Memorandum

23 April 2000

To : Dr. Shakil Ahmed
    Health Economics Programme
    Public Health Sciences Division

From : Professor Mahmudur Rahman
       Chairman, Ethical Review Committee (ERC)

Sub : Approval of protocol # 99-035

This has reference to your memo of 11th April 2000 attaching a modified copy of your protocol # 99-035 entitled “Cost effectiveness of nutritional intervention activities in rural Bangladesh”. I am pleased to inform you that the protocol is hereby approved upon your appropriate addressing of the issues raised by the ERC in its meeting held on 27th October 1999.

Thanking you and wishing you success in running the said study.

cc: Division Director
    Public Health Sciences Division
Memorandum

23 April 2000.

To: Dr. Shakil Ahmed
Health Economics Programme
Public Health Sciences Division

From: Professor Mahmudur Rahman
Chairman, Ethical Review Committee (ERC)

Sub: Approval of protocol # 99-035

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Thanking you and wishing you success in running the said study.

cc: Division Director
Public Health Sciences Division
To: Professor Mahmudur Rahman  
Chairman, Ethical Review Committee  
ICDDR,B

Through: Prof. Lars Åke Persson  
Division Director, PHSD

From: Dr. Shakil Ahmed  
PI: Cost effectiveness of nutritional intervention activities in rural Bangladesh  
Health Economics Programme  
Public Health Sciences Division, ICDDR, B

Date: April 11, 2000

Sub: Protocol # 99-035

Thank you very much for your letter of November 02, 1999 containing valuable observations on our protocol # 99-035 entitled “Cost effectiveness of nutritional intervention activities in rural Bangladesh.”

We have modified the protocol in the light of your valuable observations at pages as indicated:

A) In the ‘Face Sheet’, item 2 (d) marked “Yes” instead of “No”.
B) Children under 2 have been referred to in the Bengali version of the consent form.
C) The finalized questionnaire to be administered to collect socio-economic information on the respondents.

Please find enclosed the revised protocol with the modifications suggested.

Thank you.

encl: 1. Modified protocol entitled “Cost effectiveness of nutritional intervention activities in rural Bangladesh.”
2. Finalized questionnaires
Memorandum

2 November 1999

To: Dr. Shakil Ahmed
   Public Health Sciences Division

From: Professor Mahmudur Rahman
       Chairman, Ethical Review Committee

Sub: Protocol # 99-035

The Ethical Review Committee met on 27th October 1999 and considered your protocol # 99-035 entitled “Cost effectiveness of nutritional intervention activities in rural Bangladesh”. After discussion in the meeting, the Committee made the following observations:

a) in the ‘Face Sheet’, item 2(d) should be marked YES instead of ‘no’.

b) the protocol mentioned of children under 2 as one of the subjects while children under 5 have been referred to in the Bengali version of the consent form.

c) the PI should provide the questionnaire to be administered to collect socio-economic information on the respondents.

You are, therefore, requested to modify the protocol incorporating the above observations and resubmit a revised copy of the protocol for further consideration.

Thank you.

copy: Division Director
   Public Health Sciences Division
Attachment 1

(FACE SHEET)

ETHICAL REVIEW COMMITTEE, ICDDR,B.

Principal Investigator: DR. SHAHIL AHMED

Application No.

Title of Study: Cost-effectiveness of nutritional intervention activities in rural Bangladesh.

Trainee Investigator (if any)

Supporting Agency (if Non-ICDDR,B)

Project status:
( ) New Study
( ) Continuation with change
( ) No change (do not fill out rest of form)

Circle the appropriate answer to each of the following (If Not Applicable write NA).

1. Source of Population:
   (a) 111 subjects
   (b) Non-ill subjects
   (c) Minors or persons under guardianship

2. Does the study involve:
   (a) Physical risks to the subjects
   (b) Social Risks
   (c) Psychological risks to subjects
   (d) Discomfort to subjects
   (e) Invasion of privacy
   (f) Disclosure of information damaging to subject or others

3. Does the study involve:
   (a) Use of records, (hospital, medical, death, birth or other)
   (b) Use of fetal tissue or abortus
   (c) Use of organs or body fluids

4. Are subjects clearly informed about:
   (a) Nature and purposes of study
   (b) Procedures to be followed including alternatives used
   (c) Physical risks
   (d) Sensitive questions
   (e) Benefits to be derived
   (f) Right to refuse to participate or to withdraw from study
   (g) Confidential handling of data
   (h) Compensation G/or treatment where there are risks or privacy is involved in any particular procedure

5. Will signed consent form be required:
   (a) From subjects
   (b) From parent or guardian (if subjects are minors)

6. Will precautions be taken to protect anonymity of subjects

7. Check documents being submitted herewith to Committee:
   - Umbrella proposal - Initially submit an overview (all other requirements will be submitted with individual studies).
   - Protocol (Required)
   - Abstract Summary (Required)
   - Statement given or read to subjects on nature of study, risks, types of questions to be asked, and right to refuse to participate or withdraw (Required)
   - Informed consent form for subjects
   - Informed consent form for parent or guardian
   - Procedure for maintaining confidentiality
   - Questionnaire or interview schedule

* If the final instrument is not completed prior to review, the following information should be included in the abstract summary:

1. A description of the areas to be covered in the questionnaire or interview which could be considered either sensitive or which would constitute an invasion of privacy.

