure may be low. Indeed, a statistical difference exists between urban and rural groups on how often and where they watch TV.

Chapter 4
Health & Hygiene Practices

After gathering demographic data, the survey next sought to evaluate the effectiveness of the outreach program. In this context, the focus of the research was the "health and hygiene" component of the outreach program, which was designed to promote healthier lifestyles among program caregivers and their children. During this part of the study, respondents from both the control and test groups answered questions about their daily hygiene practices such as tooth-brushing, hand-washing, bathing and combing hair. The test and control groups were compared to determine whether the program had improved participants' health and hygiene practices.

In this chapter, we present the findings of the health and hygiene habits of the adult and child respondents. For ease of comparison, we present the control and test data side by side for each topic. The research team worked with the null hypothesis that the control and test groups would display similar behavior. The team carried out statistical tests of significance where applicable in order to confirm or reject the null hypothesis. In certain cases, cross-analysis[6] was carried out to determine whether socio-economic variables including income, education, location, sex of child etc., significantly impact health and hygiene habits. We also checked whether knowledge "retention" is an issue by investigating whether program caregiver's behavior varies by date of training. Where appropriate, information gathered from the observational sessions and the in-depth interviews have also been presented to triangulate and further validate any inferences.

4.1 Teeth Cleaning Habits

Teeth Cleaning Materials Available at Home

The first goal of the survey was to investigate the hygiene practices of respondents as related to their teeth cleaning habits. Caregivers reported on the types of teeth-cleaning materials they have at their homes. The study sought to determine what portion of program households owned teeth cleaning materials like tooth-brushes and tooth paste, as outreach messages emphasized that these items are essential to having good hygiene.

Table 14: Types of Teeth-cleaning Materials Available at Household

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Toothbrush	**93***	**64**	**68***	**23**	**74***	**33**
Tooth Paste	**87***	**53**	**40***	**14**	**52***	**24**
Tooth powder	49	44	46*	20	46*	26
Majon	19	27	41	50*	36	45*
Coal/ash	7	20*	32	58*	26	49*
"Neem" tree branch	1	5*	35*	11	26*	10
Base	**150**	**75**	**450**	**226**	**600**	**301**

Note: * refers to figures that are statistically significantly higher or lower between the test and control groups in the respective locations.

The availability of cleaning materials like tooth brushes and tooth paste is much higher in test households than their control counterparts (see Table 14). The difference between these data sets is statistically significant. Allowing for multiple responses, 74 percent of the program caregivers reported they had toothbrushes at their households, while 52 percent reported that they had toothpaste. These figures were only 33 percent and 24 percent respectively among the control households. Forty-six percent of the test respondents also said they had toothpowder in their household, again a statistically higher proportion than the control sample, where toothpowder was only available in 26 percent of the households.

These figures indicate that the availability of teeth-cleaning materials like toothbrushes, toothpaste and tooth powder, are considerably higher in the program households. Differences between test and control samples are also apparent across urban and rural households. In urban areas, almost 9 out of 10 program caregivers reported having toothbrushes and toothpastes at their homes. For non-program households, availability of these materials is much lower: about two-thirds of the control households have toothbrush, while about half of them have toothpaste (see Table 14). Similarly, rural program households also tend to have more teeth cleaning materials that their non-program counterparts. About 7 out of 10 rural beneficiaries reported having toothbrushes in their households, 46 percent reported having toothpowder, and 40 percent reported having toothpaste. In non-program areas, these figures are much lower. Only 23 percent of rural non-program households have toothbrushes and only 14 percent of households have toothpaste. Members of non-program households often use materials like "*majon*"[7] and coal/ash for cleaning teeth. These findings suggest that availability of effective cleaning materials is much higher in program households across urban and rural program locations[8].

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[6] Cross analysis is performed through preparing cross-tables representing the joint frequency distribution of two or more discrete variables. Rows and columns correspond to the possible values of the first and the second or other subsequent variables, the cells contain frequency (numbers) of occurrence of the corresponding pairs of values of the 1st and 2nd or subsequent variable. After performing statistical tests on the results of the tables, it can be predicted whether the variables are associated or not.

[7] A form of toothpowder used in rural areas.

[8] The analysis indicates that effective cleaning materials are more available at urban program beneficiaries' households compared to rural program beneficiaries' households. This is most likely due to "urban" factors (like higher income, better availability etc), rather than the program itself, as confirmed by our observation that availability of these products is also higher for urban control households compared to rural ones.

The survey investigated whether there was a relationship between income levels and possession of cleaning materials. For this purpose, we carried out a cross-analysis using income as the independent variable. Table 15 shows how ownership of teeth-cleaning materials varies across households earning less than and more than the median income of Tk. 3000 per month (approximately US$43):

Table 15: Types of Teeth-cleaning Materials Available at Household, by Income Levels

	Test (%)		Control (%)	
	<Tk. 3000	>Tk. 3000	<Tk. 3000	>Tk. 3000
Toothbrush	**67**	**82***	**23**	**53***
Tooth paste	**39**	**66***	**15**	**41***
Tooth powder	50	43	23	32
Majon	38	33	47	41
Coal/ash	33*	18	55*	38
"Neem" tree branch	39*	13	12	6
Base	**306**	**294**	**195**	**106**

Note: * refers to figures that are statistically significantly higher or lower between the test and control groups in the respective location.

Findings indicate an association between having a relatively higher income and possessing toothbrushes and toothpaste. More than four-fifths of the program households with income in excess of Tk. 3000 per month reported having toothbrushes, while two-thirds of these same households reported owning toothpaste (see Table 15). T-tests reveal that the differences are statistically significant in both cases. For households with incomes lower than Tk. 3000 per month, possession of these teeth-cleaning materials is much lower (67% own toothbrushes while 39% own toothpastes), probably because these households tend to prefer relatively cheaper forms of cleanings materials- like toothpowder and *majon*.

Discussion

This investigation of program caregivers' teeth-cleaning habits of the program indicates that participation in the *Sisimpur* outreach program is associated with increased availability of effective teeth-cleaning materials like toothbrushes and toothpaste in the program households. These positive indicators are apparent in both urban and rural program locations. Not surprisingly, access to these materials are also linked to income levels, higher income households are more likely to have materials like toothbrush and toothpastes available than lower income households.

Daily Teeth Cleaning Habits

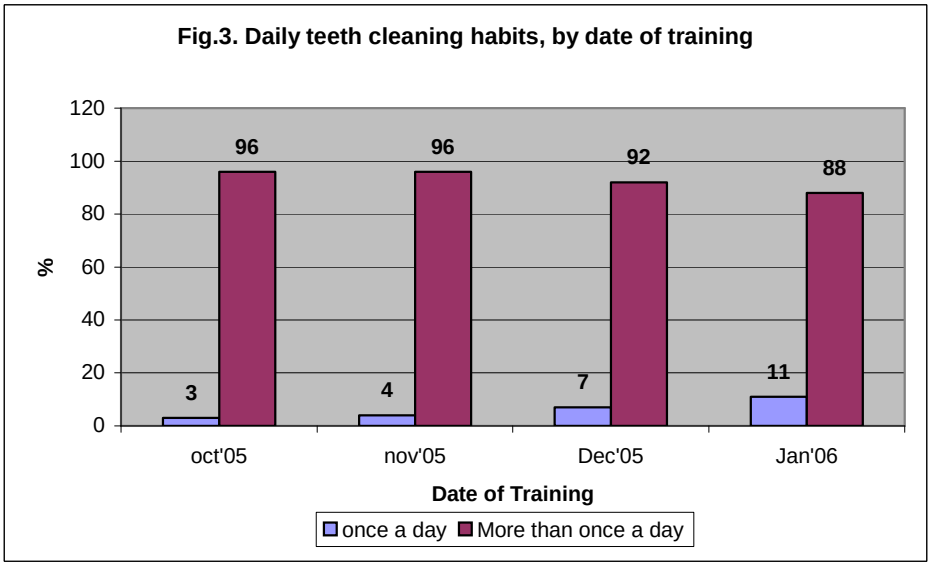
The following part of the survey posed questions to children and caregivers about their daily teeth-cleaning habits (see Table 16).

Table 16: Caregivers' Daily Teeth-Cleaning Habit

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Once a day	5	59	6	48	6	50
More than once a day	**95**	**40**	**92**	**52**	**93**	**49**
	chi^2 = 86.2, at 2 df and p < .0001		*chi^2 = 159.4, at 3 df and p < .0001*		*chi^2 = 240.7 at 3 df and p < 0.0001*	
Base	**150**	**75**	**450**	**226**	**600**	**301**

Test and control respondents reported considerable differences in the daily teeth-cleaning habits. Overall, ninety-three percent of program caregivers reported that they clean their teeth more than once a day, as compared to only 49 percent of the control respondents (see Table 16).

The data also show that program participation is linked to positive teeth-cleaning habits of both urban and rural caregivers: more than 90 percent of the program beneficiaries reported cleaning their teeth more than once a day in both rural and urban locations whereas only about half (49%) of the individuals in the control group reported doing so. The chi square test indicates that there is a statistical association between participating in a workshop and having a higher frequency of cleaning teeth in both urban and rural areas.



An analysis of the program caregivers by their date of training shows no considerable differences between "old batches" and "new batches" of participants: As evident in Figure 3, the frequency of teeth cleaning is consistent among caregivers regardless of whether they received training more recently or several months prior. This suggests that knowledge was effectively retained by workshop attendees from different periods.

The survey also investigated the times of day when caregivers cleaned their teeth. The findings show that control and test caregivers consistently clean their teeth in the morning. However, there are statistically significant differences in their nightly teeth cleaning habits. While 79 percent of program

caregivers reported cleaning their teeth before going to bed, this same figure is only 24 percent for non-program caregivers. Furthermore, both urban and rural program beneficiaries appeared to have the habit of regularly cleaning their teeth at night, as shown by Table 17 below.

Table 17: Time of Cleaning Teeth- Caregivers

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
In the morning	100	100	100	100	100	100
After eating	13	8	12	8	12*	8
In the night	**72***	**29**	**82***	**22**	**79***	**24**
Before prayer	2	0	9*	20*	7*	15
Base	**150**	**75**	**450**	**226**	**600**	**301**

Note: * refers to figures that are statistically significantly higher or lower between the test and control groups in the respective location.

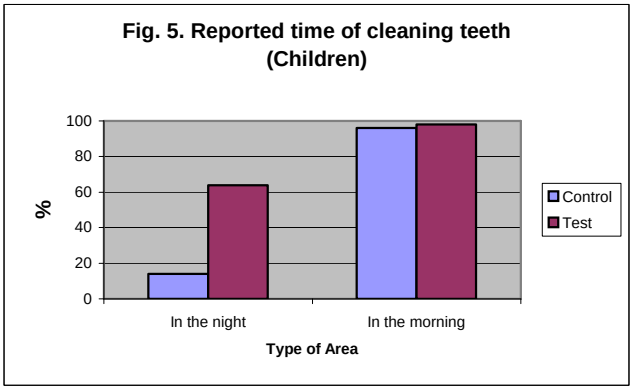
In addition to caregivers' daily teeth cleaning habits, the survey also uncovered children's daily teeth cleaning habits. Children were asked about the number of times they clean their teeth in a day, and that times at which they usually brush their teeth. (see Table 18).

Table 18: Children's daily teeth cleaning habits

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Once a day	27	59	32	79	31	74
Twice a day	**69**	**24**	**62**	**18**	**64**	**20**
Cannot say	1	15	2	*	2	4
	$chi^2 = 49.32$, at 4 df and $p < .0001$		*$chi^2 = 136.17$, at 4 df and $p < .0001$*		*$chi^2 = 171.07$, at 4 df and $p < .0001$;*	
Base	**150**	**75**	**450**	**226**	**600**	**301**

Findings show that most of the program children, like their caregivers, are in the habit of cleaning their teeth twice a day. Almost two-thirds of the program children in the intervention group reported cleaning their teeth an average of two times everyday, compared to only one-fifth of the children in the control group. These differences are statistically significant (see Table 18).

Children in the intervention and control groups were equally likely to brush their teeth in the morning, but those in the intervention group were more likely than those in the control group to brush their teeth at night (see Fig. 5).



To further validate the children's responses, caregivers were asked to describe their children's teeth-cleaning practices. Caregivers' responses verified the observed behavioral differences between program and non-program children. Eighty percent of program caregivers reported that their children were in the habit of cleaning their teeth twice a day compared to only 25 percent of the non-program caregivers (these differences are also statistically significant at the 99% level). Both urban and rural program children displayed this "improved" behavior more frequently than their counterparts in the control sample (see Table 19).

Table 19: Daily habits of children cleaning teeth (responses by caregivers)

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Once a day	9	59	22	77	19	73
More than once a day	**89**	**37**	**77**	**21**	**80**	**25**
	chi^2 = 70.7, at 4 df and p < .001;		*chi^2 = 202.5, at53 df and p < .001*		*chi^2 = 268.9 at 3 df and p < 0.001;*	
Base	**150**	**75**	**450**	**226**	**600**	**301**

Discussion

This investigation of teeth-cleaning habits indicates that caregivers and children in test group households reported cleaning their teeth more frequently than control group households. While cleaning teeth in the morning is universal across program households, 8 out of 10 caregivers in program households reported that they and their children also clean their teeth before going to bed. In contrast, only one-fourth of control group households reported nightly teeth-cleaning among caregivers and children.

Teeth Cleaning Habits using Materials

Next, the study investigated what materials are used during teeth-cleaning (see Table 20).

Table 20: Materials used for cleaning teeth- Caregivers

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
With brush	**77***	**53**	**37***	**11**	**47***	**22**
Toothpaste	**73***	**44**	**22***	**8**	**35***	**17**
Tooth powder	14	11	18*	7	17*	8
Majon	31	51	42	50	41	50
With *daton* (tree branch)	1	1	20*	1	15*	1
Coal/Ash	1	8*	19	41*	14	33*
With water only	9	13	1	0	3	3
Finger	0	0	4	3	3	2
Base	**150**	**75**	**450**	**226**	**600**	**301**

Note: * refers to figures that are statistically significantly higher or lower between the test and control groups in the respective location.

The caregivers' responses indicated that program caregivers tended to use teeth cleaning materials like toothpaste and toothbrush more than control group caregivers. About half of the program caregivers reported that they used toothbrushes (as opposed to 22 percent of those in the control

group), and about one-third of them reported that they use toothpaste (compared to 17 percent in the control group). All these differences are statistically significant.

While these figures indicate that usage of effective teeth cleaning materials is higher among program caregivers, this data also has further implications. First, it shows that, in many instances, program caregivers do not use toothbrushes and toothpaste to clean their teeth, especially in rural areas. This suggests that although program caregivers clean their teeth more frequently than control group caregivers, they do not necessarily use a toothbrush and toothpaste to do so. In fact, substantial proportions of program caregivers use materials like tooth powder (17%), majon (41%), tree branch (15%) and even coal/ash (14%).

Another notable trend is the gap between ownership of cleaning materials and the usage of cleaning materials in program households. While the toothbrushes are available in 74 percent of program households and toothpaste is available in 52 percent of the program households, both these items remain underutilized in a considerable proportion of the cases, particularly among rural caregivers. Researchers examined possible explanations behind this scenario by investigating the usage of teeth cleaning materials among children (see Table 21).

Table 21: Materials used for cleaning teeth on last occasion- Children

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
With brush	**83***	**55**	**55***	**12**	**62***	**23**
Toothpaste	**73***	**52**	**33***	**8**	**43***	**19**
Tooth powder	2	8*	13*	7	10*	7
Majon	12	25*	35	40	29	37*
With daton (tree branch)	1	1	7*	1	5*	1
Coal/Ash	3	8	13	43*	11	34*
With water only	4	4	*	1	1	2
Cannot say	2	4	2	1	2	2
Base	**150**	**75**	**450**	**226**	**600**	**301**

Note: * refers to figures that are statistically significantly higher or lower between the test and control groups in the respective location.

When children were asked if they used any materials to clean their teeth the last time they did so, 62 percent reported they had used a toothbrush and 43 percent reported they had used toothpaste (behavior that is statistically different from control sample subjects in both cases). The toothpaste and toothbrush usage habits of the children are closely matched with the availability of these materials in program households. For example, toothbrushes are available in 74 percent of program households, and 62 percent of children from these households reported using toothbrushes the last time they cleaned their teeth. Likewise, toothpaste is available in 52 percent of program households, and 43 percent of children from these households reported using toothpaste the last time they cleaned their teeth. It therefore appears that these materials are kept commonly for use by children, rather than adult household members like caregivers. [9]

These findings indicate that while teeth-cleaning habits of both caregivers and children who participated in the outreach initiative were better than those of non-participants, children benefited from the program more than caregivers. It appears that due to the economic status of many households, many families can only afford to provide teeth-cleaning materials for their children. Data across urban and rural program households appears to confirm this trend: in urban areas, where incomes are higher, findings show that caregivers tend to utilize teeth-cleaning materials like toothbrushes and toothpaste more than their rural counterparts. A cross analysis of usage of teeth-cleaning materials of caregivers across households with different incomes was carried out to validate this assertion (see Table 22).

Table 22: Types of Teeth-cleaning materials used by caregivers, by income levels

	Test (%)		Control (%)	
	<Tk. 3000	>Tk. 3000	<Tk. 3000	>Tk. 3000
With brush	**37**	**57***	**13**	**38***
Toothpaste	**23**	**47***	**10**	**28***
Tooth powder	17	16	8	8
Majon	40	41	48	53*
With daton	25*	5	1	1
Coal/Ash	19*	10	40*	19
Base	**306**	**294**	**195**	**106**

Note: * refers to figures that are statistically significantly higher or lower between the two unsparing groups.

As expected, there was a statistical link between incomes and usage of teeth-cleaning materials in both control and test sample. Usage of pricier items like toothbrushes and toothpaste was significantly higher among caregivers from households earning more than the sample median income. This lends support to the inference that those households that experience difficulty providing teeth-cleaning materials for their all members often opt to use the resources they have to provide these materials only for children.

Another factor that might influence teeth-cleaning habits of caregivers is educational background. As Table 23 shows, toothbrush and toothpaste usage is higher among more educated caregivers[10].

Table 23: Use of toothbrush and toothpaste by caregivers, by education background

	Test (%)			Control (%)		
	No formal ed.	**Primary ed.**	**Secondary or higher**	**No formal ed.**	**Primary ed.**	**Secondary or higher**
With brush	40	60	68	10	31	57
Toothpaste	28	49	55	7	24	46
Base	**417**	**121**	**62**	**178**	**86**	**37**

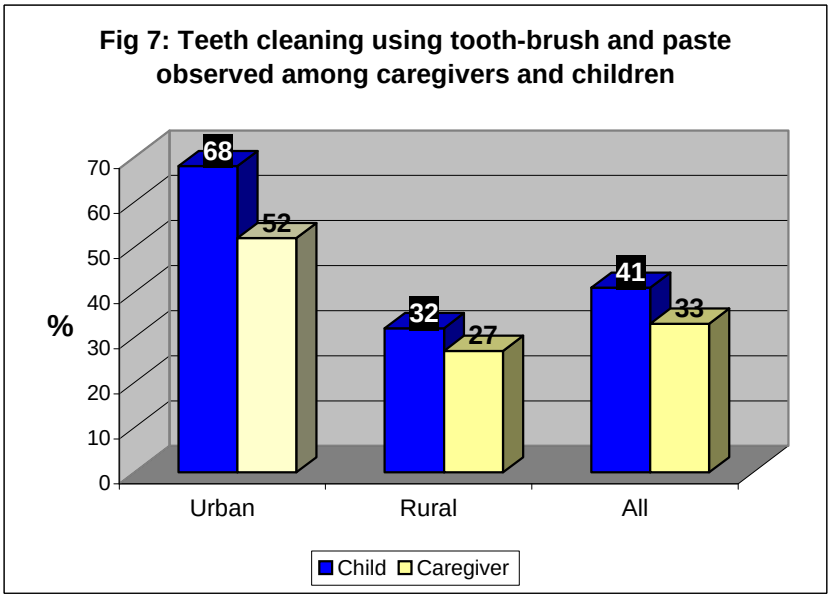
It is important to remember that that in Bangladesh, teeth-cleaning is an "attitudinal" issue. In many parts of Bangladesh (especially rural areas), many adults are accustomed to years of using materials

[9] Even considering children's reported usage habits, there appear to be gaps between ownership and usage of teeth-cleaning materials. It is therefore impossible to dismiss the possibility that respondents may have engaged in some "over-reporting."

[10] We subsequently observed that usage of toothbrushes and toothpaste are relatively higher among urban caregivers (as seen in table 20), where households have higher incomes and education levels.

like tooth powder, majon, and tree-branches. Furthermore, the training was emphasized the importance of cleaning teeth using materials that were locally available rather than materials that were not affordable. Consequently, while the outreach program may have been able to influence caregivers to clean their teeth more frequently, it might not have resulted in a change in materials used.

HH Observation Findings



Findings from our household observations further support behavioral differences between program children and caregivers. Out of the program households observed, children were seen children cleaning their teeth using toothbrushes and toothpaste in 41 percent of the cases. This same figure was 33 percent among program caregivers[11] (see Fig. 17).

Discussion

Overall, the analysis of the teeth cleaning habits of program beneficiaries shows that practices of both program caregivers and children differ from their non-program counterparts. Not only is the availability of teeth cleaning materials higher in program households, program caregivers and children also clean their teeth more frequently than control caregivers and children. However, it appears that the materials available in these households are mostly meant for children's use, especially in cases of lower income families. Thus, while participation in the program is related to more frequent teeth cleaning among program caregivers (compared with non-program caregivers), it may have been more successful with children, who not only brush teeth more frequently, but also regularly use a toothbrush and paste to do so.

Opinions of Beneficiaries about changes in Teeth Cleaning Habits

Program caregivers were asked to provide opinions about whether they believed they had changed their teeth-cleaning habits because of the outreach program. Ninety-eight percent of the program beneficiaries replied in the affirmative, believing that the program had helped to change their teeth-cleaning habits. The types of changes they cited are as follows: (see Table 24).

Table 24: Opinions of caregivers about changes in Teeth-cleaning habits

Opinions	All (%)
Clean teeth more regularly	**71**
Clean teeth twice a day	62
Bought a toothbrush	**23**
Clean teeth after meals	23
Use materials to clean teeth	18
Make sure children clean teeth regularly	17
Use brush/paste	11
Base	**590**

The caregivers' opinions also show that the changes that have taken place in their habits due to the program have to do more with "frequency" of habits than material use.

Knowledge about Proper Dental Care

Researchers sought to determine whether the "core-messages" of the outreach program had been disseminated among the caregivers. An open ended question was posed to both program and non-program caregivers to determine their level of understanding of the need for proper teeth-cleaning habits.

Table 25: Knowledge about need for proper teeth-cleaning habits

	Test (%)	Control (%)
To keep teeth clean	76*	78
To keep our teeth in good condition	43*	24
For overall good health	39*	22
Not to have bad breath	66*	59
Prevent dental carries	16*	7
Strengthen roots	7*	3
Get rid of germs	5*	3
Base	**600**	**301**

Note: 1 * refers to figures that are statistically significantly higher or lower between the test and control groups
2 Multiple responses were allowed
3 Only major responses have been listed

[11] The observational findings also verify improvements in behavior of test children over control children. While program children were observed using a tooth-brush and tooth-paste in 41 percent of the program households, the same observation was made only in 14 percent of children in non-program households.

Overall, caregivers in the intervention group were more likely to give varied responses to the question. Seventy-six percent of the program caregivers felt that good teeth-cleaning practices were needed to keep "teeth clean", while 43 percent opined that such practices kept their teeth in "good condition". Compared to the control group, a higher proportion of test respondents said that proper teeth-cleaning habits were required for "good health", "to prevent bad breath" and to "prevent dental caries" (see Table 25).

4.2 Hand-Washing Practices

After uncovering details about the teeth-cleaning habits of the program caregivers and their children, the study shifted focus to ascertaining the hand-washing practices of the beneficiaries. The aim was to find out whether caregivers and children wash their hands regularly during "critical times" in a day, such as before preparing meals as well as before and after having meals. Another goal was to determine the types of materials participants used to clean their hands.

Hand-Washing Materials Available at Homes

The caregivers were asked about the type of hand-washing materials available in their homes. Findings are displayed in Table 26.