2. Examples of the type of specific questions to be asked in the sensitive areas.

3. An indication as to when the questionnaire will be presented to the Ctte for review.

We agree to obtain approval of the Ethical Review Committee for any changes involving the rights and welfare of subjects before making such change.

Principal Investigator

Trainee
CHECK-LIST FOR SUBMISSION OF PROPOSALS
TO THE RESEARCH REVIEW COMMITTEE (RRC)

[Please tick (✓) the appropriate box]

1. Has the proposal been reviewed, discussed and cleared at the Division level?

   Yes  ✓

   No  

   If 'No', please clarify the reasons:

   

2. Has the proposal been peer-reviewed externally?

   Yes  ✓

   No  

   If the answer is 'NO', please explain the reasons:

   

3. Has the proposal scope to address gender issues?

   Yes  

   No  ✓

   If the answer is 'YES', have these been adequately incorporated in the proposal. Please indicate:

   

4. Has a funding source been identified?

   Yes  ✓

   No  

   If the answer is 'YES', please indicate the name of the donor:

   NCOE (THE WORLD BANK)
5. Whether the proposal is a collaborative one?

Yes [ ]
No [ ]

If the answer is 'YES', the type of collaboration, name and address of the institution and name of the collaborating investigator be indicated:

[Handwritten text]

M. MAHMUD KHAN, ASSOCIATE PROFESSOR
AULANE UNIVERSITY, NEW ORLEANS, LA-70112, USA

6. Has the budget been cleared by Finance Division?

Yes [ ]
No [ ]

If the answer is 'NO', reasons thereof be indicated:

__________________________

__________________________

7. Does the study involve any procedure employing hazardous materials, or equipments?

Yes [ ]
No [ ]

If 'YES', fill the necessary form.

11-04-2020
Date

Signature of the Principal Investigator
APPLICATION FOR PROJECT REVIEW BY RRC AND ERC

1. Principal Investigator(s)  
   _SHAKIL AHMEO_

2. Other Investigators  
   _M. MAHMUD KHAN, S.K. ROY, Z. QUAYYUM_

3. Title of Project  
   _Cost-effectiveness of nutrient and interaction activities in rural Bangladesh_

4. Starting Date  
   _JAN 2000_

5. Expected Date of Completion  
   _DEC 2000_

6. Total Budget Requested  
   _USD 49,975_

7. Funding Source  
   _NCOE (WB)_

8. Head of Programme  
   _DR. ABDEL BASHIR_

9. Signature by Division Director  
   _[Signature]_
**International Centre for Diarrhoeal Disease Research, Bangladesh**

**RESEARCH PROTOCOL**

1. Title of Project (Do not exceed 60 characters including spaces and punctuations)
   Cost Effectiveness of Nutritional Intervention Activities in Rural Bangladesh.

2a. Name of the Principal Investigator(s) (Last, Middle, First):
   Dr. Ahmed Shakil

2b. Position / Title
   Public Health Physician
   Senior Operations Researcher

2c. Qualifications
   MBBS, MPH

3. Name of the Division/ Branch / Programme of ICDDR,B under which the study will be carried out.
   Public Health Sciences Division, Health Economics Programme

4. Contact Address of the Principal Investigator
   4a. Office Location:
      Health Economics Programme
      Public Health Sciences Division
      ICDDR, B
   4b. Fax No: +880 -2- 886050
   4c. E-mail: salmed@icddrb.org
   4d. Phone / Ext: 2218/2219/2215
      9881762 (direct)

5. Use of Human Subjects
   Yes [ ]
   No [X]

5a. Use of Live Animal
   Yes [ ]
   No [X]

5b. If Yes, Specify Animal Species
   [ ]

6. Dates of Proposed Period of Support
   (Day, Month, Year - DD/MM/YY)
   January 2000–December 2000

7. Cost Required for the Budget Period
   7a. 1st Year ($) : 39,582
   2nd Year ($) : 3,874
   3rd Year:

   7b. Direct Cost ($) : 43,456
   Total Cost ($) : 49,975

8. Approval of the Project by the Division Director of the Applicant
   The above-mentioned project has been discussed and reviewed at the Division level as well by the external reviewers.
   The protocol has been revised according to the reviewer’s comments and is approved.

   Name of the Division Director
   [ ]
   Signature
   Date of Approval

9. Certification by the Principal Investigator
   I certify that the statements herein are true, complete and accurate to the best of my knowledge. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. I agree to accept responsibility for the scientific conduct of the project and to provide the required progress reports if a grant is awarded as a result of this application.