Table 26: Hand-washing materials available at homes

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Clean water	91	91	94	96	93	94
Soap	91	89	96*	89	95*	89
Ash	24	19	61	59	52	49
Soil	7	1	6	8	6	6
Clean towel	35	27	8*	2	15*	8
Base	**150**	**75**	**450**	**226**	**600**	**301**

Note: * refers to figures that are statistically significantly higher or lower between the test and control groups in the respective location.

In response, 95 percent of the program caregivers reported having soap and 93 percent reported having clean water. In urban locations, the control and test groups were equally likely to have hand-washing materials. However at a combined level and in rural areas, availability of soap and towel was significantly higher in test areas than their control counterparts.

Hand-washing practices before preparing meals

Next, the caregivers were asked whether they had washed their hands before they prepared their last meals. They were also asked about the materials they used on that occasion (see Table 27).

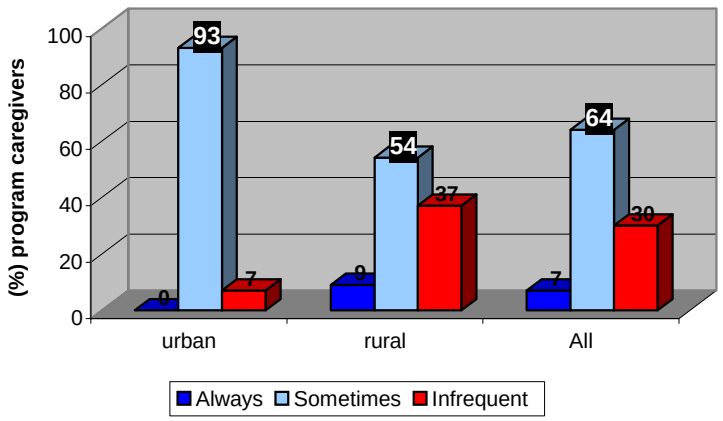
Table 27: Hand-washing practices of caregivers before preparing last meal

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Whether washed hands						
Yes	100	96	100	99	100	98
No	0	4	0	1	0	2
	chi^2 = 6.081, at 1 df and p 0.014;		chi^2 = 3.994, at 1 df and p 0.046		chi^2 = 10.022 at 1 df and p 0.002;	
Materials used to clean hands						
Water only	54	83	41	72	44	75
Water and soap	**46**	**17**	**56**	**24**	**53**	**22**
Water and ash	0	0	3	3	2	2
	chi^2 = 23.894, at 2 df and p <0.001;		**chi^2 = 67.843, at 4 df and p <0.001**		**chi^2 = 90.768 at 4 df and p <0.001;**	
Base	**150**	**72**	**450**	**224**	**600**	**296**

All the program caregivers reported that they had washed their hands before the last time they prepared a meal. While most of the control respondents reported doing the same, they used different materials than the program caregivers. Program beneficiaries were more likely to wash their hands with soap and water than those in the control group.

However, a substantial proportion of program caregivers reported that they washed their hands with soap before preparing meals relatively infrequently. While 53 percent of the program caregivers claimed they washed their hands with soap on the last occasion, only 7 percent reported that this was their regular habit. Sixty-four percent reported that they "sometimes" wash their hands with soap before preparing meals, while 30 percent reported that they use soap "very infrequently".

Fig 8- Regularity of washing hands with soap before preparing meals (Program Caregivers only)



The survey also noted substantial differences between practices of urban and rural program caregivers. Soap use was more frequent among urban caregivers than rural caregivers (see Fig. 8).

Table 28: HH Observation Findings
Hand-washing practices of caregiver observed before preparing meal

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Water only	40	67	57	79	53	76
Water and soap	**60**	**25**	**17**	**13**	**28**	**16**
Did not wash	0	8	8	8	6	8
	chi^2 = 5.031, at 2 df and p 0.07;		chi^2 = 9.45, at 5 df and p 0.09		chi^2 = 12.4 at 5 df and p 0.03;	
Base	**25**	**12**	**75**	**38**	**100**	**50**

HH observations revealed differences also existed between rural and urban caregivers (see Table 28). It was observed that caregivers in 60 percent of urban program households washed their hands with soap before preparing meals. This same observation was made in only 17 percent of the rural program households.

Nevertheless, observational findings also suggest that hand-washing practices of program caregivers are significantly better than those of non-program caregivers. Twenty-eight percent of test respondents were observed washing their hands with soap before preparing meals compared to 16 percent of control respondents. These figures indicate behavioral differences between intervention and control groups, albeit not by the degree suggested by the quantitative survey.

Triangulating data from the quantitative survey with the observational studies, we may conclude that program caregivers use soap more frequently when they wash hands before preparing meals. However, it appears that rural caregivers are not as regular in practicing this habit as their urban counterparts. Additionally, a substantial proportion of rural caregivers do not practice this habit at all.

Hand-washing practices before having meals

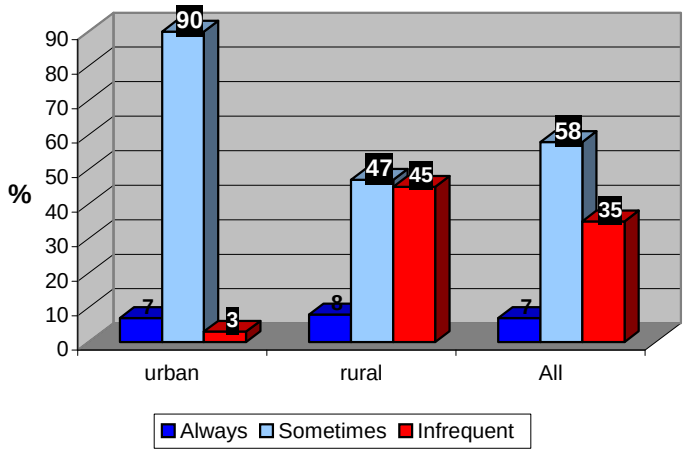
Caregivers were asked whether they had washed their hands the last time before they had taken a main meal, the materials they had used on that occasion, and how often they wash hands with a material before any meal (see Table 29).

Table 29: Hand-washing practices of caregivers before meal

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Whether washed hands before last meal						
Yes	100	99	100	99	100	99
No	0	1	0	1	0	1
	chi² = 2.0, at 1 df and p= .156;		*chi² = 6.0, at 1 df and p = .014*		*chi² = 8.0, at 1 df and p = .005;*	
Materials used to clean hands before last meal						
Water only	40	80	42	76	42	77
Water and soap	**60**	**20**	**56**	**21**	**57**	**21**
Water and ash	0	0	2	3	2	2
	Chi² = 31.4, at 1 df and p < .001;		*chi² = 74.17, at 3 df and p < .001*		*chi² = 105.3, at 3 df and p < .001;*	
Base	**150**	**74**	**450**	**223**	**600**	**297**
How frequently hand washed with soap before meal						
Always	7	1	8	12	7	9
Sometimes	90	53	47	63	58	61
Never	3	45	45	25	35	30
Base	**150**	**74**	**450**	**223**	**600**	**297**
	Chi² = 62.48, at 2 df and p < .001;		*Chi² = 25.38, at 2 df and p < .001;*		*chi² = 2.143, at 2 df and p = 344*	

Again, a larger proportion of test caregivers (57%) responded that they had used soaps to wash their hands before having meals on the last occasion compared to control caregivers (21%). These differences were statistically significant across both urban and rural samples.

Fig 9- Regularity of washing hands with soap before having meals



However, again, findings indicated that there were gaps between reported practices for the last occasion and regular practices. While 57 percent of the program caregivers reported washing their hands with soap before their last meal, only seven percent of them reported practicing this habit regularly (see Table 29). Furthermore, substantial differences existed between urban and rural program beneficiaries (see Figure 9). While 90 percent of urban caregivers reported that they sometimes use soap, less than half of the rural caregivers did so. Also, a substantial portion of rural caregivers (45%) reported they "infrequently" used soap to wash their hands before having meals.

Overall, data on the hand-washing practices of caregivers before meals was balanced by better reported performance in urban and opposite in rural. On the one hand, data related to the last occasion of use indicates that a high proportion of rural test respondents (56%) have used soap. On the other, data related to regularity of soap use suggests that a substantial portion of rural control respondents use soap *very irregularly* (45%). Thus, it is difficult for the research to draw definite conclusions about rural caregivers, as there might have been "over-reporting" by respondents. However, results related to urban caregivers are more definite, and they suggest that these respondents are more regular in their use of soap before taking meals.

Hand-washing practices of Children

To determine the hand-washing practices of the children before having meals, child interviewees responded to similar survey questions (see Table 30).

Table 30: Hand-washing practices of children before having last meal

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Whether washed hands						
Yes	97	96	99	99	98	98
No	3	4	1	1	2	2
Materials used to clean hands						
Water only	57	88	56	91	56	91
Water and soap	**42**	**10**	**43**	**9**	**43**	**9**
	chi^2 = 24.6, at 2 df and p < .0001;		*chi^2 = 87.3, at 3 df and p < .0001*		*chi^2 = 110.2, at 3 df and p < .0001;*	
Base	**146**	**72**	**444**	**223**	**590**	**295**

In both urban and rural areas, children in the intervention group were more likely to use water and soap to clean their hands compared to those in the control group.

HH Observation Findings
Children's Hand-Washing Practices

Table 31: Children's Hand-washing practices of children observed before having meal

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Water only	28	42	76	97	64	84
Water and soap	**72**	**58**	**17**	**0**	**31**	**14**
	chi^2 = 86.234, at 2 df and p < .001;		chi^2 = 159.426, at 3 df and p < .0001		chi^2 = 240.754, at 3 df and p < .0001;	
Base	**25**	**12**	**75**	**38**	**100**	**50**

Household observation sessions also revealed differences between the hand-washing practices of program and non-program children, although these differences were not as pronounced as those indicated in the quantitative survey, especially in rural households. Children were observed washing their hands with soap before meals in 31 percent of the program households observed, as compared

to only 14 percent of the control households observed. This difference is statistically significant (see Table 31).

Another "critical" time for children to wash their hands is after using the toilet. In this context, child interviewees responded to a second question about whether they had cleaned their hands on the last occasion of using a toilet, and, if so, the materials they had used (see Table 32).

Table 32: Hand-washing practices of children after using toilet

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Whether washed hands						
Yes	92	88	96	93	95	92
No	8	12	4	7	5	8
Materials used to clean hands						
Water only	17	42	22	58	21	54
Water and soap	**80**	**55**	**68**	**31**	**71**	**37**
Water and ash	3	2	8	9	7	7
Water and soil	0	0	2	2	2	1
	chi^2 = 17.8, at 4 df and p < .001;		chi^2 = 88.8, at 5 df and p < .001		chi^2 = 103.3, at 6 df and p < .001;	
Base	**138**	**66**	**431**	**211**	**569**	**277**

While both program children and non-program children were likely to have washed their hands after using the toilet, the former were more likely to have washed their hands with soap and water, whereas the latter were more likely to have used water only.

Opinions of caregivers about hand-washing habits

When program caregivers were asked whether they think they have changed their hand-washing practices because of the outreach program, 98 percent of the program beneficiaries replied in the affirmative. Eighty-six percent of the caregivers believed that they now wash their hands more frequently because of the program. About half of them reported that they now use products more frequently to clean up (see Table 33).

Table 33: Opinions of caregivers about changes in Hand-washing habits

Opinions	All (%)
Wash hands more frequently	86*
Use products more frequently	46*
Make sure children wash hands regularly	32*
Base	**590**

Note: * refers to figures that are statistically significant

Knowledge of Caregivers about Hand-washing Needs

Caregivers responded to two questions designed to measure their knowledge levels about the need for proper hand-washing practices. Caregivers from both the control and the test group were asked about what they felt are the critical times for hand washing (see Table 34).

Table 34: Critical Times for Hand-washing

	Program (%)	Non-program (%)
After defecation	94*	90
Before meal	92	92
After meal	73*	64
Before cooking	44*	28
Before serving food	23*	8
Base	**600**	**301**

Note: * refers to figures that are statistically significantly higher or lower across test and control groups by urban, rural and all areas

Program respondents mentioned the following critical hand washing times: "after defecation" (94%), "before meal" (92%), "after meal" (73%), "before cooking" (44%) and "before serving food" (23%). A significantly higher portion of test respondents recalled "after defecation", "after meal", "before cooking" and "before serving food" as critical times, compared to control respondents.

Next, the caregivers were asked why they felt it was important to regularly wash one's hands (see Table 35).

Table 35: Reasons mentioned for need of regular hand-washing

	Test (%)	Control (%)
To get my hands clean	77*	83
To get my hands germ free	71*	56
For overall good hygiene	32*	18
Not to fall sick	36*	20
Base	**600**	**301**

Note: * refers to figures that are statistically significantly higher or lower across test and control groups

Thirty-two percent of program respondents said regular hand washing was needed to maintain "overall good hygiene" (compared to only 18 percent of control respondents), while 36 percent mentioned that regular hand washing prevented illness. A higher proportion of test respondents recalled that washing hands frequently "kept hands germ free" and "prevented diseases."

4.3 Bathing Habits

An important goal of the outreach program was to improve the "bathing habits" of program caregivers and their children. The outreach program sought to encourage program beneficiaries to bathe more frequently and, where possible, make use of products like soap while doing so.

Last Occasion of Bathing

Children were asked about the last time they had taken a bath, and the products they had used on that occasion (see Table 36).

Table 36: Last Occasion of Bathing- Children

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
When last bath was taken						
Today	75	65	43	33	51	41
Yesterday	23	35	56	65	48	58
	Chi^2 = 4.894 at 3 df sig. at 0.180;		Chi^2 = 7.046 at 3 df sig. at 0.070		Chi^2 = 9.932 at 4 df sig. at 0.042;	
Materials used during bath						
Only water	33	44	32	32	33	35
Water & soap	**65**	**56**	**68**	**68**	**67**	**65**
	Chi^2 = 4.370 at 3 df sig. at 0.224;		Chi^2 = 44.832 at 3 df sig. <0.001		Chi^2 = 41.190 at 4 df sig. <0.001;	
Base	**150**	**75**	**450**	**226**	**600**	**301**

Participation in *Sisimpur* outreach was associated with a higher likelihood of using waster and soap when taking a bath. Sixty-seven percent of program children reported using soap during their last baths, compared to 65 percent of the control sample. This difference is statistically significant.

To further investigate the bathing practices of children, caregivers were asked to recall the last time their children had used soap when bathing. Ninety-six percent of program caregivers responded that their child had taken a bath using soap within the last twenty four hours. This same response was provided by 83 percent of the control caregivers.

Table 37: Last Occasion Child had used soap for a Bath

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Today	47	41	32	26	36	30
Yesterday	43	33	65	60	60	53
Before 2 days	5	11	2	8	3	8
Before 3 days or more	4	12	1	5	3	7
	Chi^2 = 4.474 at 3 df sig. at 0.215;		Chi^2 = 13.260 at 8 df sig. at 0.103		Chi^2 = 17.576 at 8 df sig. at 0.025;	
Base	**150**	**75**	**450**	**226**	**600**	**301**

Frequency of Soap Use

In order to ascertain how regularly program caregivers and children use soap during baths, the respondents were presented with a two-part question:

a) How many baths do you take per week?
b) In what portion of the cases do you use soap?

The table below presents average values obtained from the responses:

Table 38: Average number of baths taken/week and frequency of soap use- Caregivers

	Test	Control	t-stat
Baths Taken			
Urban	6.8	6.9	t= -0.760, sig. at 0.448
Rural	6.9	6.7	t= 3.340, sig. at 0.001
All	6.9	6.7	t= 2.358, sig. at 0.017
Soap used			
Urban	5.4	5.3	t= 0.564, sig. at 0.573
Rural	5.1	5.3	t= -1.427, sig. at 0.154
All	5.2	5.3	t= -0.960, sig. at 0.337

Most urban and rural caregivers took a bath nearly every day of the week, across both control and test samples. As shown in Table 38, the program caregivers took baths more frequently than non-program caregivers. These differences were statistically significant at the 95 percent level.
Control and test groups did not differ on the frequency of soap use.

Table 39: Average number of baths taken/week and frequency of soap use- Children

	Test	Control	t-stat
Baths Taken			
Urban	6.9	6.8	t= 0.760, sig. at 0.448
Rural	6.6*	6.4	t= 2.350, sig. at 0.017
All	6.6	6.5	t= 0.759, sig. at 0.448
Soap used			
Urban	5.3	5.0	t= 2.310, sig. at 0.034
Rural	5.2	5.2	t= 0.033, sig. at 0.973
All	5.2	5.2	t= 1.004, sig. at 0.316

Note: * refers to figures that are statistically significantly higher or lower between the test and control groups by urban, rural and all areas

In rural areas, children of program participants took baths more frequently than non-participants (see Table 39). In urban areas, children of program participants were more likely to take baths with soap than children of non-participants (see Table 39).

Knowledge about using soap for baths

When caregivers were asked why they felt it was important for soap to be used during baths, about four-fifths of them said that sop-usage "keeps one clean", while 31 percent responded that soap usage "keeps one healthy". A higher proportion of test respondents could recall that using soap "prevented diseases" and ensured "good hygiene."

Table 40: Reasons for using soap for bath

	Test (%)	Control (%)
To keep myself clean	79	77
To keep myself healthy	31	17
To keep myself from getting diseases	62*	37
To maintain good hygiene	52	43
Base	**600**	**301**

Note: * refers to figures that are statistically significantly higher or lower between the test and control groups by urban, rural and all areas

Discussion

Bathing habit shows significant association with program exposure. Compared to those in the control areas, in the test areas both care givers and children bathe more frequently. Children in test areas also display improved soap use habit as more children in the test are used soap on last bathing occasion. However, this finding may be confounded by several socio-economic and demographic characteristic of the respondents. A detailed modeling will be presented in chapter 6 to explore effect of the program holding other confounders constant.

4.4 Grooming practices

The final part of the investigation into the health and hygiene practices of the respondents revolved around the behavior of children as related to "grooming". In this context, the survey focused on hair-combing practices among children from both control and test groups.

Hair Grooming Habits of Children

In order to investigate the hair-grooming practices of children, caregivers were asked to recall the last occasion when they had groomed any of their children's hair (see Table 41).

Table 41: Last occasion of caregiver grooming child's hair

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Today	**75**	**61**	**53**	**36**	**58**	**43**
Yesterday	9	20	34	36	28	32
Before 2 days	1	5	1	8	1	7
Before 3 days or more	0	1	5	7	4	6
Did not brush hair for child	0	1	4	4	3	4
Child does not have hair	15	11	3	7	6	8
	chi^2 = 15.9 at 6 df and p<0.0001		*chi^2 = 37.7 at 9 df and p<0.0001*		*chi^2 = 39.6 at 9 df and p<0.0001;*	
Base	**150**	**75**	**450**	**226**	**600**	**301**

Fifty-eight percent of program caregivers mentioned grooming their child's hair "today", compared to 43 percent of non-program caregivers.

Both urban and rural program caregivers exhibited significantly better grooming behavior than their counterparts from the control group (see Table 41).

Urban caregivers were more likely to groom their children than rural caregivers. This phenomenon was also uncovered during the HH observations, as shown in the following table:

HH Observation Findings
Table 42: Hair grooming practices observed of Caregivers

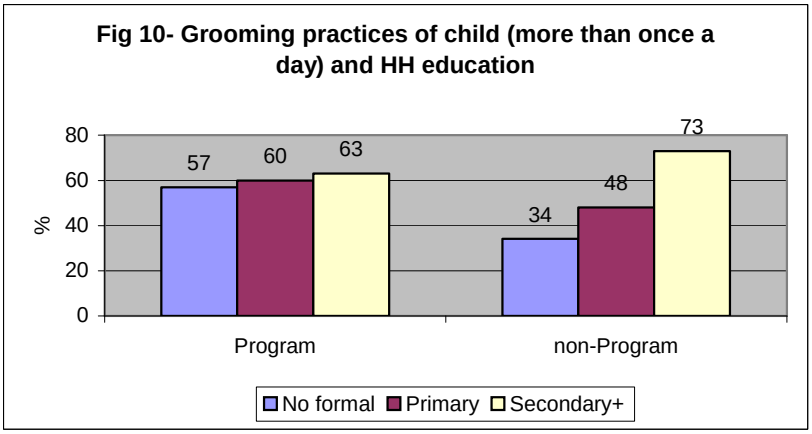
	Urban		Rural	
	Test	**Control**	**Test**	**Control**
Number of HH observed	25	12	75	38
Brushing observed	84%	100%	73%	68%

Additionally, 60 percent of the program children mentioned that they had had their hair groomed "today", compared to 46 percent of the non-program children. These figures exhibit a statistically significant difference and closely align with caregivers' reports discussed above.

Table 43: Last Occasion of Hair Grooming recalled by program child

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Today	**75**	**61**	**55**	**41**	**60**	**46**
Yesterday	6	17	30	36	24	31
Before 2 days	0	0	2	4	1	3
Before 3 days or more	0	1	3	6	3	6
Do not have hair	17	13	5	7	8	8
Cannot recall	1	7	4	4	3	5
	chi^2 = 18.06, at 5 df and p < .003;		*chi^2 = 21.93, at 10 df and p < .015*		*chi^2 = 27.24, at 10 df and p < .002;*	
Base	**150**	**75**	**450**	**226**	**600**	**301**

To determine whether any additional socio-economic factors affected grooming habits of children, researchers carried out two cross-analyses, one with "education" as an independent variable, and the other with age of caregiver as an independent variable (see Figs. 10 and 11).



The cross analysis revealed that better educated households exhibited better grooming habits. This was particularly true among non-program households, suggesting that education is an important influence on grooming practices (see Fig. 10).

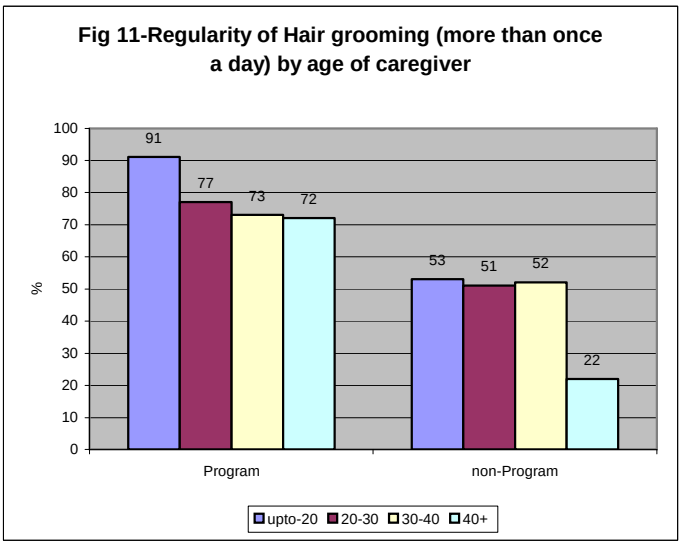
Next, the caregivers were asked how regularly their child combed his or her hair (see Table 44)

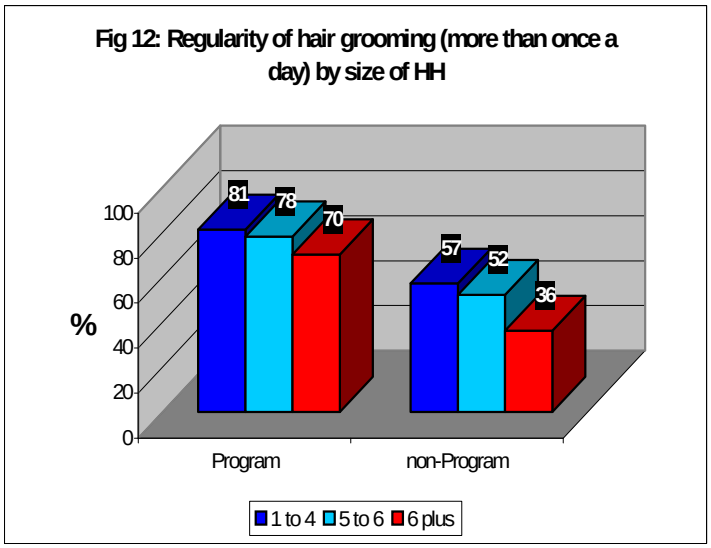
Table 44: Daily Regularity of Child Hair Grooming

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
More than once every day	**91**	**64**	**73**	**46**	**77**	**50**
Once every day	8	30	21	42	18	39
Every 2 days or more	1	3	3	7	3	8
Do not know/ Cannot say	1	1	1	3	1	3
	chi ^{2} = 24.6 at 5 df and p<0.001;		*chi ^{2} = 50.1 at 8 df and p<0.001*		*chi ^{2} = 65.0 at 8 df and p<0.001;*	
Base	**130**	**67**	**437**	**211**	**567**	**278**

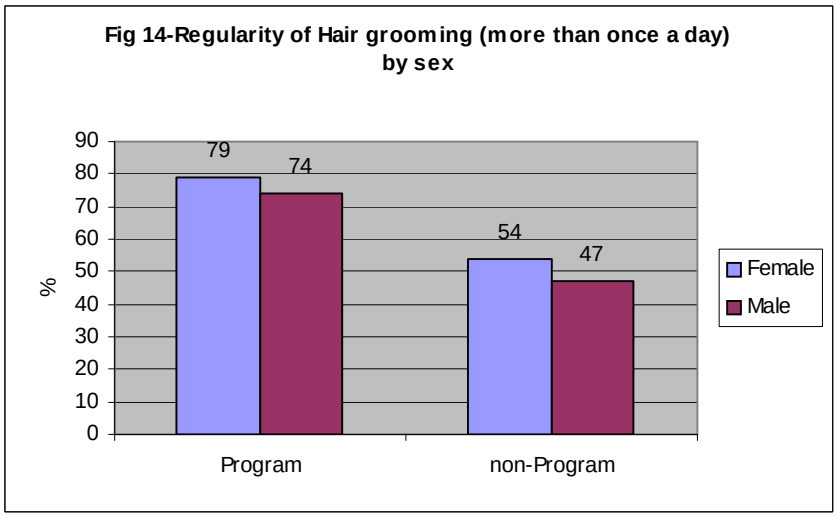
Children of program caregivers were more likely to comb their hair more than once a day compared to those of non-program caregivers; this was true for both urban and rural locations. The frequency of daily grooming was higher among urban program households (91% reported that their child combs their hair more than once every day) compared to rural households (73% reported that their child combs their hair more than once every day).