10. Signature of PI
    [ ]
    Date: 11-04-2000
# Table of Contents

<table>
<thead>
<tr>
<th>Description of the Research Project</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis to be tested</td>
<td>4</td>
</tr>
<tr>
<td>Specific Aims</td>
<td>4</td>
</tr>
<tr>
<td>Background of the Project Including Preliminary Observations</td>
<td>5</td>
</tr>
<tr>
<td>Research Design and Methods</td>
<td>8</td>
</tr>
<tr>
<td>Facilities Available</td>
<td>11</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>12</td>
</tr>
<tr>
<td>Ethical Assurance for Protection of Human Rights</td>
<td>12</td>
</tr>
<tr>
<td>Use of Animals</td>
<td>12</td>
</tr>
<tr>
<td>Literature Cited</td>
<td>13</td>
</tr>
<tr>
<td>Dissemination and Use of Findings</td>
<td>14</td>
</tr>
<tr>
<td>Collaborative Arrangements</td>
<td>14</td>
</tr>
<tr>
<td>Biography of the Investigators</td>
<td>15</td>
</tr>
<tr>
<td>Detailed Budget</td>
<td>16</td>
</tr>
<tr>
<td>Budget Justifications</td>
<td>18</td>
</tr>
<tr>
<td>Other Support</td>
<td>18</td>
</tr>
<tr>
<td>Appendix</td>
<td>19</td>
</tr>
</tbody>
</table>

- Consent Forms in English
- Consent Forms in Bangla
Principal Investigator: Last, first, middle: Dr. Ahmed Shakil

PROJECT SUMMARY: Describe in concise terms, the hypothesis, objectives, and the relevant background of the project. Describe concisely the experimental design and research methods for achieving the objectives. This description will serve as a succinct and precise and accurate description of the proposed research is required. This summary must be understandable and interpretable when removed from the main application. (Type text within the space provided)

Principal Investigator
Dr. Shakil Ahmed

Project Name: Cost Effectiveness of Nutritional Intervention Activities in Rural Bangladesh

Total Budget: 49,975
Beginning Date: January 2000
Ending Date: December 2000

With a view to prevent and control the problems of malnutrition in our country and to improve the nutritional status of the population, particularly of children under five years, and women and adolescent girls, the Ministry of Health and Family Welfare has launched Bangladesh Integrated Nutrition Project (BIMP) from July, 1995. BIMP has three major components: (1) National Level Nutrition Activities (2) Intersectoral Nutrition Programme Development and (3) Community Based Nutrition Component. This project specifies the Cost-effectiveness analysis of the third component i.e., the Community Based Nutrition Component (CBNC). The programme developed through the BIMP should be able to identify the national strategy for the reduction of malnutrition. The Government of Bangladesh (GOB) has already decided to expand the BIMP activities in new areas. Expansion in new areas and the need for making the activities sustainable in the longer run require a cost effectiveness analysis of BIMP activities.

It is necessary to determine the cost effectiveness of this programme in order to examine the efficiency of resource allocation in different nutritional intervention activities.

Hypothesis of the Study is that all the activities under the nutrition intervention programme may not be equally cost-effective. The resource allocation among the activities under the nutrition intervention programme can be made more efficient and cost effective after a proper economic evaluation.

The purpose of this study is to examine the cost effectiveness of nutrition intervention (BIMP) activities from the perspective of the project in order to determine the impact of such activities with respect to the resources used. The effectiveness measure of the activities will be assessed on certain groups of population at the community level i.e., pregnant women, lactating women and children under 2 years of age.

More specifically, the objectives of this research study are:

- To identify and measure the effects or positive intermediate outcomes of the food supplementation and health-nutrition education
- To calculate cost-effectiveness ratios of various nutrition intervention activities
- To examine the characteristics of the individuals participating in the nutrition intervention program and to see whether the target groups are correctly identified.
- To examine the effect of health education on the users of the nutrition services.
- To understand the knowledge of the population about the nutritional status of mothers and children.
- To formulate recommendations for policy makers on resource allocation, strengthening the nutritional intervention programme

KEY PERSONNEL (List names of all investigators including PI and their respective specialties)

<table>
<thead>
<tr>
<th>Name</th>
<th>Professional Discipline / Speciality</th>
<th>Role in the Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Shakil Ahmed</td>
<td>Public Health Physician</td>
<td>PI</td>
</tr>
<tr>
<td>2. M. Mahmud Khan</td>
<td>Health Economist</td>
<td>Co-PI</td>
</tr>
<tr>
<td>3. S.K. Roy</td>
<td>Nutritionist</td>
<td>Co-Investigator</td>
</tr>
<tr>
<td>4. Zahidul Quayyum</td>
<td>Health Economist</td>
<td>Co-Investigator</td>
</tr>
</tbody>
</table>
DESCRIPTION OF THE RESEARCH PROJECT

Hypothesis to be tested:

Concisely list in order, in the space provided, the hypothesis to be tested and the Specific Aims of the proposed study. Provide the scientific basis of the hypothesis, critically examining the observations leading to the formulation of the hypothesis.

All the activities under the nutrition intervention programme may not be equally cost-effective. The resource allocation among the activities under the nutrition intervention programme can be made more efficient and cost effective after a proper economic evaluation.

Specific Aims:

Describe the specific aims of the proposed study. State the specific parameters, biological functions/ rates/ processes that will be assessed by specific methods (TYPE WITHIN LIMITS).

The purpose of this study is to examine the cost effectiveness of nutrition intervention (BINP) activities from the perspective of the project in order to determine the impact of such activities with respect to the resources used. The effectiveness measure of the activities will be assessed on certain groups of population at the community level i.e., pregnant women, lactating mothers and children under 2 years of age.

More specifically, the objectives of this research study are:

- To identify and measure the effects or positive intermediate outcomes of the food supplementation and health-nutrition education.
- To calculate cost-effectiveness ratios of various nutrition intervention activities.
- To examine the characteristics of the individuals participating in the nutrition intervention program and to see whether the target groups are correctly identified.
- To examine the effect of health education on the users of the nutrition services.
- To understand the knowledge of the population about the nutritional status of mothers and children.
- To formulate recommendations for policy makers on resource allocation, strengthening the nutritional intervention programme.
Background of the Project including Preliminary Observations

Describe the relevant background of the proposed study. Discuss the previous related works on the subject by citing specific references. Describe logically how the present hypothesis is supported by the relevant background observations including any preliminary results that may be available. Critically analyze available knowledge in the field of the proposed study and discuss the questions and gaps in the knowledge that need to be fulfilled to achieve the proposed goals. Provide scientific validity of the hypothesis on the basis of background information. If there is no sufficient information on the subject, indicate the need to develop new knowledge. Also include the significance and rationale of the proposed work by specifically discussing how these accomplishments will bring benefit to human health in relation to biomedical, social, and environmental perspectives. (DO NOT EXCEED 5 PAGES, USE CONTINUATION SHEETS).

Nutrition, in a narrow medical sense, may be defined as a process whereby living organisms utilize food to produce enough energy and obtain adequate nutrients for growth, development and normal functioning of organs and tissues of the body to enjoy a healthy life. Nutritional status, in a wider sense, is the availability of enough nutrients to allow biological functioning as well as to optimize social roles individuals play in the society. Despite rapid development in the production and distribution of nutrients, existence of malnutrition and hunger is still widespread. In fact, in the modern world, existence of severe forms of malnutrition is simply not acceptable; nutrients are in adequate supply in the world and lack of access of adequate nutrients is simply a failure of the modern social system to address a very basic need for human survival.

Nutrition for all is a precondition for the objective of Health for all. The future of a country, and the human society in general, depends on the its new generation “the children”. Childhood is the most important part of life which probably influence not only the future physical, mental and social capacities, it may also be linked with the prevalence of illnesses, probability of becoming sick, etc. Better nutrition for children helps them to develop the mental capacity to its fullest, allow them to learn more from the environment and the education system. Therefore, need for improved nutritional status for children is much more than the future nutritional status of the nation.

Determinants of malnutrition are many and extremely complex. The most basic type of malnutrition results in the poor developing countries of the world by lack of access to nutrients and the interaction of nutrient consumption and morbidity pattern. Access to nutrients are affected by the income levels of the population, price of food in the market compared to the income, distribution of assets and other resources in the society, knowledge about nutrients and signs of malnutrition, knowledge about disease and malnutrition relationships, illiteracy and social restrictions and taboos on food consumption. Some of the structural conditions, like population density, environmental sanitation, access to clean water supply etc. increase the vulnerability of the population, especially of children, to nutritional stress.

Nutritional status of population in Bangladesh is considered one of the worst in Asia. Despite quite rapid growth in income and food production, nutritional status remained low with considerable impacts on health, quality of life, labor productivity and mental ability (Berg, 1974; First, 1978; Gopalan, 1988; Martorell, 1978; Popkin, 1978; Winikoff, 1978). The Bangladesh Bureau of Statistics (BBS) carry out regular surveys to determine the nutritional status of children in Bangladesh. All the surveys clearly indicate a high degree of malnutrition among children. Other surveys also indicate similarly high rates of malnutrition (HKI Nutrition Monitoring, Surveys carried out by the Institute of Nutrition and Food Science). The 1995-96 Child Nutrition Survey of Bangladesh shows that more than 50% of children between the age six to 71 months are stunted. Bangladesh probably shows the highest prevalence of wasting in the world. According to the 1995-96 Survey, the prevalence rate of wasting was more than 16 percent. The nutritional status among rural population is even worse than the urban rates.

In Bangladesh, stunting has shown some improvements over the last 10 to 15 years but the rate of progress has remained very low. What is more disturbing is the complete stagnancy of the prevalence of wasting. In fact, rather than showing a decline over the last 10 years, wasting rate actually increased (BBS 1996).