Children were likely to be groomed more frequently in households that were smaller or where caregivers were younger (see Figs. 11 and 12). Again, it is worth noting that grooming behavior is more regular among program HHs than non-program HHs, even where large families are concerned.





Another point of interest is that girls seem to comb their hair more frequently on a daily basis (more than once) than boys (see Fog. 14).



Knowledge of caregivers about proper grooming habits

Caregivers were asked to describe why they felt that it was important to regularly comb hair. Their responses have been summarized in the table that follows:

Table 45: Reasons for regularly combing hair

	Test (%)	Control (%)
To keep myself clean	58	55
To keep myself groomed	60	55
Keep hair free from lice	45*	32
Keep hair free from dandruff	22*	7
To keep hair "beautiful"	13*	4
Base	**600**	**301**

Note: * refers to figures that are statistically significantly higher or lower between the test and control groups

Findings showed that 60 percent of caregiver believed regular combing "kept one's self groomed", while 58 percent believed that it helped "keep one's self clean". Forty-five percent of program caregivers also responded that regularly combing kept hair free from lice (compared to only 32% of control caregivers), while 22 percent felt that it kept hair free from dandruff (compared to only 7% of control caregivers).

Discussion

This analysis of the hair-grooming practices of children revealed more regular grooming among program children than to non-program children. Not only had a greater proportion of program children been groomed on the day of the interview, but also the frequency of grooming among test children was higher.

This phase of the survey revealed interesting variations in grooming practices between groups. The following factors were also found to influence grooming practices:

- **Location:** Urban children had much more regular grooming habits than rural children.
- **Education Background of Households-** Children in better-educated households are groomed much more regularly than their counterparts. This also partly explains the urban-rural discrepancies, as educational attainment of urban HHs are relatively higher that rural ones.
- **Average HH size-** As expected, the size of the family also plays influences grooming habits. Children in smaller households are groomed more regularly that children from larger families. An obvious explanation is that it is easier for caregivers to cater to his/her children when fewer heads need attention.
- **Age of Caregiver-** Children of relatively younger caregivers are groomed more regularly than children of older caregivers. While attitudinal factors related to age explain this observation, the fact that younger caregivers reside in comparatively smaller households may also be a significant influence:

Table 46: Relation between age of caregiver and family size

Age of Caregiver	Average family Size
Upto 20	5
21-30	5.2
31-40	6.2
40 plus	7

The table clearly indicates that the family size of the caregivers (who are primarily the "wives" of household heads) is related to life-cycle stage. Older women have larger households (see Table 46). This implies that the age of the caregiver would affect grooming practices of children because of a combination of attitudinal factors and the co-relation between age and family size (which, as mentioned, influences grooming habits).

4.5 Qualitative Insights: Health and Hygiene Knowledge & Behavior

The outreach program was designed to promote behavioral changes in the lives of its beneficiaries by developing their knowledge and awareness of various aspects of health, hygiene and nutrition. While quantitative methods can provide concrete measures of behavioral change, they sometimes fail to comprehensively capture how a program impacts respondents' thoughts, ideas and knowledge. Consequently, this study contained a qualitative component designed to create an in-depth understanding of beneficiaries' acquired knowledge. In-depth interviews were arranged with 20 caregivers from the four program areas. Five interviews were conducted in each location. In addition to assessing participants' knowledge levels, in-depth interviews also explored whether the caregivers had actually made changes in their practices, and, if not, what barriers prevented them from doing so.

Recalling Hygiene Information

Most of the caregivers recalled basic health and hygiene information they learned during the training sessions. These included concepts such as the importance of hair brushing and teeth cleaning, hand-washing during and after defecation, hand-washing before meals, wearing sandals to go to latrines, washing vegetables before cutting, and washing fruits before eating them raw. Caregivers were also informed about the need to use materials when washing hands at different times. While a few seemed to have problems recalling necessary information given during training sessions, overall, they appeared to have a grasp of basic health and hygiene concepts.

Not only did the participants have a good recall of basic health and hygiene related information, but some also had clear ideas about the consequence of disregarding hygiene rules. As one respondent from Dhaka commented-

> ".....(without proper practice) we might get diseases such as upset stomach, because of entrance of germs into the body through dirty hands."

Some parents even stated that their children were able to recall some of the basic health and hygiene information the caregivers taught them.

A few of the caregiver informed interviewers that they were aware of some of the hygiene rules before the training sessions. However, they said, they did not practice these rules seriously because they were either unaware of or improperly educated about the consequences of ignoring these rules.

Implementing Health and Hygiene Information Taught at Workshops

Almost all the caregivers interviewed reported implementing their newly acquired knowledge about health and hygiene in their daily lives. They mentioned practicing the behaviors themselves, as well as teaching and guiding their children about hygiene. One mother described the change in her children's behavior below:

> "……now they (children) wash their hands/feet/face first after coming back from playing outside, before taking their food. In the past, they never cared to wash their hands."

Caregivers reported that they had become more conscious about practicing these hygiene rules. They also said they were trying to teach family members in addition to their children to practice these hygiene rules. Most of these caregivers said they had been successful in creating positive changes in the entire household's behavior. Some of the caregivers even stated that they had tried to tell their neighbors (both adults and children) about these messages as well. Unfortunately, some reported that, while their children were willing to adapt, other family members had not been as co-operative. One participant from Thakurgaon said that her efforts to teach other members of her family healthy habits, she failed. When asked why she had been unsuccessful, the woman responded, "my family members told me that 'you learn and practice these yourself, we don't need it.'"

Impact of Program

When asked to describe how the program had impacted her life, one caregiver in Thakurgoan said,

> "…… we previously used to live in a dirty environment, but now we have become cleaner and healthier".

She said she has benefited from her participation in the session because her newly learned knowledge had inspired and motivated her to improve her and her family's situation. Another caregiver in Kurigram stated that, although she had previously been aware of the hygiene rules, she did not always follow them correctly:

> "…… previously, after dinner, I would clean my teeth. However, I would have a paan (beetle leaf) before going to bed. Now I know that this is not good, and after brushing teeth at night I do no eat anything anymore."

Other caregivers have that they had bought toothbrushes and toothpaste for their children after the program to encourage them to practice regular tooth brushing. In some cases, caregivers even said that their children persuaded them to buy toothbrushes and tooth paste. As one mother in Dhaka explained,

> " …….my children came up to me and told me 'you told me to brush my teeth, so buy me a toothbrush and toothpaste.' When I handed these over, my children started to regularly brush their teeth, very happily."

A caregiver expressed her happiness about the *Sisimpur* program by stating that her children became healthier after her household implemented the health and hygiene behaviors discussed in the training. Furthermore, she said that the games she played with the children made them improve their health and behavior independently. She also added that her children had now become more conscious:

> "……..nowadays, my children have become so hygiene conscious that after eating meals and washing hands, they refuse to dry their hands if I give them another piece of cloth, like the saree I wore, instead of a towel".

Chapter 5
Nutritional Habits

The second component of the *Sisimpur* Outreach program sought to develop the nutritional habits of the program beneficiaries. In order to achieve this objective, the program focused on developing program caregivers' knowledge about the nutritional qualities of different types of food. The idea was that improving caregivers' knowledge and awareness of nutritional foods would ultimately lead to improvements in the daily diets of members of program households, particularly program children.

The outreach program primarily focused on three food groups-

1) Carbohydrates, which was promoted as a food group that "gives energy."
2) Proteins, which was promoted as a food group that "builds the body."
3) Vitamins, which was promoted as a food group that "prevents diseases."

The program sought to improve program caregivers' diets by familiarizing them with how each food group helps the body and with the types of food items in each group. The program used this information to encourage caretakers to consume a diversified diet covering all food groups.

5.1 24-Hour Diet Cycle

Approach

There are various ways to determine the nutritional habits of a population through research. These approaches have various degrees of complexity, ranging from determining the precise "kilo-calorie" content of each meal taken by a household over a period of time to simply listing the types of food eaten by the members. For the purpose of this survey, the research team used a simplified version of a "24-hour dietary recall" to assess nutritional habits. Under this method, caregivers were asked to recall the types of food they had eaten for the three main meals (breakfast, lunch, and dinner) of the previous twenty four hours.

One of the program's main goals was to improve beneficiaries' diets. Consequently, researchers assessed the effectiveness of the nutritional component of the program by determining the number of food groups test respondents consumed for each meal. The hypothesis was that program households should, on average, consume more food groups than non-program households.

After obtaining results from the 24-hour dietary survey, the research team sorted each food item according to its specific single food group on the list above. Researchers then calculated the number of food groups comprised each meal. Finally, researchers analyzed the data to determine whether there were any differences between program and non-program households.

Composition of Breakfast

The respondents were asked to recall what they had for breakfast the day before the interview (see Table 47).

Table 47: Composition of Breakfast

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Group 1- Carbohydrates *	99	99	98	100	98	99
Group 2- Protein **	52	47	41	40	44	42
Group 3- Vitamins ***	58	45	52*	39	53*	41
Base	**150**	**75**	**450**	**226**	**600**	**301**

* Items like Rice/bread/Potato
** Items like Meat/Fish/egg/milk
*** Items like Vegetables/fruits

Note: * refers to figures that are statistically significantly higher or lower across the test and control groups by urban, rural and all areas

The findings indicated that carbohydrates were the most common element consumed for breakfast among caregivers, as almost all breakfasts had at least one item from the carbohydrate group.

A comparative analysis revealed that a statistically higher proportion of program caregivers consumed vitamins (53%) than their non-program counterparts (41%). Comparatively, program consumed less protein group items (44%) than other food groups items.

A comparison between urban and rural caregivers showed that the urban group had a relatively higher intake of vitamin and protein-based food items than members of the rural group (see Table 47).

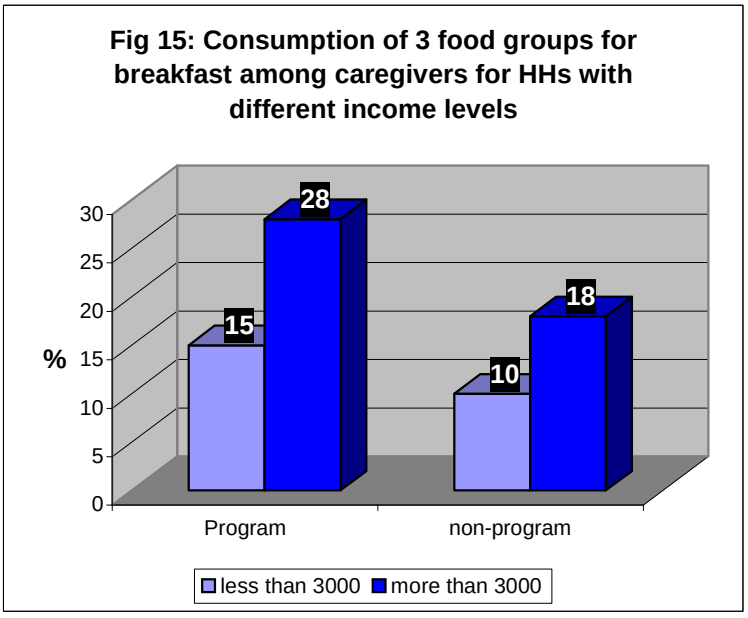
Table 48: Number of Food Groups Consumed for Breakfast

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
1 food group consumed	17	25	26	32	24	31
2 food groups consumed	55	59	53	56	54	56
3 food groups consumed	**27**	**16**	**19**	**12**	**21**	**13**
	chi ^{2} = 4.969 at 3 df and p 0.174;		chi ^{2} = 7.789 at 3 df and p 0.051		chi ^{2} = 12.280 at 3 df and p 0.0 006;	
Base	**150**	**75**	**450**	**226**	**600**	**301**

When the food items consumed by the caregivers were separated into the 3 food groups, it was found that majority of the program caregivers (54%) consumed two food groups for breakfast, one of which was consistently carbohydrate (see Table 48). Twenty-one percent of program caregivers consumed all three food groups, a figure higher than the portion of three food-group consumers found among non-program caregivers (13%).

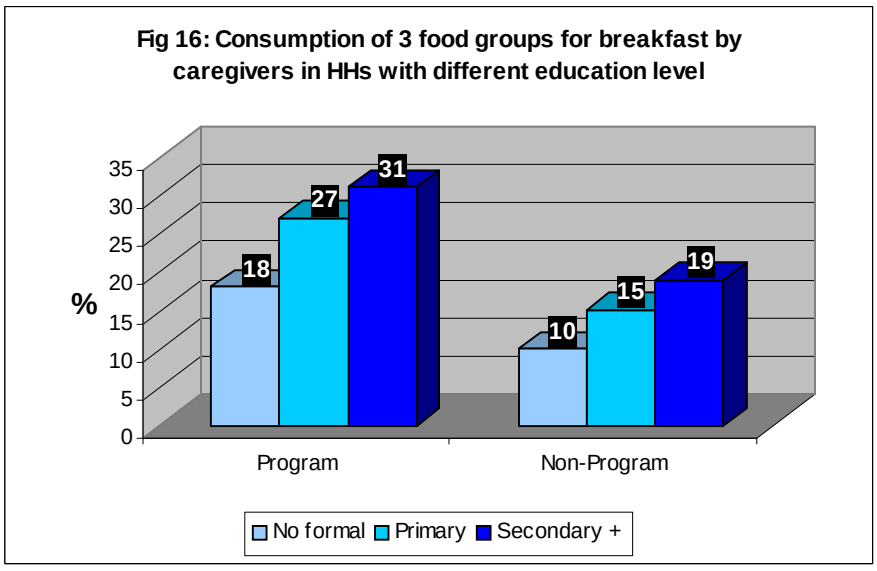
A two-food group based diet was commonly observed in both urban and rural program locations, although again, the test group tended to have greater numbers of three food-group consumers (see Table 48). At a combined level test, and control groups vary significantly.

Food availability is intrinsically linked to the economic capacity of the household. In this context, the variables "income" and "education" are considered influential because these factors dictate the purchasing capacity of households. Thus, households with better purchasing power should have more diversified diets:



As the figure to the left indicates, consumption of three food groups for breakfast was more common among caregivers from households earning more than the median income than those earning less. The t-test also confirms that this difference is significant in both the program and non-program areas. This holds true across both control and test-samples (see Fig. 15).

The following diagram (Fig. 16) also indicates that consumption of three food groups for breakfast is more common for households with higher levels of education:



These factors also possibly explain why consumption of three food groups for breakfast is higher among urban HHs, where levels of income and education are relatively higher than in rural areas.

Composition of Lunch

Next, the respondents were asked to recall what they had for lunch on the day before the interview.

Table 49: Composition of Lunch

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Group 1- Carbohydrates	99	96	98	96	98*	96
Group 2- Protein	87	85	55	49	63	58
Group 3- Vitamins	53*	32	62*	47	59*	44
Did not have lunch	0	1	1*	4	1*	4
Base	**150**	**75**	**450**	**226**	**600**	**301**

Note: * refers to figures that are statistically significantly higher or lower between the test and control groups by urban, rural and all areas

The data again indicated that carbohydrates were the most common food group consumed for lunch (see Table 49). Although there appears to be very marginal difference between control and test groups at the combined level, t-test results show that this difference is statistically significant.

Program caregivers were more likely than non-program caregivers to consume protein and vitamins for lunch.

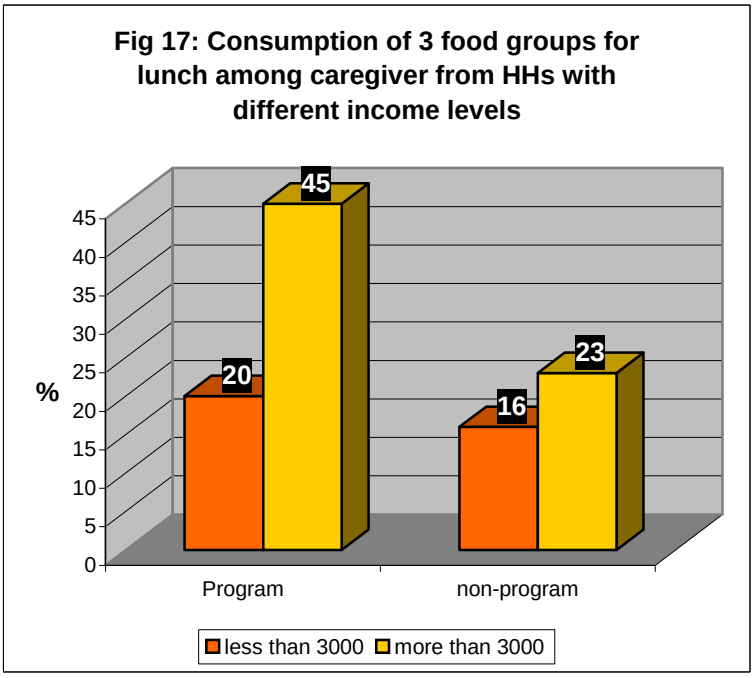
The intake of proteins and vitamins were higher across both control and test sample during lunch than they were at breakfast.

Researchers detected definite variations in protein and vitamin intake between urban and rural locations among both program and non-program caregivers. Specifically, protein intake was found to be markedly higher among urban caregivers, while vitamin intake was higher among rural ones (see Table 49).

Table 50: Number of Food Groups Consumed for Lunch

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
1 food group consumed	4	1	13	18	11	14
2 food groups consumed	53	80	58	59	57	64
3 food groups consumed	**43**	**17**	**29**	**19**	**32**	**18**
Did not have lunch	0	1	1	4	1	4
Base	**150**	**75**	**450**	**226**	**600**	**301**
	chi ^{2} = 18.234 at 3 df and p <0.001		: chi ^{2} = 18.269 at 3 df and p <0.001		chi ^{2} = 28.740 at 3 df and p <0.001	

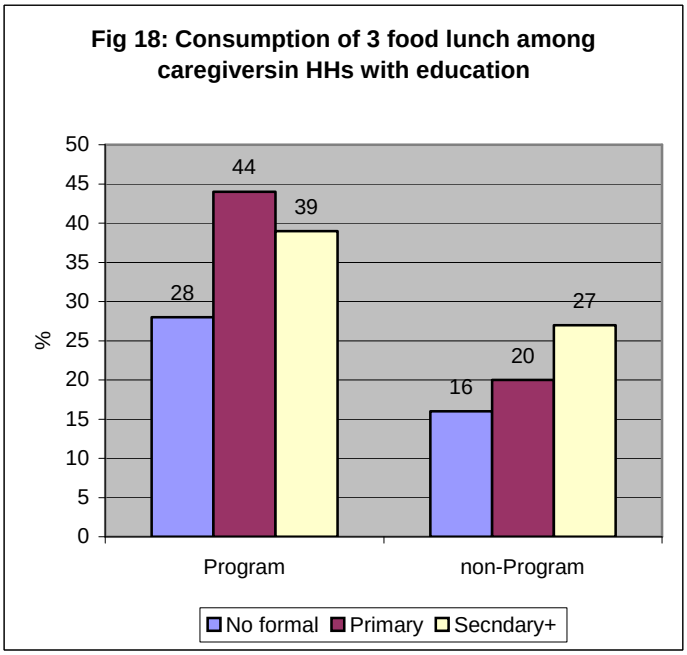
As was the case with breakfast, the majority of the respondents had diets based on two food groups (57% of test respondents and 64% of control respondents). Nevertheless, the proportion of three-food-group consumers was again higher among the test group (32%) compared to non-program caregivers (18%). This difference held across rural and urban areas (see Table 50) and at a combined level as well. The difference is statistically significant (see Table 50).



Again, it was found that income and education levels of HHs were largely co-related with their consumption habits, as shown in the following diagram (Fig. 17).

Consumption of three food groups is greater with higher income, across both program and non-program households (see Fig. 17).

A cross-analysis revealed a link between the educational background of HHs and food consumption, although this co-relation appeared to be stronger among non-program households (see Fig. 18.)



Composition of Dinner

Finally, the respondents were asked to recall what they had for dinner on the day before the interview. The dinner diet was again found to be largely based on carbohydrates (see Table 51).

Table 51: Composition of Dinner

	Urban (%)		Rural (%)		All (%)	
	Test	Control	Test	Control	Test	Control
Group 1- Carbohydrates	97	96	98	97	98	97
Group 2- Protein	83	84	66	58	70	64
Group 3- Vitamins	55	43	57*	46	57*	45
Did not have dinner	1	3	1	1	1	2
Base	**150**	**75**	**450**	**226**	**600**	**301**

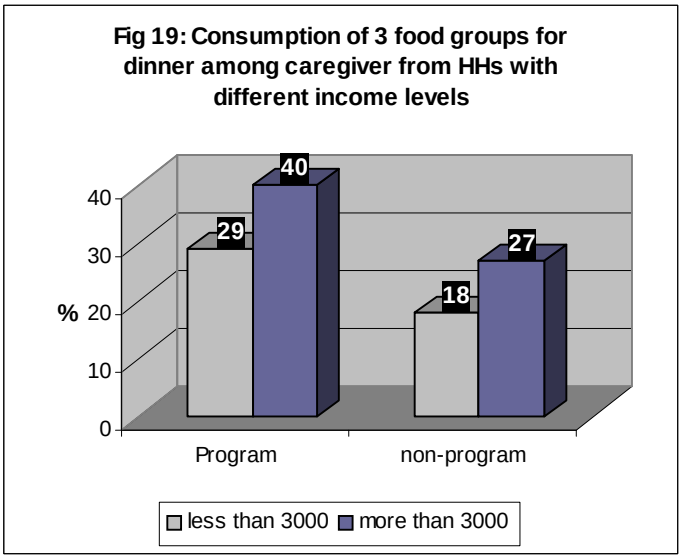
Note: * refers to figures that are statistically significantly higher or lower between the test and control groups by urban, rural and all areas

The responses showed that a higher portion of program caregivers had food containing protein (70%) and vitamins (57%) in their diets when compared to non-program respondents (protein—64%, vitamins—45%; see Table 51).

Again, noticeable variations in protein and vitamin intake were detected between urban and rural respondents. Protein food items were more common in urban menus, while vitamin food items were more common in rural dinner menus. Nevertheless, intake of these food groups among program caregivers was noticeably higher overall, and in both urban and rural locations, when compared to their non-program counterparts.