If deficiency of all the important nutrients are considered, the situation of malnutrition in Bangladesh is alarming. At present about 93% children under the age of five year are suffering from different grades and types of malnutrition, 30-50% babies born with birth weight below normal and 70% mothers and children are suffering from nutritional anaemia. It is estimated that about 30,000 children become blind every year due to vitamin A deficiency.
In a country like Bangladesh, where natural material resources are in short-supply, the future development potential depends crucially on the development of human resources. But it is a matter of great concern that a majority of the population is suffering from malnutrition, ill health, disability and illiteracy. In such an environment, it will be extremely difficult to convert the population into human resource and highly productive human capital. Poor nutritional status of the population deprive the society of the best possible output from a large segment of the population. Lack of nutrients hamper physical and mental growth and learning ability of children. In a competitive world, malnutrition of the population can have crippling effect on the whole society. From the ethical considerations as well, developed countries of the world can not simply remain indifferent to this silent disaster, a tragedy which can be avoided with simple, low-cost interventions.

With a view to prevent and control the problems of malnutrition in Bangladesh and to improve the nutritional status of the population, particularly of children under five years, and women and adolescent girls, the Ministry of Health and Family Welfare has launched Bangladesh Integrated Nutrition Project (Binp) from July, 1995. The Project is being implemented through a loan from the World Bank and technical assistance from UNICEF, with strong GO-NGO support and cooperation. BNP is being implemented in a phased manner. At present it is working in 40 rural thanas of Bangladesh.

Binp has three major components: (1) National Level Nutrition Activities (2) Intersectoral Nutrition Programme Development and (3) Community Based Nutrition Component.

This project will concentrate on the Cost-effectiveness analysis of the third component i.e., the activities and services provided through the Community Based Nutrition Component (CBNC).

The community based nutrition component (CBNC) of BNP focuses on growth monitoring and promotion activities, IEC and mobilization of the community with targeted and supervised supplementary feeding at the Community Nutrition Centers (CNC) in the village.

Direct beneficiaries of the project are the children under 2 years of age, pregnant women and lactating mothers. Pregnant women and all children under 2 years of age are targeted to conduct Growth Monitoring Promotion (GMP) in every month to identify the severely malnourished and growth faltered children. The pregnant women having Body Mass Index (BMI) 18.5 and below are also brought under supplementary feeding. Supplementary feeding is given to these women for a period of 6 months during pregnancy and six months after delivery. Therefore, after the delivery of the baby the woman is categorized as a member of the group 'lactating mothers'. The project provides four packets of food per pregnant woman / lactating mother per day except Friday.

Children having weight-for-age less than 60% of reference median of NCHS standard are considered as severely malnourished. The project provides these children with two packets of food. If a child under 12 months fails to gain weight or loses weight or if weight gain is less than 600 grams over a two month period, the child is considered a case of growth faltered child. The definition of growth faltering use the weight loss of 300 grams for children in the age group 12-24 months. The growth faltered children are provided with one packet of food. The children remain under supplementation for 90 days. If their weight do not improve after 90 days, they are supplemented for additional 30 days.

The programme developed through the BNP should be able to identify the national strategy for the reduction of malnutrition. The Government of Bangladesh (GOB) has already decided to expand the BNP activities in new areas. Expansion in new areas and the need for making the activities sustainable in the longer run require a cost effectiveness analysis of BNP activities.

It is necessary to determine the cost effectiveness of this programme in order to examine the efficiency of resource allocation in different nutritional intervention activities.

Cost-effectiveness analysis aims at estimating the resources used to achieve a stated output (quantity and time). This technique has been frequently employed in health studies and, increasingly, in nutrition as well. The choice of output variable is important. The most commonly used measure in health – cost per death averted --- is not very appropriate for nutrition interventions. Improved nutrition lowers mortality but has many other positive impacts, including decreased morbidity, improved educability and increased productivity.
Cost-effectiveness analysis aims at estimating the resources used to achieve a stated output (quantity and time). This technique has been frequently employed in health studies and, increasingly, in nutrition as well. The choice of output variable is important. The most commonly used measure in health — cost per death averted — is not very appropriate for nutrition interventions. Improved nutrition lowers mortality but has many other positive impacts, including decreased morbidity, improved educability and increased productivity.

Cost per child removed or averted from a given state of malnutrition is probably the most useful and practical measure. Most cost analyses, however, deal with unit costs; that is, the cost per beneficiary per volume of food delivered, per X number of calories per person per day, per year and so forth. As the impact of intervention is not included, unit cost data can not be used in comparing different interventions.

Only few nutrition projects have collected data that make it possible to study cost-effectiveness, and these few studies show wide cost discrepancies which need to be explained.

Berner (1977) reports a reduction in the proportion of underweight children visiting Maternal Child Health clinics in Malawi from 40 percent in 1970 to 23 percent in 1976 following a programme of nutrition education, and regular weighing and feeding for malnourished children at clinics throughout the country. However, the supplementary food was provided free by the World Food Programme. It is not clear what proportion of this reduction in malnutrition was due to food supplementation. A study of the cost-effectiveness of each part of the programme (with the food valued at the domestic cost) would help decide which aspect of the nutrition interventions is more important and how the nutritional status might be affected if the World Food Programme resources are withdrawn. Maxwell (1978) pointed out that since an estimated 95 percent of all child nutrition programme in developing countries involve supplementary feeding, it is most unfortunate that few adequate estimates of their cost-effectiveness have been made.