Table 52: Number of Food Groups Consumed for Dinner

	Urban (%)		Rural (%)		All (%)	
	Test	Control	Test	Control	Test	Control
1 food group consumed	3	1	11	15	9	12
2 food groups consumed	57	67	55	65	56	65
3 food groups consumed	**39**	**29**	**33**	**19**	**35**	**22**
Did not have dinner	1	3	1	1	1	2
	chi ^{2} = 4.009 at 3 df and p 0.260;		chi ^{2} = 15.294 at 3 df and p 0.002		chi ^{2} = 17.895 at 3 df and p <0.001;	
Base	**150**	**75**	**450**	**226**	**600**	**301**



A significantly higher portion of program households (35%) were consuming 3 food groups compared to non-program caregivers (22%). However, as with lunch, most had diets that contained two basic food groups (with one group always being carbohydrate), signaling that either protein or vitamin was missing from the diets of many (see Table 52).

Again, a cross-analysis with income levels re-established the co-relation between income and the composition of caregivers' diet, as shown in Figure 19.

Overall, the survey showed that a higher portion of program caregivers than non-program caregivers was consuming a 3-food-group based diet for all three main meals. However, the majority was consuming diets that covered two food groups. This was also uncovered during the HH observations, as shown in Table 53.

HH Observation

Table 53: Number of Food Groups Served at Observed Meal

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
1 food group served	44	42	25	16	30	22
2 food groups served	32	42	55	71	49	64
3 food groups served	**24**	**17**	**15**	**13**	**17**	**14**
Not observed	0	0	5	0	4	0
	chi ^{2} = 4.28 at 2 df and p 0.80;		chi ^{2} = 4.23 at 3 df and p 0.238		chi ^{2} = 4.357 at 3 df and p = 0.225;	
Base	**25**	**12**	**75**	**38**	**100**	**50**

The survey team observed that the meals being served in about half of the program households covered 2 food groups. All 3 food-groups were being served at only 17 percent of the program households and 14 percent of control households.

Again, variations in dietary habits were noted between urban and rural program households. While it was observed that 24 percent of the urban beneficiaries were serving meal that covered all 3 food-groups, this same observation was made in case of 15 percent of the rural program households.

Composition of Child's Meal

Another important scope of the survey was to uncover the dietary habits of the program children. The child interviewees were asked to recall what they ate for their last meal. The list of food items was then categorized into the 3 food groups to uncover the variety in children's diets.

Table 54: Composition of Last meal taken by child

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Type of Meal Taken on Last Occasion						
Breakfast	69	73	80	78	77	77
Lunch	31	27	18	21	21	22
Composition of Meal*						
Group 1- Carbohydrates	99	99	99	100	99	100
Group 2- Protein	60	49	43	38	47	41
Group 3- Vitamins	41	35	39	36	40	36
Number of food groups consumed						
1 food group consumed	21	29	30	34	28	33
2 food groups consumed	55	59	58	58	57	58
3 food groups consumed	**23**	**12**	**12**	**8**	**15**	**9**
	chi ^{2} = 4.909 at 3 df and p 0.179;		chi ^{2} = 3.883 at 3 df and p 0.274		chi ^{2} = 8.119 at 3 df and p 0.044;	
Base	**150**	**75**	**450**	**226**	**600**	**301**

* There is no statistically significant differences between the test and control groups by urban, rural and all areas

As the interviews were mostly conducted in the morning, most of the children (77%) used "breakfast" as their reference point for last meal taken (see Table 54).

The analysis showed that the diets of the children were also mainly based on carbohydrates, as nearly all the child respondents mentioned that their last meal included at least one food item belonging to the carbohydrate food group. Protein and vitamin intake was not universal. About 47 percent of the program children reported consuming at least one protein-based food item for their last meal, compared to 41 percent of non-program children. For vitamin intake, the same figures were 40 percent and 36 percent for program and non-program children respectively.

The findings also showed that a higher portion of program children (15%) had diets that covered the 3 food groups, compared to control respondents (9%).

However, the survey also found that 28 percent of program children were only consuming one food group for their last major meal, and 57 percent were consuming two food groups. With one food group always being carbohydrate, these figures indicated that many children's meals might be lacking in either protein or vitamin, or both.

Discussion

Overall, the analysis of respondents' dietary habits provided two important insights. Firstly, it showed that diets of households were heavily based on carbohydrate food items: all three main meals contained at least one food item belonging to this food group. This finding is very consistent with the normal Bangladeshi diet, which is heavily based on "cereals" like rice. A nationwide food consumption survey (Hassan, N and Ahmad, K. *Intra-familial distribution of food in rural Bangladesh:* Institute of Nutrition and Food Science, University of Dhaka, Dhaka, Bangladesh) in selected rural locations across Bangladesh showed that the average per capita intake of total food for all ages and both sexes was 788 grams per person per day. Cereals like rice constituted the major proportion of the diet for all surveyed respondents, as the average intake was 493 grams per day. The amount of cereal varied from 54 to 60 per cent of the total diet for children 1-9 years old and from 61 to 64 per cent for adults 20 years old or older.

Our survey also indicated that the dietary habits of program caregivers were more diversified compared to non-program caregivers. For all three meals examined, it was found that a higher portion of program caregivers were consuming all 3-food groups, compared to their non-program counterparts. Similarly, children in the test group were more likely to be consuming all 3 food groups compared with those in the control group.

Overall, however, the study revealed that most caregivers and their children (in both control and test groups) had diets that consisted mainly of carbohydrates, suggesting that protein and vitamins were often missing.

5.2 Regularity of Vitamin and Protein Intake among children

The next component of the research focused on finding out the regularity with which children of program households consumed vitamins and proteins. In this context, caregivers from both control and test households were asked how regularly their children drank milk, ate eggs and fish (proteins), and fruits and vegetables (vitamins).

Table 55: Regularity of Eating Eggs

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Daily	**10**	**3**	**7**	**4**	**8**	**3**
Once every 2 days	23	15	22	9	23	11
Once every 3-5 days	57	53	37	29	43	25
Once a week	7	9	19	21	16	18
Once every 2 weeks	1	15	9	19	7	18
Once every month	2	4	3	10	3	8
Less than once a month	0	0	1	6	1	5
	chi^2 = 32.5 at 7 df and p<0.0001;		*chi^2 = 64.4 at 8 df and p<0.0001*		*chi^2 = 85.4 at 8 df and p<0.0001;*	

The findings revealed that consumption of proteins like eggs, fish and milk occurred significantly more frequently among program children (see Tables 55-57) than non-program groups.

Ninety percent of program caregivers reported that their children take eggs at least once every week, compared with 57 percent of non-program caregivers (see Table 55).

Egg consumption occurred more regularly for urban beneficiaries, where 97 percent said that their children consume eggs at least once every week. This same figure was 85 percent among rural program households (see Table 55).

Table 56: Regularity of Eating Fish

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Daily	**52**	**43**	**21**	**14**	**29**	**21**
Once every 2 days	33	45	30	31	31	35
Once every 3-5 days	15	9	35	35	30	29
Once a week	0	1	11	12	8	9
Once every 2 weeks	0	0	2	5	2	4
	chi^2 = 7.9 at 5 df and p<0.16		*chi^2 = 14.07 at 8 df and p<0.08*		*chi^2 = 16.8 at 8 df and p<0.03;*	

Similar regularities in consuming other proteins like fish and milk were also noted in program households. Fish consumption was very frequent in a considerable portion of the program households, as almost 9 out of 10 caregivers reported that their children had fish at least once every 3-5 days, with 29 percent reporting that fish is taken on a daily basis (see Table 56).

Urban households were more likely to consume fish regularly then were rural households (see Table 56).

Overall, chi square tests reveal that regularity of taking fish significantly higher among the test group than the control group.

Table 57: Regularity of Consuming Milk

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Daily	**12**	**8**	**24**	**19**	**21**	**17**
Once every 2 days	19	5	6	4	10	4
Once every 3-5 days	48	41	16	10	25	18
Once a week	7	9	23	12	19	11
Once every 2 weeks	5	9	10	12	9	12
Once every month	4	3	10	18	9	14
Less than once a month	3	16	8	18	6	18
Never	4	8	3	7	3	7
	chi ^{2} = 24.26 at 8 df and p<0.002;		chi ^{2} = 46.81 at 8 df and p<0.0001		chi ^{2} = 60.19 at 8 df and p<0.0001;	

In terms of milk consumption, program households were again found to be more regular in their habits: 21% reported that their children drink milk daily, compared to 17 percent of non-program households (see Table 57). More than half of program households reported that their children take milk at least once every week, compared to 39% of non-program households.

Rural program households were more regular in their habits, as 24 percent of these respondents reported that milk consumption occurs everyday in their households, compared to 12 percent of urban program caregivers.

Table 58: Regularity of Eating Fruits & Vegetables

	Urban (%)		Rural (%)		All (%)	
	Test	**Control**	**Test**	**Control**	**Test**	**Control**
Daily	**56**	**25**	**48**	**35**	**50**	**32**
Once every 2 days	25	45	27	29	26	33
Once every 3-5 days	17	24	19	25	19	24
Once a week	1	3	5	7	4	6
	chi^2 = 27.76, at 6 df and p < .001;		chi^2 = 22.15 at 7 df and p < .002		chi^2 = 40.07, at 7 df and p < .001;	

Consumption of fruits also occurred very frequently among many program households, as shown in the Table 57 above. The daily consumption of fruits and vegetable by was reported to be higher among program households (50%) compared to non-program ones (32%). The differences are statistically significant.

Box 2
Nutritional Habits of Children in Rural Bangladesh

Commonly, the diets of children in rural Bangladesh are heavily based on carbohydrates like cereal, with low intake of proteins and vitamins like fruits, milk and fish. In fact, the nationwide food consumption survey shows that, out of the average per capita intake of food of 510 grams a day for children aged between 4-6 years, about 300 grams is made up of carbohydrates (almost 60% of total food intake), and 90 grams in made up of pulses (almost 18% of total food intake). In context of other food items belonging to the categories of vitamins and minerals, the dietary composition is:

- Intake of carbohydrates: 300 grams/person/day… (60% of total food intake)
- Intake of fruits only 19 grams/person/day..... (3% of total food intake)
- Intake of meat only 6 grams/person/day ……...(1% of total food intake)
- Intake of fish only 12 grams/person/day ……...(2% of total food intake)
- Intake of milk only 16 grams/person/day …….(2% of total food in take)

(Source: Hassan, N and Ahmad, K. *Intra-familial distribution of food in rural Bangladesh:* Institute of Nutrition and Food Science, University of Dhaka, Dhaka, Bangladesh)

Discussion

Our survey findings into respondents' nutritional habits showed that dietary habits of program children and beneficiaries generally varied from their non-program counterparts. A higher portion of children and caregivers who participated in *Sisimpur* outreach reportedly consumed a well-balanced 3-food-group based diet than their non-program counterparts.

The subsequent investigations into the regularity of children's protein and vitamin intake also indicated positive results: Food items like eggs, milk, fish and fruits were consumed daily by a considerable portion of program households.

However, while these improvements were noted, it should also be kept in mind that the survey found most children and caregivers were consuming a 2-food group based diet, with one group always being carbohydrate. In fact, the survey uncovered that a substantial portion of children (28%) had consumed a meal where both elements of protein and vitamin were completely missing. Given the strong co-relation between income and diet, there is a strong likelihood that improvements in the dietary habits might have taken place mostly among those who can afford it.

The data indicate that the nutrition component of the outreach program has had positive associations with the nutritional habits of the program children and caregivers.

5.3 Qualitative Insights: Knowledge and Habits about Nutrition

To supplement the information gathered in the quantitative survey, in-depth interviews were used to obtain a more comprehensive understanding about the nutritional knowledge and practices of the caregivers.

Recalling Nutrition Information

Most caregivers were able to recall some of the basic nutrition information they had been taught during the training sessions such as, what a balanced diet is, what nutritious foods are, nutrient content of different food, the importance of a balanced diet, the need to wash vegetables before cutting them, and need to wash fruits before eating them. One of our participants from Dhaka was able to describe a balanced diet quite clearly:

> "……..there are three types of foods in balanced food- for example rice that gives us energy, vegetables that help us to fight diseases and fruits and fishes that help the kids to repair body and grow".

Though some of them were not able to recall all the necessary information given during training sessions in detail, it appeared that most of them understood the basic concepts and seemed to understand the importance of the information. Many of them informed the interviewers that they had not known any of the nutrition-related information before the training sessions.

A few participants even stated that their children could now even tell "what foods do what for the body":

> "…….if I give them milk to drink, they ask me what happens if we drink milk and then responds themselves that it helps to repair our body."

However, while some caregivers understood the importance of eating all kinds of foods, they were not able to say precisely how each type of food group helps the body. One caregiver in Cox's Bazar noted that the children had some trouble understanding the nutrition information given, as they were too young to understand and remember these topics. Given that the more complex nutrition information was meant specifically for adults, it is not surprising that young children did not comprehend or recall it.

Implementing Nutrition Information Taught at Workshops

Almost all the caregivers interviewed seemed to be trying their best to practically implement their newly acquired knowledge about nutrition. They were practicing the behaviors themselves by trying to cook nutritious and balanced meals within their capacity, as well as trying to encourage their children to eat the balanced diet prepared. It seemed that most of them had become more conscious about implementing their newly acquired nutrition knowledge. Not only that, they were also trying to teach other members of their family to eat and prepare foods according to the balanced diet rule and based on the nutrition value of the foods. In some cases they were quite successful in

implementing these behaviors for their whole household, and they reported that their spouses were often supportive. If their children were unwilling to try any food that they knew as nutritious and necessary for their children's health and growth, the caregivers tried to encourage them by citing the examples of *Sisimpur* characters.

However, there was a sizeable portion of interviewees who responded that they had failed to provide sufficiently balanced diet for their children and their family because of their inadequate incomes. These caregivers opine that it is not practically feasible for all families to provide such foods daily to their children. One participant in Thakurgaon told us that, due to financial constraints, she was not able to provide balanced diet to her family members every day, although she devised her own way to handle the situation:

> "……it costs money to buy chicken; it also costs money to buy vegetables, so I try to arrange a balanced meal for my children at least once every week."

Another mother in Dhaka expressed the change in nutritional behavior of her children as-

> "……..I previously used to give them (her children) pocket money to buy foods, but they used to buy junk foods. So now I rather buy nutritious foods such as bananas and give it to the kid as snack.... the kids seem happier too..."

Many caregivers also feel that their children were now more willing to eat healthy foods such as veggies as they learned from the kit materials that these foods were good for them.

Chapter 6
Regression Modeling: Assessing the Relation between Outreach Participation and Outcomes

6.1 Multivariate Logistic Regression Modeling

The bivariate analyses established significant differences in behavior and knowledge between the test and control groups, in favour of the test group. This implies that the outreach program has created positive impact. However, improved behavioral outcomes can also be associated with higher income in both the test and control areas. Researchers used multivariate logistic regression to assess if the outreach activities had any impact on the target group, barring confounders such as income, caregiver education, and other factors.

Logistic regression is a powerful tool to assess the odds of a given outcome improve for a given increase in an independent variable (also called "predictor"). It also allows researchers to evaluate the influence of a particular predictor, while controlling for other variables that may confound its effects.

A detailed example of the analysis strategy using a dichotomous dependent variable (presence or absence of toothbrush in the household) is given in the following section. For other dependent variables, only summary data will be provided for the sake of focus and brevity. The same rigor has been applied to each analysis.

For the analysis of toothbrush-ownership, several covariates like education of the respondent, education of the head of household, monthly income, watching TV and listening to the radio daily, urban residence, participation in the outreach program, and time of participation has been initially considered. Most of these are categorical variables except for income and time of participation. Only two variables were later dropped –watching TV and listening to the radio daily – as these did not produce any statistically significant odds ratios.

Income and time of participation in training were the only variables measured on a continuous scale. Income was originally measured in Taka (i.e. unit of measurement is Tk. 1), but because there was a wide range of income of about over Tk.14,000, a one unit increase (i.e. increase of income by Tk.1) does not result in significant changes in the odds ratio. Therefore, the income variable needed some transformation. However, though mathematically robust transformations like natural log, square root, or standardizing yield very meaningful improvement in odds ratio, these transformations are difficult to interpret in common parlance. Hence researchers finally computed income in Tk. 500's instead of Tk. 1's.

The following is a contingency table for toothbrush ownership by area type (i.e., test vs. control area) which clearly depicts significant association between being a program beneficiary (i.e., being in a test area) and owning a toothbrush (see Table 6A).

Table 6A. Toothbrush * Area Type Crosstabulation

			Area Type		
			Control	Test	Total
Toothbrush	No	Count	201	154	355
		% within Area Type	66.8%	25.7%	39.4%
	Yes	Count	100	446	546
		% within Area Type	33.2%	74.3%	60.6%
Total		Count	301	600	901
		% within Area Type	100.0%	100.0%	100.0%

Chi-square=134.818 at 1 df and p<.001

From the following table (Table 6B) it is evident that participants in the test area are 5.8 times more likely to own a toothbrush than those in the control area.

Table 6B.Risk Estimate

	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Toothbrush (No / Yes)	5.821	4.305	7.872
For cohort Area Type = Control	3.091	2.533	3.773
For cohort Area Type = Test	.531	.469	.602
N of Valid Cases	901		

While this is very encouraging, it may be an artifact confounded by income, urban status, etc. To assess if the odds hold in a binary logistic regression model, a model was run with only type of area (Test/ Control) as the single covariate for toothbrush ownership.

Table 6C. Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	142.085	1	.000
	Block	142.085	1	.000
	Model	142.085	1	.000

Table 6D. Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1066.167(a)	.146	.198

a Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

The above two tables depict that the model is significant yields a significant pseudo R squared value (see Tables 6C and 6D). Model summary, however, also implies that there is scope for improving the model.

To examine the influence of potential confounders, we run the model with income in Tk. 500's, Urban location, Caregiver's education, and Household head's education. The following tables show the overall model fit with the addition of these variables (see Tables 6E and 6F)

Table 6E. Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	154.036	8	.000
	Block	154.036	8	.000
	Model	154.036	8	.000

Table 6F. Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1054.217(a)	.157	.213

a Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

The following table (Table 6G) indicates the status of the variables in this model:

Table 6G. Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1(a)	**Urban status**	1.341	.205	42.967	1	.000	3.821
	Income in Tk. 500's	.120	.026	21.011	1	.000	1.128
	Caregiver Education:						
	Education*			11.973	3	.007	
	NFE	.197	.221	.788	1	.375	1.217
	Upto Class V	.445	.205	4.690	1	.030	1.560
	Class VI+	.863	.265	10.635	1	.001	2.371
	Househead's Education:						
	Education			8.623	3	.035	
	NFE	.159	.208	.588	1	.443	1.173
	Upto Class V	.021	.208	.010	1	.920	1.021
	Class VI+	.897	.317	7.992	1	.005	2.453
	Constant	-1.082	.193	31.266	1	.000	.339

* NFE= Non-formal Education, Class V= Has passed level 5, Class Vi+= Has passed Level 6 or higher

We can see that living in an urban residence raises the odds for owning a toothbrush (3.82) compared to living in a rural area. Income also has a significant positive relation with toothbrush ownership.

We can see that the education status of both caregiver and house-head has significant role in the model, particularly at the higher levels of education measured (Class VI).

Finally, the model was run with area type (Test / Control) as an additional separate block.

Table 6H. Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	154.390	1	.000
	Block	154.390	1	.000
	Model	308.426	9	.000

The Chi-square value for the Model has now increased from 154 to 308, suggesting a large improvement in model fit (see Table 6H).

Table 6I. Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	944.885(a)	.253	.343

a Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

This model has also substantially reduced the -2 log likelihood and increased the pseudo R square values (see Table 6I). Hence it can be concluded that the addition of "Test vs. Control area status" (i.e., whether respondents participated in *Sisimpur* outreach) substantially improves the model and is likely to be an important predictor.

The following table provides the coefficients for the final model.

Table 6J. Variables in the Equation

		B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1(a)	**Urban**	1.630	.229	50.439	1	.000	**5.103**
	Income in Tk.500's	.091	.028	10.632	1	.001	**1.095**
	Househead's Education:			10.449	3	.015	
	NFE	.287	.246	1.360	1	.243	1.332
	Upto Class V	.559	.224	6.223	1	.013	**1.748**
	Class VI+	.834	.291	8.229	1	.004	**2.302**
	Caregiver's Education:			16.220	3	.001	
	NFE	.259	.229	1.288	1	.256	1.296
	Upto Class V	.422	.232	3.308	1	.069	1.524
	Class VI+	1.419	.357	15.814	1	.000	**4.131**
	Test Group	2.134	.188	128.311	1	.000	**8.448**
	Constant	-2.540	.261	94.795	1	.000	.079

When other variables in the model are held constant for both the Test and Control Groups, the odds of owning Toothbrush is nearly 8.5 times higher in the Test group compared to that of the Control group (see Table 6J).

Further, it can be concluded that urban status (as against rural), having higher income, the caregiver's ClassVI+ education, and any formal education of the household head positively influenced ownership of toothbrush (odds ratios are 5.10, 1.10, 4.13, 1.75, and 2.30 respectively).

We started off with an odds ratio of 5.82 for the test group in a bi-variate analysis; after accounting for variables which were possible confounders, we found that the impact of the *Sisimpur* outreach program increases ownership of toothbrushes by 8.45 times.

6.2 Summary models based on caregiver interviews

This section presents summary tables for logistic regression models for other outcome variables. Only models that resulted in significant model fit are presented. The same procedures were used to model each outcome variable. The predictors used in the model are test/control area, urban/rural location, Income in Tk. 500, caregivers' education, household head's education and time of participation in training. For brevity and focused analysis, the findings are presented for several outcome variables of same area of interest in a single table. Also all the modeling and predictor information is presented in the same table.

The models for caregivers' interview were first run with all the predictors mentioned above. However, if the regression coefficient for a predictor was not statistically significant, that variable was excluded from the modeling and the final model was based only on the predictors having significant model fit. This same approach has been followed to model the data from the children's interview, though those models include additional predictors (e.g., age, gender, and school attendance).

6.2.1 Ownership of Tooth Cleaning Material

The following table (Table 59) summarizes binary logistic regressions predicting the ownership of tooth cleaning materials.

Table 59: Modeling of Ownership of Tooth Cleaning Material

	Parameters		Toothbrush	Toothpaste	Tooth Powder	Majon
Model	Chi-Square	Value	308.42	346.86	60.38	52.20
		Df	9	9	5	5
		sig.	<.001	<.001	<.001	<.001
	-2 loglikelihood		899.83	881.89	1148.72	1148.87
	Nagelkerke R Square		0.39	0.43	.08	0.08
	Variables					
Odds Ratio of	Test Area		8.45	5.3	2.52	0.67
	Urban		5.10	7.5	1.53	0.35

	Parameters		Toothbrush	Toothpaste	Tooth Powder	Majon
Predictors	Income in Tk 500		1.10	1.17	-	–
	Caregiver Education	NF	NS		.51	NS
		Up to class 5	NS		NS	NS
		Class 6 and above	4.13	3.18	.58	0.57
	Household Head Education	NF	NS		-	–
		Up to class 5	1.75	2.59	-	–
		class 6 and above	2.30	2.54	-	–

Note: Odds ratios listed are significant at $p < .05$. NS=Not Significant. '–' means not included in the model

The models for toothbrush and toothpaste ownership have more predictive power while the ones for tooth powder and majon ownership are not as strong.

It is clear that participation in the *Sisimpur* Outreach Program is very highly associated with toothbrush and toothpaste ownership. Caregivers who participated in *Sisimpur* outreach were more likely to own toothpaste, toothbrush, and toothpowder than non-participants. This was true even after controlling for urban residence, education, and income.

Urban location, and the caregiver's education also have high impact. From a program perspective, we need to focus on rural and families headed by those with less education.

6.2.2 Teeth Cleaning Habit

The following table (Table 60) provides a summary of the model predicting teeth cleaning habits (i.e., using a toothbrush, cleaning teeth more than once a day and at night).

Table 60: Modeling of Teeth Cleaning Habit

	Parameters		Caregiver				Child >once a day
			Use toothpaste	Use toothbrush	>once a day	At night	
Model	Chi-Square	value	291.39	226.12	256.5	300.82	306.88
		df	9	6	5	8	8
		sig.	<.001	<.001	<.001	<.001	<.001
	-2 loglikelihood		789.63	980.39	687.3	907.44	892.30
	Nagelkerke R Square		0.39	0.30	0.382	0.38	0.39
	Variables						
Odds Ratio of Predictors	Test Area		4.18	3.78	17.26	14.40	13.89
	Urban		9.52	5.95	–	–	2.35
	Income in Tk 500		1.09	1.06	0.92	0.96	-
	Caregiver Education	NF	NS	NS	0.42	NS	0.52
		Up to class 5	1.8	1.99	0.48	NS	NS

		Class 6 and above	3.8	4.42	NS	1.94	NS
	Household Head Education	NF	1.9	–	–	0.52	0.54
		Up to class 5	2.3	–	–	NS	NS
		class 6 and above	2.1	–	–	NS	NS

Note: Odds ratios listed are significant at $p < .05$. NS=Not Significant. '–' means not included in the model

Compared to non-participants, participants in *Sisimpur* outreach are 4 times more likely to use toothpaste, 4 times more likely to use toothbrush, 17 times more likely to clean their teeth more than once a day, and 14 times more likely to clean their teeth at night; their child is also 14 times more likely to clean his or her teeth more than once a day.