Nutrition planning has a role in all developing countries undertaking programmes which explicitly or implicitly contain nutritional objectives. Analysis of nutritional problems within the country and evaluation of interventions can help to improve the efficiency and effectiveness of these programmes. It is useful to analyze the cost of each type of nutrition intervention activities with respect to their outcome. The Health Economics Programme of ICDDR,B has conducted a cost analysis of the BNP programme at the community level in selected thanas of Bangladesh. There has been requests from BNP, World Bank and the Government of Bangladesh for undertaking economics evaluation for each type of activities covered under BNP. This will provide useful policy guideline for the next programme, the National Nutritional Programme.
Research Design and Methods

Describe in detail the methods and procedures that will be used to accomplish the objectives and specific aims of the project. Discuss the alternative methods that are available and justify the use of the method proposed in the study. Justify the scientific validity of the methodological approach (biomedical, social, or environmental) as an investigation tool to achieve the specific aims. Discuss the limitations and difficulties of the proposed procedures and sufficiently justify the use of them. Discuss the ethical issues related to biomedical and social research for employing special procedures, such as invasive procedures in sick children, use of isotopes or any other hazardous materials, or social questionnaires relating to individual privacy. Point out safety procedures to be observed for protection of individuals during any situations or materials that may be injurious to human health. The methodologies section should be sufficiently descriptive to allow the reviewers to make valid and unambiguous assessment of the project. (DO NOT EXCEED TEN PAGES, USE CONTINUATION SHEETS).

Research Questions
The resource allocation between the activities under the nutrition intervention programme can be made more efficient and cost effective after the proper economic evaluation.

It is important to evaluate the activities with respect to the following research questions:

(1) What is the total operating cost of the nutrition intervention activities
   - Per pregnant women
   - Per lactating mother
   - Per malnourished child enrolled
   - Per growth faltered child enrolled

(2) What is the food supplementation cost
   - per severe malnourished child graduated
   - per faltered child graduated

(3) Whether the targeting and enrollment of the population for the nutrition interventions are effectively and efficiently done
   - What percent of pregnant women are from the target group
   - What percent of children are from the target group

(4) Cost of delivering health and nutrition education
(5) Effect or outcome measures for health and nutrition education (practice, behavior, knowledge, compliance with recommendations, etc.)

Methodology

Experimental design: Posttest-Only Control group design

Longitudinal survey will be conducted for 6 months to collect information on nutritional status, knowledge of nutrition etc for BNP participants and non-participants after controlling for other relevant variables.

Sampling

a. Selecting thana and unions for intervention and control areas:

It may be mentioned here that the nutritional intervention programme is being implemented in phased manner in 40 thanas of different part of Bangladesh. This study will be carried out in areas where the costing study of BNP activities was undertaken by Health Economics Programme of Public Health Sciences Division of ICDDR,B. Multi-stage sampling procedure
will be followed. To select a thana for the intervention area, one thana will be selected randomly, from the 5 thana where first phase of BINP were carried. The costing study was conducted in these 5 thanas. From the selected thana, two contiguous unions will be defined as a cluster. i.e. all unions of the selected thana will be grouped into clusters of unions. The clustering of the unions will start from the north-east corner of the thana. One cluster will then be randomly selected for the study area. The control area will be selected from the adjacent thana which is not included in the nutritional intervention programme of BINP. Two contiguous unions will be selected from the control thana using the same procedure mentioned for the selection of intervention thana. It is assumed that randomization will ensure that the intervention and control groups are equivalent with respect to all factors (Socio-economic status, population groups, demographic and environmental factors etc) other than exposure to the nutritional intervention program. It will be possible to compare outcome measures (effectiveness of the programme) for the intervention and control groups after the program has been operating for sufficiently long period of time, for about more than three years.

b. Selecting households in the intervention and control area:

To compare nutritional status, knowledge of nutrition etc between BINP participants and non-participants, households will be selected in intervention and control areas after identifying all the households in the area through a census. The census questionnaire will collect information on demographic characteristics of the households (number of women in reproductive age group and children under 5), weight, height of children and women, participant of any member of the households in the programme during the last three years in the intervention area.

c. Selecting households in the intervention and control area for longitudinal survey

To select households in the nutrition programme, a list of participants will be obtained from the Community Nutrition Centers (CNCs) of the BINP activities. The list will be cross-checked with actual participation by observation and by comparison with the census data. Once the participants are selected, the control households will be matched with the selected households by using certain economic, social and demographic characteristics.

d. Selecting the CNCs in the cluster of intervention area:

All the CNCs in the cluster will be identified and included in the study to collect information. The study will also use the process variables like the number of target population and number of beneficiaries as the effectiveness measures of the nutrition activities of CNCs. Information on the number of target population and number of beneficiaries will also be collected from the CNCs.