6.2.3 Hand Washing Material Owned

The following table (Table 61) models the presence of soap and towel at home.

Table 61: Modeling of Hand washing material owned

	Parameters		**Soap**	**Towel**
Model	Chi-Square	value	8.35	96.61
		Df	1	2
		Sig.	<.01	<.001
	-2 loglikelihood		463.7	587.66
	Nagelkerke R Square		0.02	0.19
	Variables			
Odds Ratio of Predictors	Test Area		2.1	2.07
	Urban		–	7.28
	Income in Tk 500		–	–
	Caregiver Education	NF	–	–
		Up to class 5	–	–
		Class 6 and above	–	–
	Household Head Education	NF	–	–
		Up to class 5	–	–
		class 6 and above	–	–

Note: Odds ratios listed are significant at $p < .05$. NS=Not Significant. '–' means not included in the model

The availability of soap and towels for washing hands is related to participation in *Sisimpur* outreach: Participants are 2 times more likely to have soap and 2 times more likely to have a towel than non-participants.

6.2.4 Hand Washing Behavior

Desirable hand-washing behaviors have been modeled in the following table (Table 62).

Table 62: Modeling Hand washing Behavior

	Parameters		Wash with water and soap before last meal	Always use soap in hand wash before preparing food	Wash with water and soap before taking main meal last	Always use soap in hand wash before meal
Model	Chi-Square	Value	110.77	34.7	113.62	77.64
		Df	5	4	1	5
		sig.	<.001	<.001	<.001	<.001
	-2 loglikelihood		1119.16	532.83	1124.53	1067.50
	Nagelkerke R Square		0.16	0.08	0.16	0.11
	Variables					
Odds Ratio of Predictors	Test Area		4.45	–	5.15	–
	Urban		0.64	0.21	–	0.27
	Income in Tk 500		–	–	–	1.07
	Caregiver Education	NF	0.58	2.42	–	–
		Up to class 5	NS	NS	–	–
		Class 6 and above	1.63	NS	–	–
	Household Head Education	NF	–	–	–	NS
		Up to class 5	–	–	–	1.60
		class 6 and above	–	–	–	2.10

Note: Odds ratios listed are significant at $p < .05$. NS=Not Significant. '–' means not included in the model

Chi-square tests indicate that the model fit the data.

Caregivers who had participated in *Sisimpur* outreach were more likely to wash their hands before having a meal than those who had not participated. Participation, however, was not related to consistent use of soap for all the occasions of washing hands before preparing food or taking meals.

6.2.5 Bathing Behavior

Caregiver and children's bathing behaviors are modeled below (Table 63).

Table 63: Modeling of Bathing Behavior

	Parameters		**Caregiver Bathing**		**Child Bathing**	
	Parameters		Seven times or more last week	with soap 4 times or more in a week	7 times or more last week	Soap used 4 times or more last week
Model	Chi-Square	value	14.25	106.68	28.32	90.11
		df	2	6	1	9
		sig.	.001	<.001	<.001	<.001
	-2 loglikelihood		457.8	622.55	986.65	635.48
	Nagelkerke R Square		0.03	0.20	0.05	0.17
	Variables					
Odds Ratio of Predictors	Test Area		2.13	3.07	–	2.99
	Urban		0.51	0.32	2.91	0.57
	Income in Tk 500		–	1.22	–	1.15
	Caregiver Education	NF	–	2.23	–	NS
		Up to class 5	–	2.48	–	2.65
		Class 6 and above	–	24.30	–	2.89
	Household Head Education	NF	–	–	–	2.16
		Up to class 5	–	–	–	2.11
		class 6 and above	–	–	–	NS

Note: Odds ratios listed are significant at $p < .05$. NS=Not Significant. '–' means not included in the model

Caregivers' and children's bathing habits are associated with their exposure to *Sisimpur* outreach. Caregiver participants are 2 times more likely to bathe daily and 3 times more likely to bathe with soap frequently than non-participants; participants' children were also 3 times more likely to use soap when bathing.

6.2.6 Children's Hair Washing and Combing Behavior

The following models focus on predicting children's hair washing and combing (Table 64).

Table 64: Modeling of Children's Hair Washing and Combing Behavior

	Parameters		Child combs hair more than once a day	Child washed hair at least once within last three days
Model	Chi-Square	value	63.62	176.3
		df	2	2
		sig.	<.001	<.001
	-2 loglikelihood		1107.53	1015.9
	Nagelkerke R Square		0.09	0.242
	Variables			
Odds Ratio of Predictors	Test Area		3.04	–
	Urban		1.57	0.05
	Income in Tk 500		–	1.07
	Caregiver Education	NF	–	–
		Up to class 5	–	–
		Class 6 and above	–	–
	Household Head Education	NF	–	–
		Up to class 5	–	–
		class 6 and above	–	–

Note: Odds ratios listed are significant at $p < .05$. NS=Not Significant. '–' means not included in the model

Children whose caregivers were exposed to the *Sisimpur* outreach program were 3 times more likely to comb their hair more than once a day; program exposure was not related to hair washing, however.

6.2.7 Knowledge about Teeth Cleaning

Significant models predicting caregivers' knowledge on teeth cleaning are presented below (Table 65).

Table 65: Modeling of Knowledge about Teeth Cleaning

Note: Odds ratios listed are significant at $p < .05$. NS=Not Significant. '–' means not included in the model

			Response to the question "Why do teeth need cleaning?"			
	Parameters		Mentions "to keep teeth clean"	Mentions "for healthy teeth"	Mentions "to keep healthy"	Mentions "for fresh breath"
Model	Chi-Square	Value	190.81	143.38	166.78	15.23
		Df	9	2	9	5
		sig.	<.001	<.001	<.001	<.001
	-2 loglikelihood		1057.03	913.04	789.69	1004.1
	Nagelkerke R Square		0.25	0.213	0.26	0.216
	Variables					
Odds Ratio of Predictors	Test Area		2.87	–	2.2	–
	Urban		5.65	5.82	4.2	3.5
	Income in Tk 500		1.05	1.1	1.09	1.1
	Caregiver Education	NF	NS	–	1.83	–
		Up to class 5	1.62	–	2.1	–
		Class 6 and above	1.87	–	2.55	–
	Household Head Education	NF	1.76	–	NS	2.1
		Up to class 5	NS	–	2.14	3.15
		class 6 and above	1.75	–	2.01	2.99

Participation in the *Sisimpur* outreach initiative does not seem to predict caregivers' articulation of reasons for keeping one's teeth clean. Participants were more likely to cite keeping one's teeth clean and keeping teeth healthy as reasons. Participation did not predict the likelihood of mentioning having healthy teeth and fresh breath as reasons. Knowledge about teeth cleaning is most strongly influenced by urban location and income.

6.2.8 Knowledge on Washing Hands, Bathing, and Washing hair

The models predicting caregiver's knowledge of the reasons for various hygiene practices (using soap when bathing, washing hands regularly, and washing hair) are presented below (Table 66).

Table 66: Modeling of Other Knowledge area: washing hands, bathing, washing hair

	Parameters		Use soap when bathing: To keep healthy	Regular hand washing: Not to fall sick	Hair washing: To keep hair free from lice	Hair washing: To keep hair free from dandruff
Model	Chi-Square	Value	71.11	46.4	104.47	84.03
		Df	4	6	8	6
		sig.	<.001	<.001	<.001	<.001
	-2 loglikelihood		971.33	1063.8	1109.58	730.56
	Nagelkerke R Square		0.11	0.07	0.15	0.15
	Variables					
Odds Ratio of Predictors	Test Area		–	2.57	1.87	3.93
	Urban		4.01	1.52	3.77	2.07
	Income in Tk 500		–	0.92	–	1.05
	Caregiver Education	NF	–	NS	NS	–
		Up to class 5	–	NS	NS	–
		Class 6 and above	–	1.74	1.77	–
	Household Head Education	NF	NS	–	NS	NS
		Up to class 5	0.61	–	NS	1.91
		class 6 and above	NS	–	1.61	2.60

Note: Odds ratios listed are significant at $p < .05$. NS=Not Significant. '–' means not included in the model

The *Sisimpur* outreach program has had an influence on caregivers' knowledge of hand wash and hair washing. Other factors that affect knowledge include urban residence, and caregivers' and household head's education.

6.2.9 Nutrition practices: Protein Intake Yesterday

The logistic regression models predicting consumption of carbohydrates and vegetables (not shown) were not statistically significant, perhaps because those foods are common in the diets of most Bangladeshis and there is little variation to predict. On the other hand, consumption of protein appears relatively low compared to the other foods, and the model unearths influencing factors well. In this model consumptions of carbohydrates and vegetables have also been considered as predictors. Table 67 shows the model predicting protein intake during breakfast, lunch, and dinner.

Table 67: Modeling of Nutrition practices: Protein Intake Yesterday

	Parameters		Breakfast	Lunch	Dinner
Model	Chi-Square	value	73.7	237.4	156.7
		df	2	6	7
		sig.	<.001	<.001	<.001
	-2 loglikelihood		1158.48	965.49	972.5
	Nagelkerke R Square		0.105	0.314	0.22
	Variables				
Odds Ratio of Predictors	Test Area		–	–	–
	Urban		–	0.217	0.40
	Income in Tk 500		1.17	1.22	1.21
	Caregiver Education	NF	–	0.47	–
		Up to class 5	–	NS	–
		Class 6 and above	–	NS	–
	Household Head Education	NF	–	–	–
		Up to class 5	–	–	–
		class 6 and above	–	–	–
	Vegetables/Fruits Intake		1.73	3.0	0.31
	Carbohydrate Intake		–	–	–

Note: Odds ratios listed are significant at $p < .05$. NS=Not Significant. '–' means not included in the model

The outreach program has had no influence on high protein intake, which was mostly influenced by income.

6.2.10 Children's Consumption of Nutritious Food

Caregivers' report of how often their children consume milk, eggs, and fish were modeled to identify potential impact of relevant factors (see Table 68).

Table 68: Modeling Children's Consumption of Nutritious Food

	Parameters		drink milk at least once a week	Eats eggs daily	Eats fish at least once in two days
Model	Chi-Square	value	84.34	106.15	151.93
		df	5	3	5
		sig.	<.001	<.001	<.001
	-2 loglikelihood		1081.92	1142.50	1073.03
	Nagelkerke R Square		0.12	0.15	0.21
	Variables				
Odds Ratio of Predictors	Test Area		2.97	2.96	–
	Urban		2.26	2.33	5.83
	Income in Tk 500		–	1.08	1.12
	Caregiver Education	NF	NS	–	–
		Up to class 5	NS	–	–
		Class 6 and above	2.50	–	–
	Household Head Education	NF	–	–	0.49
		Up to class 5	–	–	NS
		class 6 and above	–	–	NS

Note: Odds ratios listed are significant at $p < .05$. NS=Not Significant. '–' means not included in the model

Compared to those in control groups, children of outreach participants were 3 times more likely to consume milk and eggs with some regularity. Participation was not associated with children's fish consumption.

Living in urban areas was consistently associated with consumption of milk, eggs, and fish. Income was also highly associated with egg and fish consumption. Mothers' education was influential only in case of milk consumption.

6.3 Summary models based on child interviews

The following section summarizes the regression models used to predict children's reports of their health, hygiene, and nutrition practices. While modeling using information from child interviews their age, sex, and school going history were also used as predictors. These predictors were believed by the researchers to influence behavior of the children and also intra-household food distribution

6.3.1 Children's Teeth Cleaning Behavior

The following table (Table 69) models children's report of their teeth cleaning behavior.

Table 69: Modeling of Teeth cleaning behavior reported by children

			Materials used in last teeth cleaning occasion			Usual Teeth Cleaning habit		
	Parameters		Toothbrush	Toothpaste	Tooth powder	More than once a day	After Meal	At night
Model	Chi-Square	Value	335.8	332.2	27.8	183.9	8.6	222.2
		Df	9	9	6	4	1	2
		sig.	<.001	<.001	<.001	<.001	0.003	<.001
	-2 loglikelihood		912.2	830.3	526.2	1063.3	383.3	1024.6
	Nagelkerke R Square		0.415	0.425	0.066	0.246	0.027	0.292
	Variables							
Odds ratio of Predictors	Test Area		8.64	5.0	1.7	7.80	2.83	10.91
	Urban		4.56	6.56	0.336	–	–	1.50
	Income in Tk 500		1.17	1.21	0.91	–	–	–
	Age		–	–	–	–	–	–
	Ever attended school		–	–	–	–	–	–
	Girl		–	–	–	–	–	–
	Caregiver Education	NF	NS	NS	NS	0.66	–	–
		Up to class 5	NS	NS	NS	NS	–	–
		class 6 and above	2.78	2.59	NS	NS	–	–
	Household Head Education	NF	1.93	2.25	1.99	–	–	–
		Up to class 5	1.82	2.89	2.51	–	–	–
		class 6 and above	2.67	2.20	NS	–	–	–

Note: Odds ratios listed are significant at $p < .05$. NS=Not Significant. '–' means not included in the model

Caregivers' participation in *Sisimpur* outreach was reliably linked to their children's healthy teeth cleaning practices: Compared to non-participants, their children were more likely to use toothbrush and toothpaste, and clean their teeth more than once day, after a meal, and at night.

Other factors that were related to using toothbrush and toothpaste were urban residence, income, caregiver education, and house hold head's education. These variables did not predict teeth-cleaning habits well, however.

6.3.2 Hand Washing Behavior

Children's hand washing habits (before a meal, and before and after going to the toilet) has been modeled in the following table (Table 70).

Table 70: Modeling of Hand Washing Behavior

				Hand wash after Last defecation		
	Parameters		Used soap in last hand wash before meal	Washed hand	Used Soap	Used water and ash
Model	Chi-Square	value	132.8	35.2	161.27	15.5
		df	4	1	10	2
		sig.	<.001	<.001	<.001	<.001
	-2 loglikelihood		984.0	379.0	1075.0	409.5
	Nagelkerke R Square		0.193	0.104	0.220	0.045
	Variables					
Odd ratio of Predictors	Test Area		7.99	–	4.60	–
	Urban		NS	–	2.10	0.05
	Income in Tk 500		–	–	0.94	–
	Age		–	1.98	1.44	–
	Ever attended school		–	–	–	0.05
	Girl		–	–	–	–
	Caregiver Education	NF	0.54	–	NS	–
		Up to class 5	NS	–	NS	–
		class 6 and above	NS	–	1.95	–
	Household Head Education	NF	–	–	NS	–
		Up to class 5	–	–	NS	–
		Class 6 and above	–	–	1.71	–

Note: Odds ratios listed are significant at $p < .05$. NS=Not Significant. '–' means not included in the model

Children; whose caregivers participated in the *Sisimpur* outreach program were more likely to use soap to wash their hands before a meal and after visiting the toilet compared to those of non-participants. Participation did not predict children's propensity to wash her hands or use water and ash after going to the toilet.

6.3.3 Children's Food Habits

As with caregivers' food consumption, researchers had little success in predicting children's carbohydrate consumption. The models predicted protein and vitamin consumption, but the amount of variance accounted for was not high (see Table 71).

Table 71: Modeling of Food Habits

	Parameters		Protein Consumption	Vitamin Consumption	If anybody washed child's fruits before eating
Model	Chi-Square	value	74.1	33.1	75.3
		df	6	1	6
		sig.	<.001	<.001	<.001
	-2 loglikelihood		1166.1	1166.1	1173.6
	Nagelkerke R Square		0.106	0.049	0.107
	Variables				
Odd ratio of Predictors	Test Area		–	–	2.62
	Urban		1.70	–	2.0
	Income in Tk 500		1.08	–	–
	Child's Age		–	–	–
	Girl		–	–	0.74
	Ever been to school		–	–	–
	Protein		–	0.45	–
	Vegetable /Fruits		0.44	–	–
	Caregiver Education	NF	NS	–	–
		Up to class 5	1.45	–	–
		class 6 and above	NS	–	–
	Household Head Education	NF	–	–	NS
		Up to class 5	–	–	NS
		class 6 and above	–	–	1.79

Note: Odds ratios listed are significant at $p < .05$. NS=Not Significant. '–' means not included in the model

Exposure to the *Sisimpur* outreach initiative was unrelated to children's consumption of foods containing protein and vitamins. Protein consumption is largely influenced by urban location, income, and caregivers' education; vegetables/vitamin consumption was inversely associated with protein intake.

Children whose caregivers took part in the outreach intervention were more likely to have had someone wash fruits for them before eating, suggesting that these caregivers or other adults in the family are more aware of the importance of hygienic food handling.

Chapter 7
Application of Outreach Kit

After the investigating caregivers' and children's hygiene and nutrition behavior, the next goal of the research was determine their use of the outreach kit. In this context, the survey was interested documenting the frequency of use, and caregivers' thoughts, perceptions, and opinions about the usefulness of the kit.

7.1 Possession of Outreach Kit

First, researchers determined which outreach kit materials the program beneficiaries still possessed at the time of the survey. For this purpose, researchers asked program caregivers if they had all 6 items of the kit: flash cards, matching cards, two storybooks, board game and growth chart.

Table 72: Possession of Outreach Kit Materials

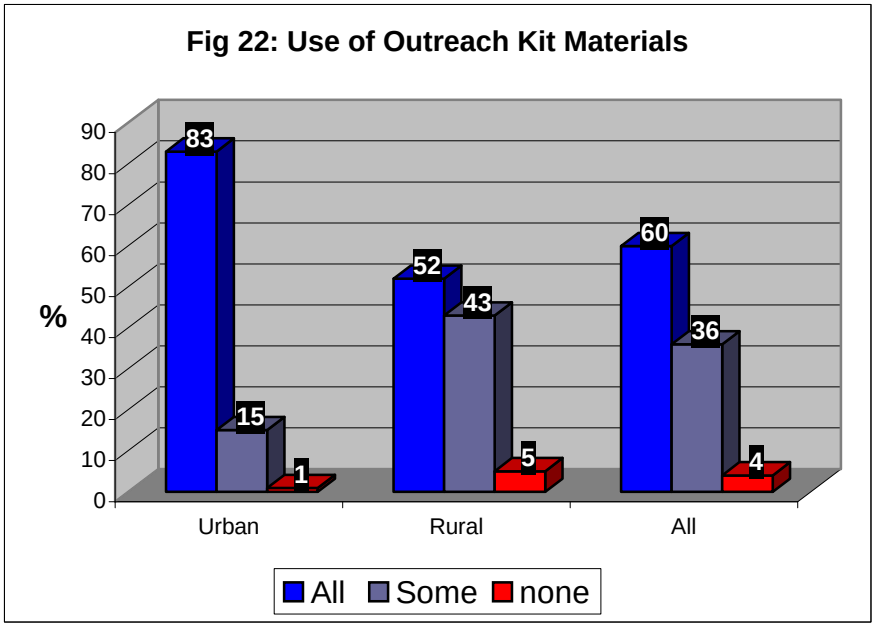
	Urban (%)	Rural (%)	All (%)
Do you have the kit in your possession			
Yes	99	98	99
Some materials available	1	2	1
Materials Available*			
Flash cards	99	100	99
Matching cards	99	99	99
Mitu ekdin sismpur - story book	98	98	98
Ekdin shobai mile - story book	97	97	97
Board game	98	97	97
Growth chart	97	95	96
Base	**149**	**448**	**597**

* There are no statistically significant differences between the urban and rural groups

Ninety nine percent of program caregivers reported having the outreach kit they received during the workshops. In the cases where all materials were not present, it was found that the missing materials were often misplaced or lost.

7.2 Use of Outreach Kit Materials by Caregivers

The survey's next goal was to elucidate how caregivers were using the materials contained in the outreach kit. For this purpose, caregivers were initially asked which outreach kit materials they had personally used with their children:



In response, 60 percent of the program caregivers reported using all the materials in the outreach kit with their children, 36 percent reported using some of the materials, while the remaining 4 percent said they had never used any of the materials with their children. The portion of caregivers who had utilized all 6 materials was noticeably higher in urban program locations (83%) than in rural program locations (52%).

Table 73: Use of Outreach Kit Materials with children

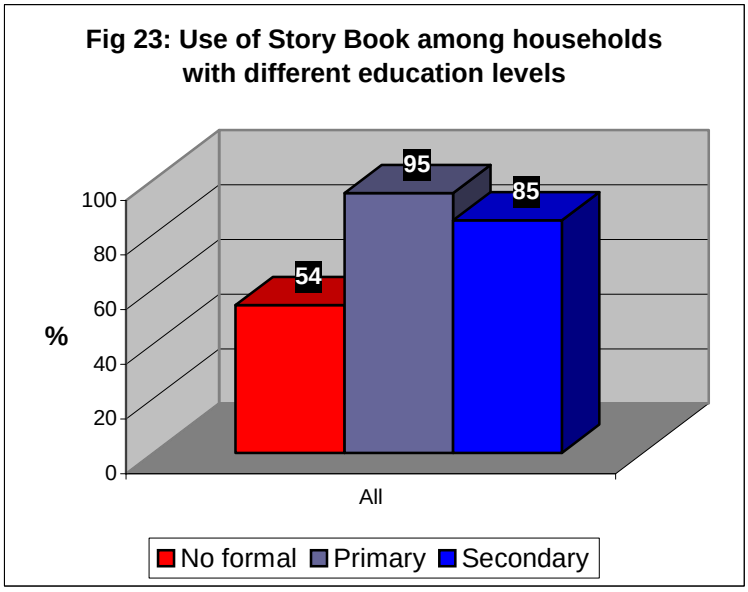
	Urban (%)	Rural (%)	All (%)
Matching cards	99*	92	94
Board game	99*	88	90
Flash cards	99*	85	89
Growth chart	95*	74	80
Mitu ekdin sismpur - story book	88*	58	66
Ekdin shobai mile - story book	87*	59	66

Note: * refers to figures that are statistically significantly higher or lower across urban and rural groups

The three materials caregivers used the most were the matching cards (used by 94% of caregivers), the board-game (used by 90% of caregivers) and flash cards (used by 89% of the caregivers).

The most under-utilized materials were the two story books, which only two-thirds of the program caregivers reported using with their children. The use of storybooks differed according to location. Urban parents were more likely to use the materials than rural parents. This relation is likely mediated by differences in education backgrounds.

The diagram below (Fig. 23) represents the findings that caregivers with low education levels were less likely to use the storybooks:



The second most under-utilized material was the growth chart, which twenty percent of caregivers reported never using with their children.

Box 3: Qualitative Findings
Use of Materials among Caregivers

Data from in-depth interviews indicated that most participants retained all the elements of the outreach kit. Every participant affirmed that they were able to play with their kids with the outreach kit elements, except one mother who said she had not been able to use the kit materials with her children due to lack of time.

Reasons for Non-Use

Researchers were interested in exploring why some elements of the outreach kit were unused. This investigation was important because it had the potential to identify barriers parents might face when using the materials. Such insights also provide valuable input into improving the design of future outreach materials.

As indicated earlier, the storybooks were found to be the most inaccessible materials among program caregivers. Consequently, participants who had never used the storybooks with their children were asked why:

Table 74: Reasons for Non-Use of Story Books

	Urban (%)	Rural (%)	All (%)
Did not understand the procedures	11	5	5
Child did not like storybook	6	3	3
Lost the material	6	4	4
Cannot read	**89**	**85**	**85**
Did not have the time	0	14	13
Base	**18**	**188**	**206**

* There are no statistically significant differences between the urban, and rural areas

The primary reason cited by these respondents for non-use was their lack of reading skills (mentioned by 85%)[12].

The second most under-utilized material was the growth chart. One hundred and twenty-two caregivers said they had never used this particular material:

Table 75: Reasons for Non-Use of Growth Chart

	Urban (%)	Rural (%)	All (%)
Forgot how to use	0	30	29
Did not understand the procedures	0	26	25
Cannot hang chart	14	7	7
May use later on	0	10	9
Lost the material	0	2	2
Cannot read	29*	11	12
Did not have the time	43*	12	14
Material not given	29	3	5
Base	**7**	**115**	**122**

Note: * refers to figures that are statistically significantly higher or lower between the urban and rural area

A major portion of these non-users were from rural program locations. Thirty percent of respondents said they did not use the materials because they forgot how, while another one-fourth mentioned that they never understood the "procedures" of application. Twelve percent of respondents said they did not use the material because they cannot read, while 7 percent said they have not used the chart because they cannot "hang" it. Six of the parents (2 from urban areas and 4 from rural areas) have claimed that they did not receive the material during the workshops to begin with.

Table 76: Reasons for Non-Use of Flash Cards

	Urban (%)	Rural (%)	All (%)
Forgot how to play	0	7	7
Did not understand procedures	0	9	9
Child did not like game	0	6	6
Did not have the time	100	70	71
Base	**1**	**67**	**68**

Note: There are no statistically significant differences across urban and rural areas

Sixty-seven rural program beneficiaries and one urban program beneficiary reported that they had never used the flash cards with their children. A majority of these respondents said they did not use the materials because of a "lack of time". Ten percent of rural respondents reported that they did not play because they could not understand the procedures, while seven percent overall said that they forgot how the game was meant to be played.

Only one urban respondent mentioned he/she did not use the cards. This respondent said the reason for the nonuse was a lack of time.

Table 77: Reasons for Non-Use of Board Game

	Urban (%)	Rural (%)	All (%)
Forgot how to play	0	9	9
Did not understand the procedures	0	13	12
Child did not like game	0	5	5
Lost the material	0	5	5
Did not have the time	50	45	45
Material not given	50*	5	7
Base	**2**	**56**	**58**

Note: * refers to figures that are statistically significantly higher or lower between the urban and rural area

[12] It should be noted that the problems of using only one storybook (*mitu ekdin SisimpurSisimpur-e*) have been analyzed here, as findings related to both storybooks are almost identical. For the other book, the number of non-users is 205 caregivers (19 urban, 186 rural) and the majority (84%) of respondents said that they did not use the material because they cannot read.

A total of 58 program beneficiaries (56 rural and two urban) mentioned that they had never used the board game. The majority (45%) said they did not use the board game because they could not find the time, while another 12 percent said that they did not understand the procedures.

Four program beneficiaries (one urban and three rural) also mentioned that they did not receive this specific material in their kit.

Table 78: Reasons for Non-Use of Matching Cards

	Urban (%)	Rural (%)	All (%)
Did not understand procedures	0	17	17
Cannot read	0	3	3
Did not have the time	100	71	72
Material not given	0	3	3
Base	**1**	**35**	**36**

Note: There are no statistically significant differences between the urban and rural areas

The most utilized material in the outreach kit was the matching cards, as only 36 program beneficiaries (six percent of the total sample) reported that they had never used this particular material.

Again, the major reason cited by the 36 respondents who had not used the matching cards was lack of time. Another 17 percent also claimed they could not understand the procedures and therefore could not use the cards with the children.

A single caregiver also said that he/she did not receive the material during the workshop.

7.3 Application of Outreach Kit Materials

After obtaining a general idea about the overall usage of the kit, the research moved on to a more in-depth investigation into each of the six materials contained in the kit. In this context, researchers asked caregivers and children about each of the six materials in separate questions to determine their usage habits. Specifically, the survey sought to determine:

- Whether the material had ever been used
- When the material was last used
- Who the material was used it with
- What children and caregivers liked and disliked about the material

The results of this survey are discussed below.

7.3.1 Flash Cards

Application among Children

Initially, the children were asked if they had ever used the flash cards, and if so, who they have used the cards with:

Table 79: Use of flash cards among children

	Urban (%)	Rural (%)	All (%)
Cards used by	95*	87	89
Persons Cards used with			
Caregivers/parents	100*	71	79
Siblings/relatives	31*	65	56
Friends	14*	31	26
Base	**143**	**393**	**536**

Note: * refers to figures that are statistically significantly higher or lower between the urban and rural areas

In reply, 89 percent of program children reported using the flash cards. This percentage was marginally higher in urban areas. Most children had used the cards with their caregivers (74%), followed by siblings/relatives (56%) and friends (26%).

Usage of cards with other children (siblings, relatives and friends) was significantly higher among rural children than urban ones. Sixty-five percent of rural children mentioned using the cards with their siblings, while 31 percent of them mentioned using the cards with "friends".

The children who reported using the flash cards at least once were then questioned about their last occasion of use:

Table 80: Last Occasion of Use of Flash Cards

	Urban (%)	Rural (%)	All (%)
Today	41	11	19
Yesterday	38	42	41
Day before yesterday	13	20	18
Within last week	1	16	12
Before one week	2	7	6
Cannot remember	5	4	4
	$chi^2 = 74.680$ at 5 df and $p < 0.001$		
Base	**143**	**393**	**536**

Many children reported playing with the cards recently. Overall, forty-one percent of children reported playing with the cards "yesterday", while 19 percent reported playing with the cards on the day of the interview. The difference between urban and rural respondents was found to be statistically significant.

Table 81: Person with whom flash cards were used on last occasion

	Urban (%)	Rural (%)	All (%)
Caregivers/parents	73*	27	40
Siblings/relatives	20*	57	47
Friends	10	14	13
Base	**143**	**393**	**536**

Note: * refers to figures that are statistically significantly higher or lower between the urban and rural areas

On the last occasion, many of the children (47%) had used the cards with their siblings, while another 38 percent of the children had used the cards with their caregivers. Once again, it was more common for rural children to make use of the cards with peers of or near their own age. In contrast, urban children more commonly used the materials with a caregiver.

Table 82: Likeability of Flash cards reported by Children

	Urban (%)	Rural (%)	All (%)
A lot	**87**	**49**	**59**
A little	13	49	39
Not liked at all	0	2	1
	chi ^{2} = 64.002 at 2 df and p <0.001		
Base	**143**	**393**	**536**

When children were asked how much they liked the flash cards, 59 percent of them said they liked the materials "very much". However, chi square tests reveal significant variations in "likeability" levels between urban and rural children: while almost nine out of ten urban children mentioned that they liked the "flash card" material "a lot," less than half of the rural children gave this response.

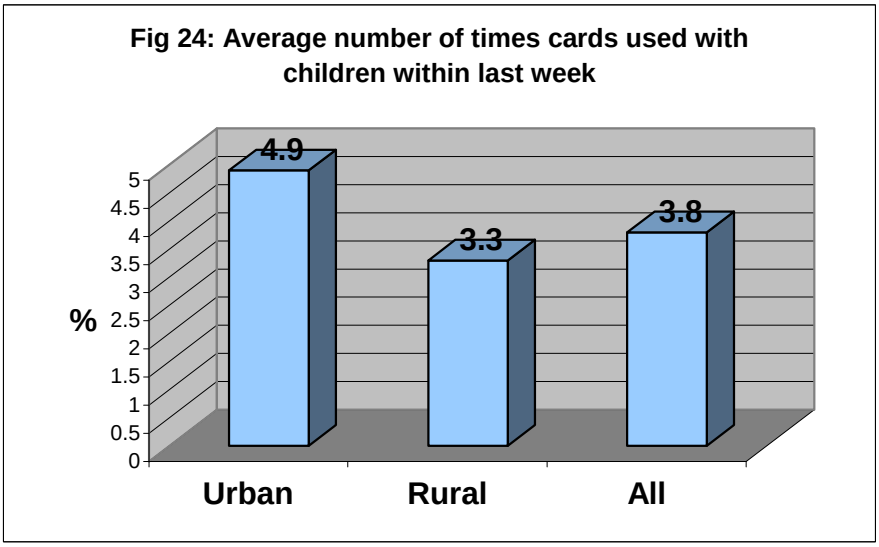
Application among Caregivers

After ascertaining the usage habits of children, researchers investigated caregivers' use. The 536 caregivers who had reported using the flash cards at least once were asked about the last occasion when they had used the flash cards with their children:

Table 83: Last Occasion of Use of Flash Cards

	Urban (%)	Rural (%)	All (%)
Today	26	8	13
Yesterday	41	23	28
Day before yesterday	17	16	16
Within last week	7	26	21
Within the last 2 weeks	5	8	7

Within last month	3	11	9
Cannot remember	1	7	5
	chi ^{2} = 77.922 at 6 df and p<0.001		
Base	**143**	**393**	**536**



In reply, 41 percent of the caregivers reported using flash cards with their child within the last two days. The survey found that 16 percent of caregivers had not used the cards with their children within the last two weeks, or even longer.

Urban caregivers were found to use the cards more frequently than rural respondents: 84 percent of the urban caregivers reported that they had used the cards with their children within the last three days (time spanning "today", "yesterday" and "day-before yesterday"). Among rural caregivers, this figure was considerably lower at 47 percent. This difference is statistically significant.

Overall, caregivers had used flash cards with their children an average of three times in the last week (see Fig. 24). Again, urban caregivers reported more frequent use of the flash cards (4.9 times during last week) than their rural counterparts (3.3 times during last week)

Finally, the caregivers were asked if they felt that their children liked playing with the flash cards. In response, 68 percent of the caregivers said their children liked the material "a lot", while another 30 percent said their children liked the material "somewhat." Again, it was found that urban beneficiaries received the flash cards significantly better than rural beneficiaries. Nine out of 10 respondents from urban program locations believed that the flash card was liked "a lot" by their children, compared to 58% of rural respondents.

Table 84: Likeability of Flash cards reported by Caregivers

	Urban (%)	**Rural (%)**	**All (%)**
A lot	**91**	**58**	**68**
Somewhat	7	39	30
Not liked at all	2	2	2
	chi ^{2} = 54.980 at 2 df and p<0.001		
Base	**143**	**393**	**536**

7.3.2 Matching Cards

Application among Children

Ninety-seven percent of the program children mentioned using the matching cards, making this material with the most reported use. Most children reported using the cards with their caregivers (72%), followed by siblings (58%) and friends (29%).

Table 85: Use of Matching Cards among children

	Urban (%)	Rural (%)	All (%)
Cards used by	99*	96	97
Persons Cards used with			
Caregivers	89*	66	72
Parents	13*	5	7
Siblings/relatives	32*	67	58
Friends	15*	33	29
Base	**149**	**432**	**581**

Note: * refers to figures that are statistically significantly higher or lower between the urban and rural areas

Again, it was found that rural children commonly played the matching card game with siblings (67%), while urban children commonly used the cards with caregivers (89%).

The children who responded that they had used the matching cards at least once were then asked when they had used them last:

Table 86: Last Occasion of Use of Matching Cards

	Urban (%)	Rural (%)	All (%)
Today	37	14	20
Yesterday	42	44	43
Day before yesterday	13	19	17
Within last week	5	14	12
Before one week	1	5	4
	$chi^2 = 47.554$ at 5 df and $p<0.001$		

Eighty percent of children reported using the flash card at least once within the last three days, with 20 percent reporting that they had played with the cards on the day of the interview. These figures indicate the children used the matching cards frequently. A chi square test reveals that the variation between urban and rural is significant.

Table 87: Person with whom matching cards were used on last occasion

	Urban (%)	Rural (%)	All (%)
Caregivers	70*	26	38
Parents	6	3	4
Siblings	19*	56	46
Friends	10	14	13

Note: * refers to figures that are statistically significantly higher or lower between the urban and rural areas

On the last occasion, most of the children (46%) had used the cards with their siblings, while another 38 percent of the children had used the cards with their caregivers.

Table 88: Likeability of Matching Cards reported by Children

	Urban (%)	Rural (%)	All (%)
A lot	**85**	**70**	**74**
A little	15	29	25
Not liked at all	0	1	1
	chi ^{2} = 14.386 at 2 df and p 0.001		

The matching cards were well liked among children: 74 percent of them reported liking the materials "a lot". Unlike flash cards, where there is significant variation in "likeability" levels between urban and rural children, the data indicated that matching cards were popular across all locations.

Application among Caregivers

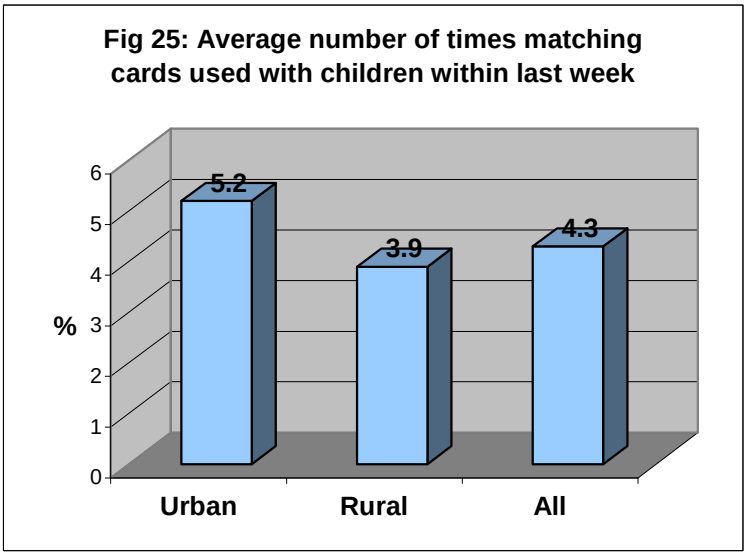
A total of 564 caregivers reported using the matching cards at least once with their children. These caregivers were asked to recall the last time they used the cards with their children, plus the number of times they had used the cards last week:

Table 89: Last Occasion of Use of Matching Cards

	Urban (%)	Rural (%)	All (%)
Today	27	8	13
Yesterday	43	29	33
Day before yesterday	15	20	19
Within last week	6	19	16
Within the last 2 weeks	4	9	7
Within last month	5	12	10
	chi ^{2} = 65.846 at 6 df and p <0.001		
Base	**149**	**415**	**564**

In reply, 33 percent of the caregivers reported using flash cards with their child on the day before the interview, while another 13 percent reported using cards on the day of the interview.

Seventy percent of the urban caregivers reported using the cards with their children within the last two days (time spanning "today" and "yesterday"), while another 15 percent said that they had used the cards "three days back". Among rural caregivers, 37 percent reported that they had used the cards within the last two days, while 20 percent said they had used the cards with the last three days. Chi square test reveals that the variation between urban and rural is significant.



On average, the matching cards had been used 4.3 times within the past week. Frequency of use among urban caregivers was higher than their rural counterparts (5.2 times for urban caregivers compared to 3.9 times for rural ones).

The survey found that the caregivers, like their children, reacted positively to the matching cards. A majority believed that their children had liked the matching cards "a lot." About 9 out of 10 urban respondents and 8 out of 10 rural respondents were found to perceive that their children had liked the cards "a lot", which shows that this material was well received in both urban and rural locations, even though the difference between them is statistically significant.

Table 90: Likeability of Matching Cards reported by Caregivers

	Urban (%)	Rural (%)	All (%)
A lot	**93**	**83**	**86**
Somewhat	7	16	13
Not liked at all	0	1	1
	chi ^{2} = 8.106 at 2 df and p 0.017		

7.3.3 Storybooks- *"Mitu Ekdin Sisimpur-e"* and *"Ekdin Shobai Mile"*

Application among Children

When researchers asked children they had ever been read or told the two storybooks contained in the outreach kit, about three-fourths of the children replied in the affirmative for both books. A higher proportion of urban respondents than rural respondents reported being read or told the stories. A majority of children reported that their caregivers had read or told them the stories. Children – particularly rural respondents - also commonly identified siblings as storytellers.

Table 91: Use of Storybooks

	Mitu Ekdin *Sisimpur*e			Ekdin Shobai Mile		
	Urban (%)	**Rural (%)**	**All (%)**	**Urban (%)**	**Rural (%)**	**All (%)**
Was the story every read/told to you?						
Yes	**89**	**70**	**75**	**88**	**70**	**75**
No	11	30	25	12	30	25
Who told you the story?						
Caregivers	81*	52	60	87*	51	62
Parents	10	5	6	6	6	6
Siblings	13*	48	38	14*	52	41
Friends	3*	14	11	2*	15	11
Self	7	11	10	7	10	9
	chi ^{2} = 19.923 at 1 df and p <0.001			**chi ^{2} = 18.797 at 1 df and p <0.001**		
Base	**133**	**317**	**450**	**132**	**316**	**448**

Note: * refers to figures that are statistically significantly higher or lower between the urban and rural areas

Next, researchers asked children to recall what each of the storybooks was about. A majority of children (45% in case of *Mitu Ekdin Sisimpur-e* and 40% in case of *Ekdin Shobai mile*) could not provide any responses to the query. This could be attributed to a lag between the administration of the survey and the last time children heard the story, young children's low propensity to verbalize their responses, or gaps in the process of knowledge dissemination between children and storytellers.

Table 92: Children's Learning from Storybook - *Mitu Ekdin Sisimpur*e

	Mitu Ekdin *Sisimpur*e		
	Urban (%)	**Rural (%)**	**All (%)**
Mitu went to *Sisimpur*	12	14	13
Story focuses on cleanliness issue	1*	15	11
Mitu brushed her teeth in the morning	4	8	7
Going for a visit together	2	4	3
Do not Know	**64***	**38**	**45**
Base	**133**	**317**	**450**

Note: * refers to figures that are statistically significantly higher or lower between the urban and rural areas

Table 93: Children's Learning from Storybook - *Ekdin Shobai Mile*

	Ekdin Shobai Mile		
	Urban (%)	**Rural (%)**	**All (%)**
Tuktuki and her friends went to a picnic	6*	21	16
Tuktuki ate nutritious food	7*	14	12
About nutritious foods	0*	12	8
Do not know	**58***	**33**	**40**
Base	**132**	**316**	**448**

Note: * refers to figures that are statistically significantly higher or lower between the urban and rural areas

The storybooks had an average level of "likeability" among children. Fifty-eight percent of them said they liked the story of "Ekdin Shobai Mile", and 55 percent of them said they liked the story of "Mitu Ekdin *Sisimpur*e." Urban children appeared to like the books better than rural children (see Table 81).

Table 94: Likeability of Storybooks reported by Children

	Mitu Ekdin *Sisimpur*e			Ekdin Shobai Mile		
	Urban (%)	**Rural (%)**	**All (%)**	**Urban (%)**	**Rural (%)**	**All (%)**
A lot	77	46	55	79	50	58
A little	22	52	43	20	48	40
Not a lot	1	3	2	1	2	2
	chi ^{2} = 38.126 at 2 df and p <0.001			chi 2 = 32.434 at 2 df and p <0.001		

Application among Caregivers

A total of 394 caregivers reported telling the story of "Mitu Ekdin *Sisimpur*e" to their children at least once, while a total of 394 caregivers reported telling the story "Ekdin Shobai Mile" at least once.

Table 95: Last Occasion of Use of Storybooks

	Mitu Ekdin *Sisimpur*e (%)	**Ekdin Shobai Mile (%)**
Today	**10**	**9**
Yesterday	**30**	**32**
Day before yesterday	16	14
Within last week	17	18
Within the last 2 weeks	10	10
Within last month	10	10
Cannot remember	6	6

While earlier investigation indicated that the storybooks were perhaps the least accessible material for the caregivers, it appears that, nevertheless, those who had the necessary skills to utilize the book

did so. Initially, data indicated that about one-third of the total sample did not use the book at all; however, those who made use of the book did so regularly. Around 40 percent of users of both storybooks reported that they had read/told the stories to their children at least once within the last two days.

The relatively high frequency of use is also apparent through the examination of "reading"/"telling" figures of both storybooks among caregivers for the last week:

Table 96: Average number of Readings from Last week

	Mitu Ekdin *Sisimpur*e			Ekdin Shobai Mile		
	Urban (%)	**Rural (%)**	**All (%)**	**Urban (%)**	**Rural (%)**	**All (%)**
Average Reads	4	3.6	3.8	4.4*	3.6	3.9
Base	**111**	**178**	**289**	**110**	**182**	**292**

Note: * refers to figures that are statistically significantly higher or lower between the urban and rural areas

In the last week, significantly more urban children read "Ekdin Shobai Mile" than their rural counterparts. Importantly, a majority of caregivers who use the books report that children enjoy them (see Table 83).

Table 97: Likeability of Story Books reported by Caregivers

	Mitu Ekdin *Sisimpur*e			Ekdin Shobai Mile		
	Urban (%)	**Rural (%)**	**All (%)**	**Urban (%)**	**Rural (%)**	**All (%)**
A lot	81	61	68	86	64	71
A little	19	38	31	13	36	28
Not at all	0	0	0	0	0	0
	chi ^{2} = 18.368 at 3 df and p <0.001			chi 2 = 22.778 at 3 df and p <0.001		

7.3.4 Board Game

Application among Children

Ninety-two percent of the program children mentioned playing the board game at least once. Most children reported playing the game with their caregivers (74%), siblings (53%) and friends (28%).

Table 98: Use of Board Game among children

	Urban (%)	Rural (%)	All (%)
Game played by	97*	90	92
Persons game played with			
Caregivers	90*	69	74
Parents	7*	3	4
Siblings/relatives	31*	61	53
Friends	16*	32	28
Base	**146**	**407**	**553**

Note: * refers to figures that are statistically significantly higher or lower between the urban and rural areas

Children who reported playing the board game at least once were asked about their last occasion of use:

Table 99: Last Occasion of Use of Board Game

	Urban (%)	Rural (%)	All (%)
Today	42	10	18
Yesterday	33	34	34
Day before yesterday	18	15	16
Within last week	3	25	19
Before one week	1	10	8
	$chi^2 = 99.975$ at 5 df and $p < 0.001$		

Nine out of ten children had played the board game at least once within the last one week, with 34 percent playing on the day before the interview. The game was particularly popular among urban children: 42 percent of urban respondents reported playing the game on the day of the interview.

Table 100: Person with whom game was played on the last occasion

	Urban (%)	Rural (%)	All (%)
Caregivers	64*	30	39
Parents	4	2	3
Siblings/relatives	22*	53	45
Friends	10	15	14

Note: * refers to figures that are statistically significantly higher or lower between the urban and rural areas

On the last occasion, most of the children (45%) had played the game with their siblings, while another 39 percent had played with their caregivers.

Table 101: Likeability of Board Game reported by Children

	Urban (%)	Rural (%)	All (%)
A lot	**90**	**55**	**65**
A little	10	43	34
Not liked at all	0	2	2
	chi ^{2} = 58.199 at 2 df and p <0.001		

The data indicate statistically significant variations in "likeability" levels between urban and rural children. While nine out of ten urban children reported liking the board game "a lot", only about two-thirds of rural children report sharing this opinion.

Overall, it appears children in urban households received the board game better and used it more frequently than children in rural households.

Application among Caregivers

A total of 542 caregivers reported playing the board game at least once with their children. When these caregivers were asked to recall their last occasion of use, 26 percent of them responded said they had played the game with their children "yesterday", while another 15 percent reported using the material on the day of the interview. Overall, about 83 percent of the caregivers reported playing the game with their children at least once within the past seven days.

Table 102: Last Occasion of Use of Board Game

	Urban (%)	Rural (%)	All (%)
Today	30	9	15
Yesterday	34	23	26
Day before yesterday	23	17	18
Within last week	7	24	20
Within the last 2 weeks	3	10	8
Within last month	2	12	9
	chi ^{2} = 83.524 at 6 df and p <0.001		
Base	**148**	**394**	**542**

In terms of location, 64 percent of the urban caregivers reported using the board game with their children within the last two days (time spanning "today" and "yesterday"), while an additional 23 percent said that they had used the cards "3 days back".

The average number of times the board game was played within the last one-week was 3.8 (4.8 among urban caregivers and 3.4 among rural caregivers; t=5.437, sig. at <0.001).

Similar to the opinions provided by the children, the survey found that the urban caregivers reacted very positively to the board game. Ninety-one percent of urban caregivers believed their children had liked the board game "a lot". However, only 68 percent of rural caregivers reported believing that their children had a very strong liking for the board game.