Information to be collected from the participants of the programme and those in the control area:

During the first visit in both areas, the research team will carryout the socio-economic survey to collect the baseline data on sampled households. The baseline information will also include data on mother’s knowledge about nutritional status, signs of nutritional problems, benefits of using iodized salt, knowledge about common childhood and maternal illnesses, etc. The baseline data will be used as the basis for comparison of the two groups, households getting nutrition services and households not in the nutrition program.

Information to be collected from programme participants and from households in the control area during the longitudinal survey:

Every household, both in the intervention area and control area, will be visited once every month to update the information on pregnancy, births, deaths, morbidity and other health conditions, degree of participation in the nutrition intervention program, costs associated with obtaining nutrition services, food consumption pattern, etc. The programme participants and households in control area will be surveyed every month to collect data on changes in the weight of children and women.
Additional information to be collected on households in intervention areas through census questionnaire:

The study will also collect information whether the enrollees fulfill the eligibility criteria set by the project or not. This will allow the estimation of degree of mis-targeting. Mis-targeting are of two types: enrolling individuals in the programme when they should not be enrolled and not enrolling individuals who should be enrolled. In both cases, there are significant misallocation of resources as the services are provided to wrongly targeted individuals increasing the cost to the project. The non-enrollment reduce the effectiveness of the programme by keeping them outside so that the effect of the programme on nutritional status of population is less than what could have been achieved.

To quantify the both types of mis-targeting, cross sectional survey will be carried out in the project area selected to collect information on weight, height and age data of reproductive age group women and children under 5. Information on programme participation currently and in last three years will also be collected from the nutrition centers as well as from the households.

Information to be collected during the survey on following effectiveness indicators in the intervention area

The effectiveness measures could be of many different types, from immediate enrollment and service delivery related indicators to final outcome indicators. All these indicators can be used as measures of effectiveness, although at different levels of programme implementation.

Number of beneficiaries based measures:
- Number of Pregnant women in the programme
- Number of Lactating mothers in the programme
- Number of Malnourished children in the programme
- Number of Growth Faltered children in the programme

Number of beneficiaries successfully graduating from the programme:
- Number of Malnourished children graduated during a specific time frame
- Number of growth Faltered children graduated during a specific time frame
- Prevalence of malnutrition among children in the community
- Prevalence of malnutrition among women in the community

Number of cases rightly targeted:
- Number of pregnant women correctly targeted over the months
- Number of malnourished children correctly targeted over the months
- Number of growth faltered children correctly targeted over the months
- Number of children graduated in a month satisfying the graduation criteria

Number of:
- Clients who received vitamin A supplementation within two weeks of delivery.
- Eligible women from the target group receiving food supplements.
- Eligible children from the target group receiving food supplements.
- Women and children attending GMP sessions.
- Pregnant women who report taking an adequate dosage of iron pills during pregnancy.
Principal Investigator: Last, first, middle : Dr. Ahmed Shakil

Information to be collected during the survey on following effectiveness indicators in the intervention area and control area to compare

Percentage of

Women who have knowledge about nutrition practices promoted by the program.
Women who practice nutrition behaviors promoted by the program.
Women who consume vitamin A-rich foods.
Households using iodized salt.
Women who consume less than two meals per day.
Women receiving prenatal, and post-natal care

Women with low height
Women with low weight
Malnourished women, based on body mass index (BMI).
Children with low height.
Children with low weight
Wasting (weight/height) and stunting (height/age) by age group, based on Z score

Prevalence and duration of breast feeding: percentage at 3, 6, and 12 months of age.

List of Some Basic Information to be collected

Health status measures of women and children.
Nutritional intake of women and children (food consumption).
Morbidity pattern.
Medical care cost.
Income loss due to illness, morbidity, disability.
Time cost due to illness in the household.
Cost information about nutrition interventions.

Collecting information for Costing nutrition intervention activities in rural Bangladesh:

Cost data for this study will taken from the study conducted by HEP, ICDDR,B on “Cost of the BINP activities at the community level: An analysis based on community nutrition centers in five thanas of Bangladesh.” Cost parameters are already available for the BINP activities at the community level and this data set will be used to estimate the cost of nutrition intervention in the selected thana.

Facilities Available
Describe the availability of physical facilities at the place where the study will be carried out. For clinical and laboratory-based studies, indicate the provision of hospital and other types of patient’s care facilities and adequate laboratory support. Point out the laboratory facilities and major equipments that will be required for the study. For field studies, describe the field area including its size, population, and means of communications. (Type within the provided space).

Households will be selected randomly through census questionnaire. Households are located in the selected unions of thana. Community Nutrition Centres (CNCs) in the sampled intervention area will be selected. Each CNC at the Community level to cover 1000-1500 population. The MIS of CNC will assist in locating the households of programme participants. The travel to the study area will be by road.
Data Analysis

Describe plans for data analysis. Indicate whether data will be analyzed by the investigators themselves or by other professionals. Specify what statistical softwares packages will be used and if the study is blinded, when the code will be opened. For clinical trials, indicate if interim data analysis will be required to monitor further progress of the study. (TYPE WITHIN THE PROVIDED SPACE).