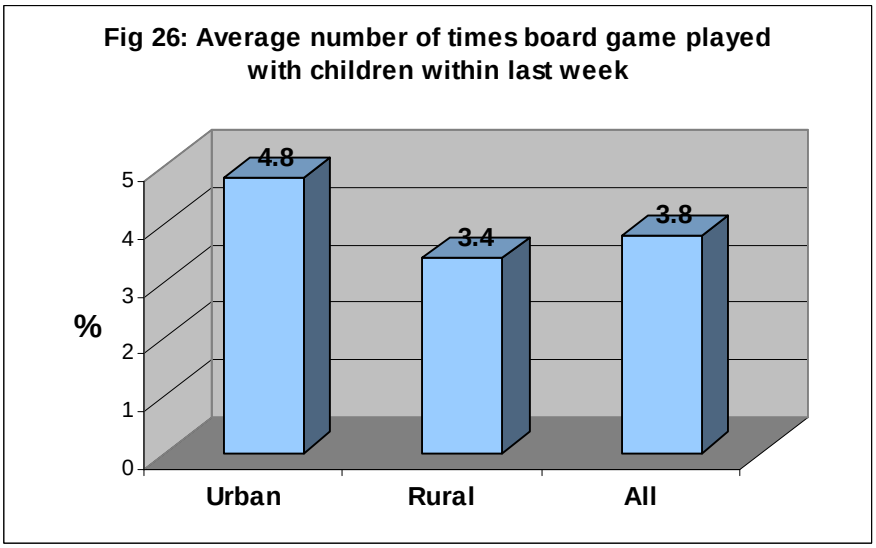


Table 103: Likeability of Board Game reported by Caregivers

	Urban (%)	Rural (%)	All (%)
A lot	**91**	**68**	**74**
Somewhat	9	31	25
Not at all	0	0	0
	chi ^{2} = 28.635 at 2 df and p <0.001		

7.3.5 Growth Chart

Application among Children

To ascertain the level of use of the growth chart among program households, the children were asked if the growth chart had ever been used on them. Eighty-two percent of the children said their height had been measured using the growth chart at least once. The data indicated that a significantly higher portion of urban households had made use of the growth chart, compared to rural ones (see Table 90).

Table 104: Use of Growth Chart among children

	Urban (%)	Rural (%)	All (%)
Chart used on	94*	78	82
Chart used by			
Caregivers	93*	79	83
Parents	4	7	6

Elder Siblings	4*	15	12
Base	**141**	**352**	**493**

Note: * refers to figures that are statistically significantly higher or lower between the urban and rural areas

When asked about who used the chart to measure their heights, 83 percent of the children named their caregivers, while another 12 percent named their elder sibling(s).

Application by Caregivers

A total of 478 caregivers reported using the growth chart at least once to measure the height of their children. Most of the caregivers (33%) reported that they had used the chart about two months ago, while 28 percent reported using the material as much as 3 months ago.

Table 105: Last Occasion of Use of Growth Chart

	Urban (%)	Rural (%)	All (%)
Two to three days back	8	4	5
One week back	13	2	5
Two to three weeks back	5	8	7
One month back	8	4	5
Two months back	36	32	33
Three months back	20	31	28
Did not use yet	6	17	13
	chi ^{2} = 47.181 at 7 df and p <0.001		
Base	**143**	**335**	**478**

Researchers also questioned respondents about the growth chart's usefulness. In response, about 88 percent of program caregivers said that they believed the chart was "very useful," while another 12 percent felt that it was "somewhat useful." These findings indicate that, while some households (20%) did not use the material at all, the growth chart was nevertheless considered a useful apparatus among those who had used it.

Discussion

Our investigation into program beneficiaries' usage habits indicated that three-fifths of all caregivers had used all six items in the kit bag at least once with their children. The two story books were used the least. According to caregivers, this usage pattern primarily derived from caregivers' perceived inability to use the materials because of inadequate education backgrounds.

In terms of caregivers' and children's preferences, the most popular and most frequently used material was the set of matching cards. The cards enjoyed equal popularity among both urban and rural program beneficiaries. The next most popular materials were the board game and the flash cards, although urban households tended to prefer these items more than rural ones.

Another noteworthy rend was the variation in "material-playing" partners among urban and rural children. For all materials, it was observed that urban children most often used the materials with

caregivers, while the rural children also often used the materials with their siblings, other relatives, and friends. This finding could be a direct result of the variation in family composition between urban and rural areas. Rural Bangladeshi villages are often very close-knit communities. In fact, a very common homestead set-up in villages is one in which members of the same family own different houses. For example, a number of siblings may share a homestead with a number of living-units, with each sibling residing in a separate living-unit with his or her own family. In such an environment, young children frequently interact with other family members in their same age group. However, in urban slum areas, different, disconnected families typically live in adjacent living units. Thus, in these locations, children may not interact as frequently with other young family members. This set-up might explain why siblings and relatives are more common activity partners for rural children. The fact that other family members knew how to use the kit with young children also indicates that the educational messages broader family was receiving messages about the kit, thereby learning to use the materials themselves.

Another noteworthy finding from this phase of the survey is the frequency with which program beneficiaries use outreach materials. It was found that even those materials that participants used less because they felt unqualified to do so (*i.e.*, storybooks and growth charts) remained popular among those who had the necessary skills to use them. In fact, caregivers who used the materials reported doing so quite frequently, specifically an average of three to five times each week.

7.4 Opinions of Beneficiaries about the Outreach Kit

In addition to documenting caregivers' and children's uses of outreach materials, the survey investigated respondents' perceptions about the usefulness of the outreach kit. For this purpose, program children were asked to pick an item of their choice from the kit, and then tell the interviewer what he/she learned from it.

When asked to choose, 68 percent of the children picked matching cards (which again verifies the popularity of this particular material). The main messages child respondents recalled were the need to "brush teeth regularly" (recalled by 23%), the need to "wash hands with soap before and after meals" (recalled by 18%) and the need to include milk and vegetables in their diet (recalled by 15%; see Table 92).

Table 106: Learning from Materials Recalled by Child

Game Chosen	All (%)
Board game	25
Matching game	68
Flash cards	12
Main Learning	
Nutrition Related	
Should eat fish/meat	14
Should drink milk	15
Should eat vegetables	15
Should eat fruits	5
Health and Hygiene Related	
Should brush more regularly	23
Should wash hands before and after meals with soap	18
Should take baths regularly	8

Should play games and sports	9 5

Next, the caregivers were asked to describe what they felt their children had learned as a result of using these materials. In response, 46 percent of caregivers felt that the kit had been most effective in making the children brush their teeth more regularly, while another 28 percent believed that using the kit had improved the children's soap usage habits (see Table 93).

Table 107: Perceived Learning of Children from using Outreach Kit, as recalled by caregivers

Main Learning	All (%)
Brushing teeth more frequently	46
Using soap for baths regularly	28
Staying clean	25
Washing hands regularly	22
Vegetables are good for health	12

Next, researchers asked children about their favorite and least favorite materials from the kit.

Table 108: Favorite Material from Outreach Kit

	Urban (%)	Rural (%)	All (%)
Matching cards	67	73	72
Board game	29	32	31
Flash cards	11	21*	19
Ekdin shobai mile - story book	0	11*	8
Mitu ekdin sismpur - story book	0	10*	7
Base	**150**	**450**	**600**

Note: * refers to figures that are statistically significantly higher or lower between the urban and rural areas

Almost three out of four program children chose the matching card game as their favorite material. The second most popular material was the board game, which another 31 percent of the children picked as their favorite.

When asked to describe why these materials were their favorites, some of the children's responses were:

- "the board game is fun to play"..... mentioned by 23%
- "the matching cards are a fun game"..... mentioned by 19%
- "like the picture of Tuktuki/Shiku brushing their teeth"..... mentioned by 7%
- "like the picture of carrots"..... mentioned by 7%
- "like the picture of *lalshak*"..... mentioned by 6%
- "like the pictures and colors"..... mentioned by 5%

Table 109: Least favorite material from Outreach Kit

	Urban (%)	Rural (%)	All (%)
No particular dislikes	33*	22	25
Mitu ekdin sismpur – story book	26	23	24
Ekdin shobai mile - story book	32*	18	21
Flash cards	9*	22	19
Board game	4*	20	16
Matching cards	2	3	3
Base	**150**	**450**	**600**

Note: * refers to figures that are statistically significantly higher or lower between the urban and rural areas

When the children were asked to specify their least favorite material from the outreach kit, 25 percent replied that they have no particular item that they dislike. A higher portion of urban children than rural children responded that they had no particular dislikes.

Among those who named a "least favorite" item, 24 percent specified the story book "Mitu ekdin *Sisimpur*-e" and 21 percent specifed the story book "Ekdin Shobai Mile."

When asked to describe why these materials were disliked, children's responses included:

- "as I cannot read/ nobody read the book to me"..... mentioned by 23%
- "the rules of the board game are hard"..... mentioned by 13%
- "do not like the story"..... mentioned by 12%

Additionally, caregivers were asked for their opinions on what their children liked and disliked the most in the outreach kit:

Table 110: Caregivers' Opinions on Child's Favorite Material from Outreach Kit

	Urban (%)	Rural (%)	All (%)	t-stat
Matching cards	49	71	66	t=-5.014, sig. at <0.001
Board game	21	39	35	t=-3.962, sig. at <0.001
Flash cards	26	25	26	t=0.162, sig. at 0.871
All of them	35	12	18	t=6.598, sig. at <0.001
Ekdin shobai mile -one story book	5	13	11	t=-2.878, sig. at 0.004
Mitu ekdin sismpur –one story book	5	9	8	t=-1.316, sig. at 0.189
Growth Chart	8	7	7	t=0.553, sig. at 0.580
Base	**150**	**450**	**600**	

About two-thirds of the caregivers believed that their child's favorite material was the matching cards, followed by the board game. Another 18 percent of the caregivers felt that all the materials in the kit were well-liked by their children (see Table 96).

Table 111: Caregivers' Opinions on Child's Least Favorite Material from Outreach Kit

	Urban (%)	Rural (%)	All (%)	t-stat
Mitu ekdin sismpur -one story book	9	27	22	t=-4.718, sig. at <0.001
Ekdin shobai mile -one story book	11	25	21	t=-3.718, sig. at <0.001
Flash cards	3	24	19	t=-5.705, sig. at <0.001
Board game	2	16	13	t=-4.608, sig. at <0.001
Growth Chart	3	11	9	t=-3.034, sig. at 0.003
Matching cards	5	3	3	t=1.050, sig. at 0.294
Base	**150**	**450**	**600**	

Like their children, caregivers (particularly rural caregivers) liked the storybooks the least.

Next, caregivers were asked whether they thought that the materials developed by the outreach program were "suitable" for their children. One hundred percent of the program beneficiaries replied in the affirmative. When they were asked to provide some suggestions on improving the materials, common comments included the following:

- "providing more training"..... mentioned by 43%
- "making the books easier to use"..... mentioned by 36%
- "making the games easeir to play"..... mentioned by 34%

Finally, the caregivers were asked to describe their particular likes and dislike of the outreach kit.

Table 112: What Caregivers Liked about the Outreach Kit

Major Likes	All (%)
Matching card	34
Learnt a lot through the board game	18
Flash card	13
Liked the pictures	10
Liked the whole kit	7
The picture of brushing teeth	7
Learnt how to measure growth	7
Pictures of children playing sports	5
Liked reading the story books	2

Thirty-four percent of the respondents mentioned the matching cards were their favorite part of the outreach kit (again verifying its popularity among program beneficiaries). Eighteen percent of the respondents said that they liked the board game because it allowed them to learn so much.

Thirteen percent of the respondents also said that they liked the flash cards, while seven percent of the caregivers said that they "liked the whole kit".

Table 113: What Caregivers Disliked about the Outreach Kit

Major Likes	All (%)
No dislikes	**77**
Cannot read the storybooks	4
Stories are not good	4
Board game is too lengthy	3

When asked to describe if they had any particular dislikes, most of the caregivers (77%) did not provide any negative feedback.

Box 4: Qualitative Findings
Perceptions about Outreach Kit

Most caregivers felt that the outreach kit materials were handy in teaching their children about health, hygiene and nutrition information. In many cases the materials persuaded the children to adopt behavior that they resisted previously. When asked about what specific materials they had used most frequently with their children, most caregivers mentioned matching cards and flash cards. However, some of the participants complained about the books given. Because they were illiterate, many of these caregivers felt that it was awkward to tell stories using pictures. They also mentioned the children expressed their unhappiness about these materials because most of them were too young to read. Another frequent complaint was that the flash cards and matching cards wore out after children's repeated handling. Finally, some of the caregivers said that both they and their children found the rules of the board game were difficult to understand.

Quite a few of the caregivers suggested giving out more materials to help kids learn more. One caregiver felt that the flash cards and matching cards should be made of plastic so they would not wear out as quickly. Some respondents also mentioned that the books could be designed so that they have less writing and used a larger font. Another caregiver in Dhaka suggested that the matching cards could be improved if some facts about the food could be written on the back of the picture of the food on each card.

Chapter 8
Perceptions about Workshop

The final phase of the quantitative survey investigated program caregivers' thoughts, opinions and perceptions of the workshops associated with the outreach program. Program caregivers were asked to describe their experience attending the workshops, their reasons for attendance, to and how much they felt that their participation in the program affected their healthy, hygiene, and nutrition habits. In the process, the respondents provided an assessment of the strengths, weaknesses, and overall effectiveness workshops they had attended.

8.1 Reasons for Attending and Attendance Rates

Initially, all caregivers responded to a question about their reasons for attending the workshops.

Table 114: Reasons for attending Workshop

Expectations	All (%)
Hoped to improve health and hygiene	63
Hoped to improve nutritional habits	54
Wanted to attend for the good of my children	62
Money incentive	9
Base	**600**

Most caregivers claimed that they had attended the workshop to learn more about health, hygiene and nutrition. Sixty-two percent also mentioned that they had attended the workshops in hopes of receiving information that would help them improve their children's lives.

Next, caregivers were asked if they had missed any of the three workshops conducted for their batch of program beneficiaries.

Table 115: Workshop Attendance Rates

	Urban (%)	Rural (%)	All (%)	t-stat
Session missed by	**12**	**3**	**5**	**t=4.615, sig. at <0.001**
Reasons for missing				
Was busy with job	33	33	33	t=0.000, sig. at 1.000
Sickness	33	50	40	t=-0.894, sig. at 0.379
Was away from home	6	25	13	t=-1.545, sig. at 0.134
Do not know	28	0	17	
Base	**18**	**12**	**30**	

Overall, the sessions were well attended. From our sample, only five percent (30 respondents) had missed at least one of the three sessions. The absentee rate was higher among urban program

beneficiaries (12%) than rural program beneficiaries (3%). The most common reason for missing a workshop sessions was sickness, followed by "call of work".

8.2 Learning from Workshops

Workshop attendees were asked to describe the broad subjects they learned about at the program workshops. Most caregivers could articulate lessons learned from the workshops. Almost all of the caregivers mentioned that the workshops had provided basic health and hygiene lessons related to practices such as brushing teeth, bathing, and hand-washing. Eight out of ten respondents mentioned that the workshops gave them lessons on how to "keep hair clean," while around two-thirds mentioned that the workshops had given them lessons on "balanced diets."

Table 116: Lessons given at Workshop

Expectations	All (%)
Brushing teeth	98
Bathing Habits	97
Hand washing	95
Washing food carefully	90
Keeping hair clean	81
Balanced diets	65
Nail clipping	57
Should not go to toilet without sandals	4
Base	**600**

The caregivers were then asked whether they felt that attending the workshops had helped them in any way. All respondents answered this question positively, claiming that the workshop had been helpful in some way. When asked to define more explicitly how the workshop had been helpful:

- 84 percent of the caregivers said the workshops had taught them more about hygiene
- 62 percent of the caregivers said the workshops had taught them more about nutrition
- 64 percent of the caregivers said the workshops had taught them how to take better care of their children
- 23 percent of the caregivers said the workshops had taught them how to lead healthier lives

8.3 Assessment of Workshop

The next goal of the survey was to assess the workshops in terms of their effectiveness in disseminating knowledge to program caregivers. In this context, program caregivers were asked to describe how they much they thought the workshops had increased their knowledge about personal hygiene, health and nutritional issues.

Table 117: Respondents perceptions about "informative-ness" of workshops

	Urban (%)	Rural (%)	All (%)
Very informative	**98**	**86**	**89**
Informative	2	13	11
Not informative	0	0	0
	chi ^{2} = 15.777 at 2 df and p <0.001		

Base	**150**	**450**	**600**

Nine out of ten respondents found the workshops to be "very informative" while the remainder found them "informative."

In urban areas, 98 percent of program caregivers found the workshops to be "very informative," a figure that is significantly higher than it is in the rural sample.

Table 118: Improvements in Knowledge

	Urban (%)	Rural (%)	All (%)
Knowledge about Health			
Improved a lot	**95**	**81**	**85**
Improved somewhat	5	19	16
Did not improve	0	0	0
	chi ^{2} = 15.783 at 1 df and p<0.001		
Knowledge about Hygiene			
Improved a lot	**94**	**78**	**82**
Improved somewhat	6	22	18
Did not improve	0	0	0
	chi ^{2} = 18.715 at 1 df and p<0.001		
Knowledge about Nutrition			
Improved a lot	**95**	**80**	**83**
Improved somewhat	5	20	17
Did not improve	1	0	1
	chi ^{2} = 23.056 at 2 df and p<0.001		
Base	**150**	**450**	**600**

About four out of five caregivers believed that participation in the workshop improved their knowledge related to all issues of health, hygiene and nutrition "a lot." Other respondents felt the workshops had increased their knowledge level "somewhat".

It appeared that urban program beneficiaries found the workshops to be more helpful in increasing their knowledge than rural program beneficiaries. While roughly eight out of ten rural caregivers felt that the workshops had increased their knowledge in health, hygiene and nutrition, nine out of ten urban caregivers responded in the same way.

Table 119: Overall Usefulness of Workshop

	Urban (%)	Rural (%)	All (%)
Very useful	**96**	**83**	**86**
Somewhat useful	4	17	14
Not al all useful	0	0	0
	chi ^{2} = 15.840 at 1 df and p <0.001		

A majority of the caregivers said that the workshops improved their knowledge on all issues of health, hygiene and nutrition. Furthermore, 86 percent of caregivers felt that the workshops were

"very useful." Again, the proportion of respondents who found the workshop "very useful" was higher among urban program households (96%) than rural ones (83%).

Table 120: Opinions about structure of Workshops

	Urban (%)	Rural (%)	All (%)
Opinion about Speed of Sessions			
Too fast	12	11	11
Just right	**87**	**84**	**85**
Too slow	1	5	4
	chi ^{2} = 3.419 at 2 df and p 0.181		
Opinions about Length of Sessions			
Too long	4	7	6
Just right	**93**	**90**	**91**
Too short	3	3	3
	chi ^{2} = 1.950 at 2 df and p 0.377		
Opinions about practical demonstrations			
Very effective	**97**	**88**	**91**
Somewhat effective	3	11	9
Not at all effective	0	0	0
	chi ^{2} = 10.917 at 2 df and p 0.004		
Base	**150**	**450**	**600**

When the respondents were asked to provide their opinions on the speed with which lessons were given in the workshop, most (85%) felt that the workshop was paced "just right." Eleven percent believed the messages had been delivered "too fast," while another four percent would have preferred if the trainers had proceeded faster.

Nine out of ten caregivers felt that the length of the sessions were adequate. Among the remainder, six percent believed that it would have been better if the workshop had been shorter, while another three percent wished they were longer.

Ninety-one percent of caregivers found trainers' use of hands-on techniques to teach workshop attendees how to use outreach materials to be "very effective" in disseminating knowledge.

Table 121: Most Difficult Workshop Activity

	Urban (%)	Rural (%)	All (%)	t-stat
Reading the books	**39**	**33**	**35**	**t=1.188, sig. at 0.235**
Playing board games	11	38	31	**t=-6.239, sig. at <0.001**
Was not difficult to learn	39	2	12	**t=13.807, sig. at <0.001**
Playing the matching card games	8	10	10	**t=-0.797, sig. at 0.426**
Using growth charts	3	13	10	**t=-3.276, sig. at 0.001**
Playing the flash card games	6	9	9	**t=-1.267, sig. at 0.206**
Base	**150**	**450**	**600**	

Respondents were also asked to describe the activity they felt was the most difficult to learn during the workshops. About one-third of the respondents identified the two storybooks, while around 31 percent identified the board game.

The board game was more of a challenge to rural respondents than urban ones: 38 percent of rural participants described the board game as the hardest activity they had to learn during the workshop, compared to 11 percent of urban respondents.

The survey also noted that about two-fifths of the urban caregivers reported having no particular difficulties when attending the workshops.

Next, participants were asked for suggestions on improving the workshops. The top 3 suggestions are:

- 20 percent felt that the workshop programs could have been more effective if the trainers gave more time to participants individually
- 15 percent felt that the workshop programs could have been more effective if children were allowed to attend the workshops with their parents
- 12 percent felt that the workshop programs could have been more effective if they were held more frequently

Finally, the caregivers were asked to describe what they liked and disliked about the workshops.

Table 122: Mentioned Likes of the Workshops

Major Likes	All (%)
Liked watching TV/VIDEO	30
Behavior of trainers	27
Liked the teachings	13
Given money	9
Liked everything	8
Had been given food	8

Thirty percent of the workshop attendees reported liking the "video screenings" at the workshop, while 27 percent said that they liked the way trainers behaved during the workshops. Thirteen percent added that they liked what they learned from the workshops.

Eighty-five percent of the caregivers reported that they did not dislike any particular about the workshops. Three percent of the respondents said that they disliked the "short duration" of the workshop, while two percent said that they wished children were allowed in the workshops.

8.4 Qualitative Insights- Perceptions about Workshop

The caregivers selected for the in-depth interviews were also asked to describe their experience of attending the *Sisimpur* Workshops:

Expectations before Workshop

During the in-depth interviews, interviewers asked caregivers about their expectations of the program before the workshop began. The interviews revealed that some caregivers had gathered prior knowledge about the purpose of the training sessions before the workshop, so they knew what they were going to be taught.

However, some of them had expectations that did not match the objectives of the training sessions. One such caregiver expressed her expectation about the training when she said, "….. we thought *Sisimpur* training would be like the shown on TV. So I was very excited.....I thought that perhaps we will have to act or something like that." Another respondent said she went to the workshop expecting to make arrangements for her children's education.

A caregiver in Kurigram said she heard about the workshops from her neighbor who went to a previous training session and got the "very attractive" outreach kit materials. This caregiver attended the workshops because she wanted to get these same playing materials for her own children.

Satisfaction with Workshop Environment

Most respondents said that attending the workshop had been a positive experience. They were quite delighted to learn new things and to associate with other mothers. Many caregivers said it was fun to play the games. Even if some of them missed a session due to some unexpected reason, they tried to send representatives on their behalf in order to avoid completely missing the content taught during a particular session. Most of them found the length and pacing of lessons conducive for learning. Also, they were pleased with the training venues. One participant called her venue "clean, open and hygienic".

Caregivers unanimously agreed that the training sessions were important. As one respondent from Cox's Bazar said-

> "……of course they (training sessions) are important. The information about nutritious food was very important for life. Nutritious foods are very much available in our surroundings. However, because of our lack of knowledge we do not eat nutritious foods and as a result suffer from diseases."

Satisfaction about Trainers

All caregivers reported feeling deeply satisfied with their trainers. They described the trainers as attentive, helpful, and instructive. They felt that the trainers used effective teaching methods such as repeatedly reviewing the information for the participants' benefit, regularly answering participants' questions, and engaging participants by asking them questions. Most found the trainers quite friendly. Some of the participants even said that their trainers had visited participants' homes to remind them to come to the next training session.

Suggestions on how Sessions could be Improved

Many respondents felt that having their children at the session would have improved the workshop experience and increase the workshop's impact. Some suggested lengthening the workshop beyond three sessions, which would help them learn more topics that might lead to even more improvement in their lives. As one participants in Thakurgaon said-

> "……. Arrangements should be made to teach us every month- how much can we learn in only three days? And quite a number of individuals participated in training sessions. Not everybody will understand at the same pace - some will understand quickly, some will take more time. So training sessions should also take more time "

Another participant complained about the venue of the training session, saying that is was too small to properly accommodate the number of participants present. This resulted in poor learning.

Some participants from Thakurgoan and Dhaka – a few of whom could not read or write -- stated that, if they were taught to read at the sessions, or at least given some basic skills, then it would have been even more helpful.

One participant in Dhaka suggested that participants should have been given the opportunity to repeat a session if they missed an earlier session for an important reason. This would eliminate "gaps" in the knowledge of workshop attendees.

Chapter 9
Process Review
Workshop Observation and Trainer Interviews

While the main purpose of this evaluation was to assess how well the *Sisimpur* outreach program achieved its goals, the research was also designed to review the process elements of the project. Specifically, the study sought to investigate how well the program disseminated knowledge, and to identify any possible gaps in the process. To this end, researchers interviewed trainers directly to assess the effectiveness of their knowledge dissemination techniques. Researchers also observed workshops to determine how well the intended audience was receiving the program messages.

9.1 Trainer In-Depth Interviews

The research team conducted five in-depth interviews with five different trainers: one each in Takurgaon, Cox's bazar and Kurigram, and two in Dhaka. In the course of the in-depth interviews, the research team gathered qualitative information about the trainers' perceptions, knowledge, and attitude about the health, hygiene and nutrition information they taught during the *Sisimpur* training sessions. Additionally, the interviews asked trainers to identify possible barriers discouraging participants from incorporating knowledge from the workshops into their lives.

Profile of Trainers

The majority of trainers had the equivalent of a high school degree. All of the trainers interviewed had the equivalent of a bachelor's degree, and one trainer in Dhaka had a Master's in child psychology. Each trainer was a team member of a non governmental organization (NGO) associated with the *Sisimpur* project.

Health and Hygiene Information taught and change in practices

During interviews, most trainers successfully recalled the health and hygiene information they had to teach to participants in the training sessions They cited hand washing before and after meals, hand washing after defecation, hair brushing, tooth brushing twice a day, and wearing sandals to the latrine as examples of important information they had taught.

The trainers claimed it was easy to teach the participants about health and hygiene information because some of the participants had prior knowledge of hygiene rules even if they did not fully understand the importance of practicing them. Therefore, trainers felt that all they had to do was to point out the importance of these habits and the benefits that may arise from practicing them. As one trainer in Dhaka opined-

> "…….most of the caregivers used to wash hands before three main meals of the day before taking part in the training sessions, but they washed only with water. Also, they were always eating junk foods outside the home, but never washed their hands in such cases. Now, after taking part in the training sessions, they have seemed to realize the importance of washing hands before every meal, no matter how insignificant that meal might be, as now they know that by using dirty hands they are ruining their health."

After the training, all trainers reported feeling that trainees would practice these behaviors as much as possible in real life. Trainers told the research team that most participants were enthusiastic about the sessions and seemed to understand the importance of the messages taught. As most of the workshop's recommended behavior changes are not too costly, it seemed that caregivers were willing to practice these new behaviors and to teach their children to follow them as well. Trainers got the impression that behavior change had occurred when they observed households during the follow up visits they sometimes made in the intervention areas as part of their NGO program.

The trainer in Kurigram succinctly described the whole health and hygiene information taught in *Sisimpur* as, "..... from morning to night, the personal health and hygiene care as well as nutrition habits , have all been taught in these sessions."

Barriers to Implementation

When trainers were asked to identify the main barriers to caregivers' implementation of these behaviors in real life, most trainers identified a lack of education among caregivers as the main constraint. The trainer from Kurigram further cited a lack of adequate facilities. For example, some households may not have sanitary latrines. The trainer expressed his opinion as-

> "……..if there are no sanitary latrines available in the first place, then how are they supposed to use soap or ash to wash hands with? How effective are these hygiene information without effective back-up support for these caregivers who lack the resources?"

Another barrier could be "negative" peer effect from "untrained" caregivers. Pressure from these parties may make it harder for trained caregivers to implement what they learned through the workshops, or it might lead them to forgo their lessons entirely. Furthermore, if children notice that their peers or other family members are not practicing these habits, they may also become unwilling to practice the health and hygiene rules themselves.

Nutrition Information Taught and Changes in Practice

Most of the trainers interviewed told the research team that they taught participants about eating a balanced. Although most trainers could recall the three food groups and their core functions, the trainers also appeared to have certain misconceptions about nutrition. For example the trainer in Cox's bazar explained to the research team that "……the human body suffers from three different kinds of diseases, so human beings should take three different kinds of foods." Yet, the same trainer understood had to divide foods into the three groups and how each group helps the body. As the same trainer explained-

> "…….. (types of foods are) foods that give energy, foods that fights diseases, foods that help the body to grow. Energy giving foods are--- rice, bread, puffed rice; Disease fighting foods are -any kinds of vegetables; and foods that help the body to grow are-meat, fish, milk etc."

Trainers said that teaching caregivers about nutrition took longer because most caregivers seemed to find this information difficult to understand. Trainers felt that some of the caregiver left sessions still confused, mainly because of their lack of basic education.

However, most of the trainers thought that most attendees tried to create a balanced diet for their households as much as possible. One trainer even felt that it might actually be easier for the caregiver to implement their knowledge about nutrition than any of the other knowledge received during the training:

> "……it may be hard for the caregivers to supervise their kids and observe every hygiene rule, as they are busy with work, housework and other duties; but as the main cook and provider, they will be more at ease to use their newly acquired knowledge about nutrition."

One trainer in Dhaka mentioned that during the second and third training session discussions, a number of caregivers claimed that they had started using their newly learned balanced-diet rule. She gave an example of this-

> "…..... before, the caregivers used to eat rice and smashed potato as a meal, as they did not know that rice and potato falls in the same food group. But after learning the new information about nutrition, they now try to include another vegetable in their meals."

Trainers told the research team that because most of the nutrition information is hard to understand and practice, they tried to teach caregivers practical ways to apply their new knowledge in their daily lives. Some trainers told caregivers about cheap ways to include nutritious fruits and foods in their diets. Trainers said that caregivers were particularly receptive to the idea of washing vegetables and raw fruits before cutting them and eating them. The trainers also reported observing caregivers practicing these habits during follow-up visits.

Barriers to Implementation

The main barriers caregivers faced in implementing the nutritional behaviors appeared to be economic. Since most caregivers came from extremely low-income households, trainers thought some of them may not be able to afford the foods necessary to incorporate three food groups into their daily menu.

Opinion about Outreach kit

All trainers were reported that the flash cards and matching cards were effective teaching props. They explained that by using these two types of cards, the caregivers were able to catch on easily.

However, like the caregivers, the trainers the storybooks problematic. Trainers explained that the books' small size and font made it difficult for some caregivers to read the books, thus rendering them ineffective.

Trainers thought that most caregivers found the board game interesting, but found the complicated rules confusing. Trainers thought the growth charts should have been made of a "harder material" to prevent children from tearing them.

Suggestions about Improving Training Sessions

Trainers had quite a few interesting suggestions about improving the effectiveness of the training sessions and the kit materials. All trainers felt they needed more time to teach the caregivers about relatively complex topics like balanced diet and nutrition. They felt that addressing all these topics in only three sessions was quite demanding, and that some of the sessions might have been a bit "fast-paced" because trainers were trying to cover everything.

One trainer thought that the time for each session was adequate but that the number of sessions should be increased. A trainer in Thakurgaon suggested training children and fathers of a household as well as mothers. He felt that doing so would make the whole household practice these habits more regularly. He also predicted that seeing both parents practicing these habits would encourage children to do the same, whereas seeing only one parent practicing these habits might not.

9.2 Workshop Observation

In order to evaluate how well trainers disseminated knowledge to workshop attendees, the survey team observed the three sessions of workshops at Chakaria, Cox's Bazar, (conducted by NGO ISDE Bangladesh) during the second week of February, 2006. Although the observation of more workshops would have provided a more comprehensive overview, a thorough evaluation and observation of multiple workshops was beyond the scope of this study.

Observation of 1st Session

Description of Training Site

The training center was located in a remote area of Cox's bazaar in a village named Poshchim Pokoria (West Pokoria, Chokoria). The training sessions took place on a long veranda of the building where the partner NGO usually conducted NFPE classes.

Although the training area was clean, the seating was disorganized. Since the veranda was long and rectangular, the participants had to sit at both ends. This made it difficult for them to interact with the trainer because of the distance between them.

The room was decorated sparely. The only materials observed were a 17 inch black and white television, training videos, and DVD player and the kit.

Arrival of Trainees

The workshop was scheduled to start at 2 pm. Half the attendants were present on time. The last participant to come to the workshop arrived as late as 2.40 pm.

Upon arrival, half of the participants did not get any name cards or badge.

Effectiveness of Trainer in Disseminating Information

Although one person was scheduled to conduct the first session, two trainers were present. The scheduled trainer (Rafique Ahmed) initially seemed uncertain about how to conduct the session. He spent the first 10-15 minutes in conversation with the unscheduled trainer (Mr. Azad) and a participant called Putul (who identified herself as a teacher at the NFPE school).

The trainer seemed under prepared. Although he covered most of the scheduled topics for the first session, he appeared uncomfortable with almost all the topics covered. For example, he read the story-book by himself without clarifying how the pictures could be used to tell the story. Thus, the participants (most of whom were not literate) did not learn how to teach their children through the illustrations. Furthermore, he paid little individual attention to the caregivers who were having the most problems.

While the trainer did show how to maintain the sequence when building a story using the flash cards, he covered this material very quickly. Consequently, some caregivers were unable to tell the story of the cards they have arranged or arrange the events in proper chronological order from morning to night.

Also, the trainer lost some time trying to get the television (which was not functioning properly) ready to show the video. Although he eventually got it to work, the video played at a very low volume. Many caregivers complained that they could not hear anything.

Attentiveness of Participants and their willingness to participate

While the trainer appeared to be under-prepared, the participants were quite attentive. They tried their best to learn the topics under discussion. All of them remained enthusiastic and curious for most of the two hour session.

Generally, caregivers were also very participative, answering questions even if their answers were irrelevant to the topic at hand.

Reactions to Materials

When one of the trainers, Mr. Azad, asked the caregivers if they had watched the *Sisimpur* television program, many replied affirmatively. Some even recalled that it was a children's program and an educational program.

The attendants were quite happy about receiving the kit materials. All of them said called the materials "attractive" and felt their children would like them.

Interaction between Trainer and Attendees

During the first session, the trainer was not very helpful in answering questions. He also made some discouraging replies to respondents' queries. The respondents found this attitude somewhat discouraging. When one caregiver expressed the opinion that not all participants would leave the workshop with the ability to share the storybook with their children, the trainer made a disparaging remark about how "then they will fail the workshop." This remark was inappropriate and insensitive, given the educational limitations of the participants.

Overall Impression of First Session

This trainer largely failed to meet the objectives of the session. The respondents lacked encouragement, the schedule lacked structure and some of the participants did not receive kits. The trainer did not present the session objectives clearly, so the participants did not fully understand the purpose of the workshop. The trainer neglected to discuss the topic concerning developmentally challenged individuals. The trainer was under-prepared and may not have been able to carry out the session at all if not for the presence of the unscheduled trainer, Azad, and the NFPE teacher and participant, Putul.

Observation of 2nd Session

Description of Training Site

In the second training session, the training site was changed. When a NGO staff member was later asked why, he said that the first site had been "too congested" for the participants.

The new site was in a school room at the *Golap Kuri* kindergarten in Poschim Pok Pokoria, beside the Chittagong-Cox's Bazar Highway.

The room was approximately 750 sq. ft. A partition divided the room into two equal parts and only half of the room was used for the training. The participants sat on small benches. There was a black and white television.

Arrival of Trainees

Again, most of the participants were late. The last three participants arrived at 2:47 pm. Interestingly, the only absentee was the NFPE teacher, Putul. Some of the participants brought their children.

Effectiveness of Trainer in Disseminating Information

In the second session, the trainer's performance was greatly improved. He attempted to fill the gaps left in the first training session. He asked for opinions about the first session, but some of the participants appeared hesitant to talk about it. Understanding the problems, the trainer repeated some of the first session lessons. He showed the entire first session video again, did a short review of the book "*mitu ekdin Sisimpure*", and played the flash card game. As a result, it appeared that the participants gained a better understanding of health and hygiene issues. When the trainer asked the participants to describe what they had learned, the participants responded with answers such as:

"We have to brush teeth twice a day- morning and night-so as to keep our teeth healthy."

"Have to wash hands before and after meals as well as after defecation, with soaps if possible or otherwise with materials such as soil, ash."

"Kids should play regularly, as it makes them healthy."

"We should cover your face when sneezing."

"Keep our nails short and clean as well as wash your hair."

The trainer was quite successful in teaching the second session topics. He played all the videos. He effectively used the storybooks to discuss nutrition, hygiene, and cooperation. This time, he used the illustrations to make the storybooks easy to understand even for participants who could not read. He used the books and the matching cards to inform participants about balanced diets, the food groups, and how nutritious foods help the body. He mentioned food processing practices before cooking and after cooking hygiene practices. He emphasized to the importance of teaching children about this information to encourage them to develop healthy behaviors early on. The trainer showed the participants how to play different games with the matching cards. Most of the participants were able use the cards to to design a balanced diet by the end of the session. The trainer also distributed the growth chart and explained how to measure a child's growth by demonstrating the procedure. He explained why it was necessary to measure a child's growth, why it is important to know their growth rate, and what to do if they are not growing.

Attentiveness of Participants and their willingness to participate

The participants were attentive during the session, although those who had brought their children were sometimes interrupted by them. They concentrated on the trainer, the training materials, and the topics discussed. When the trainer asked them if they felt this training was important, all of them responded affirmatively. When asked why they thought it was necessary, they replied that they needed it to "increase their knowledge and improve their lives."

Even though the new venue required participants had to travel greater distances than before, the participants did not complain. They participated eagerly through out the session, responding to most of the trainer's questions.

Reactions to Materials

The participants were happy about getting the kit materials. The trainer informed the participants that these materials should be kept carefully because they cannot be purchased at market. The participants were also told that if they keep the materials carefully, the children will notice and begin to take care of the materials themselves. The participants agreed, and all of them said they would follow these instructions.

Interaction between Trainer and Attendees

While the level of interaction between trainer and caregivers was higher compared than in the first session, the trainer remained obviously unwilling to answer all participants' questions. For example, when the trainer showed the growth chart and then moved to another topic, one participant said "you did not say anything about measurements." The trainer ignored this comment.

Overall Impression of Second Session

The second session was a vast improvement from the first. All topics were discussed thoroughly. The participants seemed to have received and understood the important information. However, the trainer still had room for improvement:

- The second session also did not start on time just like the first session.
- Disability was still not discussed.
- The trainer showed favoritism when choosing the participants to play games and/or answer questions. He continually asked two particular participants to answer questions.

After the session, the observer held an informal conversation with a NGO worker about the causes for the changes in the second session. The NGO worker replied, "Mr. Rafique was slightly under prepared for the first session, so he was trained by the other trainers before the second session started."

Observation of 3rd Session

Description of Training Site

The training session for the 3rd session was the same as that of the second one.

Arrival of Trainees

Most participants had arrived on time: only two were late and two were absent.

Effectiveness of Trainer in Disseminating Information

The trainer efficiently taught the required information. He was able to make the participants feel comfortable, so they responded to most questions with eagerness and enthusiasm. When the trainer asked them what they learned in the three sessions, a number of them were able to recall the core learning from their sessions.

Attentiveness of Participants and their willingness to participate

All the participants in the third session were attentive and engaged. They eagerly listened to the trainer and the videos. They answered the trainer's questions promptly and correctly. They understood the core information in the video. For example, when the trainer asked participants what they learned from the video "Banana", most participants accurately replied that it taught them that

fruits should be washed before they are eaten. At this point, one of the participants added that they all should not forget to wash their hands before eating as well.

Reactions to Materials

In this session, the participants were quite explicit abut expressing their reaction to the kit materials. For example, they said that it was better for their children to play with these materials instead of other toys because the kit materials helped their children learn while having fun. However, a few participants said that it would be better if the matching cards were a bit larger in size because then children would be less likely to loose them.

Interaction between Trainer and Attendees

The interaction between trainer and trainees was observed to have greatly improved in the last session. The trainer made sure he asked most of the participants individually about their experiences using the materials with their children. The participants were willing to share their experience with the trainer and with each other. They mentioned that the materials help their children learn and practice healthy, hygienic habits. In fact, a few participants mentioned that they had already purchased toothbrushes and toothpaste for their children.

Overall Impression of Third Session

The trainer conducted the last session quite efficiently. He explained the board game through practical approaches: both hands-on, and group by group. Later he reviewed all three sessions succinctly .Then he divided the participants into four groups and gave them assignments on the topics discussed in all three sessions. Most of groups handled their assignments successfully. The third session closely followed the original schedule. Thus, it was apparent that the training workshops improved with each session.

Chapter 10
Conclusions

The study assessed the impact of the *Sisimpur* outreach initiative among target beneficiaries. In the absence of baseline data, the findings for the program participants were compared with findings for similar populations who did not participate in the training. This comparison was conducted using data about knowledge and behavioral variables relevant to the outreach program. The data were analyzed using multivariate logistic regression. Additionally, regression models allowed researchers to control for the confounding effects of factors such as income, education, urban residence, and time elapsed since training. Apart from these outcome variables, the process elements of the program have also been assessed in terms of participation in training, quality of training delivery, and use of the materials provided. The evaluation offers a positive picture of the *Sisimpur* outreach program.

The Process

Overall, the sessions were well attended. Only five percent of participants reported missing at least one of the three sessions. Through observations of a training workshop, researchers found that early sessions lacked adequate trainer preparation, rapport building with the participants, and beneficiary participation. As the workshop progressed, however, subsequent training sessions were vastly improved. Beneficiaries' satisfaction with the training was high. An overwhelming majority approved of the structure of the workshop, and only a small minority found it fast paced. Although participants expected more individual attention, they were very satisfied with the trainers. They found the workshops informative about desired behavioral aspects of health, hygiene and nutrition.

Use of Materials

In urban areas, an overwhelming majority of beneficiaries reported using all the materials, while just over half of rural participants reported the same. Problems with the materials primarily stemmed from participants' inability to read. Many of the illiterate caregivers found reading books or playing board games challenging or intimidating. Otherwise, participants said the main reason they did not use materials was 'lack of time'. Children also reported being exposed to the various items in the kit. They were often able to recall the content of the materials unaided.

The most popular materials in the outreach kit were the matching cards. The matching cards in particular were popular among both caregivers and children in both rural and urban areas. These items tended to be used frequently, and many children and caregivers reported using them the day of the interview.

Growth charts were moderately popular among caregivers and children. Eighty-two percent of children reporting that they had been measured using the chart at least once. However, the charts tended to be used more in urban areas than in rural areas. The flashcards were also moderately popular. Eighty-nine percent of children reported playing with the flashcards. Again, urban children tended to use the cards more often than rural children.

The least popular materials in the kit were the storybooks and the board games. Many caregivers were hesitant to use the storybooks with their children because they could not read. Although trainers who run the workshops where caregivers receive the kit are asked to provide instruction on telling stories from illustrations, thereby emphasizing that literacy is not required for properly using the books, many illiterate participants remained intimidated. Additionally, many caregivers did not use the board game because they did not understand the rules. Therefore, when they brought the game home to children, they did not know how to explain it. In both cases, urban respondents were more likely to have used the material than rural respondents. This trend is probably related to education and income level, both of which tend to be higher in urban areas, and both of which influence the usage of materials.

This portion of the research uncovered an unexpected trend concerning the ways in which the materials are used in children's homes. Children in urban areas tend to use the materials with their primary caregivers. Children in rural areas, however, tend to use the materials with extended family members, particularly siblings. This trend is probably related to housing patterns in urban and rural areas. While urban children – particularly slum children – tend to live only with their immediate family, rural children tend to live in clusters of homes occupied by extended family.

Effectiveness of Trainers

In-depth interviews with caregivers indicated high satisfaction rates with the workshops. Caregivers felt the workshops were informative and appropriately paced. Generally, participants expressed appreciation for trainers, and reported that the workshop environments were conducive to learning. Overall, 89% of respondents found the workshop very informative, while the remainder said they found it informative. However, urban participants tended to report higher satisfaction levels than rural correspondents. They also tended to report that they had learned more.

Observations of trainings indicated a steep learning curve with one trainer. While the first workshop session was disorganized and poorly managed, by the end of the third session, the trainer had built a rapport with his trainees that resulted in a positive learning environment and open discussion.

When asked how the workshops might be improved, caregivers suggested having them more frequently, increasing one-on-one time with trainers, providing opportunities to make up missed sessions, and allowing children to attend the sessions with the caregivers.

Health, Hygiene, and Nutrition Practices

The *Sisimpur* outreach initiative has demonstrated a positive association with participants' health, hygiene, and nutritional knowledge and practices. Caregivers seem to have applied the educational messages not only to their own daily habits, but also to their children's lives.

Dental Care

Although both test and control group respondents appear equally aware of the benefits of teeth cleaning, receiving the training and other materials in the kit was linked to enhanced dental care practices among the participants.

Although factors such as income, living in urban areas, and education level of households appear to influence whether or not families own teeth cleaning materials like tooth paste, tooth powder, and toothbrushes, participation in the program was strongly related to owning tooth brush in general. Regardless of income, household education, and urban residence, households exposed to the outreach program were 8.4 times more likely to own a toothbrush and 5.3 times more likely to own toothpaste than households not exposed. Caregivers and their children were also more likely to use toothbrush and toothpaste when cleaning their teeth.

The program's positive associations with health habits are also evident for the frequency of cleaning. For instance, compared with non-participants, children of caregivers who took part in the outreach program were 7.8 times more liley to clean their teeth more than once a day, 2.8 times more likely to clean their teeth after a meal, and 10.9 times more likely to clean their teeth at night.

Hand Washing

In test areas, outreach materials appear to have improved knowledge about hand washing. Although most respondents in control and test areas knew about the importance of washing hands before meals and after defecation, respondents in test areas were significantly more aware of the importance of hand washing before cooking and before serving food. Also, while respondents in both areas perceived cleansing benefits similarly, test subjects tend to remember the health and hygiene reasons for these practices better than control subjects.

Participation in *Sisimpur* outreach is linked to the availability of effective cleaning materials such as soap and a clean towel. Though a higher proportion of test subjects own soap and towel compared to control subjects, statistical analysis did not reveal any strong model for contributing factors for this phenomenon. Participants were twice as likely to have a clean towel or to have soap in their homes compared with non-participants.

Program participation, however, does not seem to be related to consistent soap use while washing hands. While the probability of using soap on last occasion of taking meal in test areas is nearly five times the probability in control areas, the intervention does not appear to be significantly associated with participants' propensity to use soap regularly. Instead, income and education seem to be greater determinants here.

Exposure to the outreach messages was linked to participants' hand washing habits. Compared with non-participants, caregivers who were in the outreach program were 5 times more likely to wash their hands before having a meal; their children were 8 times more likely to do so. Participants' children were also more likely to wash their hands after defecation.

Bathing

A much higher proportion of test area respondents than control area respondents recalled the health benefits of bathing such as keeping healthy and germ free.

As with dental care, participation in the outreach initiative was associated with caregiver and children's bathing habits. Caregivers in the outreach programs were 2.1 times more likely to bathe

more frequently (7 times or more a week) and 3 times more likely to bathe with soap at least 4 times a week. Their children were also 3 times more likely to take a bath with soap at least 4 times a week than non-participants'. Again, income and caregiver education influence frequency of soap use.

Hair Grooming and Washing

Program participants were more aware of the importance of hair grooming than non-participants. The odds of knowing that washing one's hair prevents contracting lice is about two times higher in test areas, and the odds of knowing that washing one's hair prevents dandruff is four times higher in test areas. Income and the time elapsed since training workshops also influence the frequency of washing hair

Nutritional Practices

Exposure to the outreach initiative seemed to be linked to better nutritional practices, particularly in the consumption of foods rich in protein. The odds of a child drinking milk at least once a week or eating an egg daily is three times higher in test areas than in control areas. However, income remains strongly linked to the consumption of both of these foods.

Conclusion

Analyses indicate that the outreach program has been executed well and has improved caregiver's knowledge and awareness of health and hygiene issues. It is also found that household income and education level exert significant influences on the program's success. The program has a particularly high impact on behavior changes that require little financial investment. Participants in the outreach program came form disadvantaged and low-income communities, but within this range, households with more economic resources and education can purchase the materials necessary to maintain healthy dietary and hygiene habits, and tend to be more likely to engage in these habits on a regular basis. Thus, the program may face particular challenges in effecting behavior change in poor areas. Changing behavior is known to be a very difficult task: in light of this fact, the initiative has been especially successful.

Moving forward, *Sisimpur*'s staff can use the findings from this study as a resource for improving the outreach approach. The implications of these findings include: the need for bolstering the approach to specific content areas (such as frequency of bathing, hair washing, etc.); the need for more low literacy materials and improved strategies for their use; the increased use of materials with extended family members and siblings in rural settings; the need to accommodate caregivers' desires for more frequent opportunities to attend trainings and workshops; and the need to more readily address the economic and educational disparities between rural and urban settings.