Method of Analysis

The household survey will use both bivariate and multivariate approaches of data analysis. Simple bivariate analysis can be used to show this relationship.

COST EFFECTIVENESS ANALYSIS

Cost / Service Delivery for different population groups

Cost / Malnourished child graduated
Cost / Fated child graduated

Cost / Targeting or miss targeting of different population groups
Cost of health education for each sessions, or mother or each in different target groups.

SENSITIVITY ANALYSIS

Sensitivity analysis will be done to assess the effect of the various assumptions made on the conclusion

Ethical Assurance for Protection of Human Rights

Describe in the space provided the justifications for conducting this research in human subjects. If the study needs observations on sick individuals, provide sufficient reasons for using them. Indicate how subject’s rights are protected and if there is any benefit or risk to each subject of the study.

The study, as noted earlier, will examine the Cost Effectiveness of nutritional intervention activities in rural Bangladesh. The study will interview and collect data from the households of intervention and control area to gather information on nutritional status, knowledge, weigh / height data of participants and non participants and birth weight data of new born in both the area. The study subjects will be informed about the objectives, procedures and potential benefits of the study. Consents will be obtained from the subjects to protect subjects’ rights.

Use of Animals

Describe in the space provided the type and species of animal that will be used in the study. Justify with reasons the use of particular animal species in the experiment and the compliance of the animal ethical guidelines for conducting the proposed procedures.

NOT APPLICABLE
Literature Cited

Identify all cited references to published literature in the text by number in parentheses. List all cited references sequentially as they appear in the text. For unpublished references, provide complete information in the text and do not include them in the list of Literature Cited. There is no page limit for this section, however exercise judgment in assessing the “standard” length.


BBS report: Child Nutrition Survey of Bangladesh, Government of Bangladesh, 1992


Berg, A. The Nutrition Factor, 1974


Khan, M.M., Costing of Bangladesh Integrated Nutrition Project (BINP) activities at the community level, 1999

Khan, M.M., Cost Estimates for National Nutrition Programme (NNP) and Potential Local Resource Mobilization through User Charges, 1999


Westcott, G., Economics and nutrition planning. The Economics of Health in developing countries, 1982


Dissemination and Use of Findings

Describe explicitly the plans for disseminating the accomplished results. Describe what type of publication is anticipated: working papers, internal (institutional) publication, international publications, international conferences and agencies, workshops etc. Mention if the project is linked to the Government of Bangladesh through a training programme.

The finding will be disseminated at ICDDR,B seminars and workshops, IDSF, at NCOE seminars, and through internet, ICDDR,B working papers. International Nutrition Journal publication and International seminars or conferences.

Collaborative Arrangements

Describe briefly if this study involves any scientific, administrative, fiscal, or programmatic arrangements with other national or international organizations or individuals. Indicate the nature and extent of collaboration and include a letter of agreement between the applicant or his/her organization and the collaborating organization. (DO NOT EXCEED ONE PAGE)

The study will be conducted by directly involving Dr. M. Mahmud Khan, who ended his term at the HEP, ICDDR,B in July, as the principal technical consultant and one of the investigators. It is expected that the funding agency will enter into a formal agreement with Tulane University to allow Dr. M. Khan to provide technical assistance and guidelines to the Principal Investigator and other Co-PI at HEP, ICDDR,B. Professional collaboration will be developed with BNP, so that the analysis will be useful for policy formulation and future evaluation and monitoring at the project level as well.
Biography of the Investigators: *Please find enclosed separately*

Give biographical data in the following table for key personnel including the Principal Investigator. Use a photocopy of this page for each investigator.

<table>
<thead>
<tr>
<th>Name of Birth</th>
<th>Position</th>
<th>Date</th>
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</thead>
<tbody>
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**Academic Qualifications** (Begin with baccalaureate or other initial professional education)

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<th>Institution and Location of Study</th>
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<th>Year</th>
<th>Field</th>
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<tr>
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**Research and Professional Experience**

Concluding with the present position, list, in chronological order, previous positions held, experience, and honours. Indicate current membership on any professional societies or public committees. List, in, chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. (DO NOT EXCEED TWO PAGES, USE CONTINUATION SHEETS).

**Bibliography**
Detailed Budget for New Proposal

Project Title: Cost Effectiveness of Nutritional Intervention Activities in Rural Bangladesh

Name of PI: Dr. Shakil Ahmed

Protocol Number: Name of Division: Public Health Sciences Division

Funding Source: Amount Funded (direct): 43,456
Overhead (%): 15% 6,519  Total: 49,975

Starting Date: January 01, 2000  Closing Date: December 31, 2000

Strategic Plan Priority Code(s):

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Consultants
Local Travel Including Perdien
International Travel for consultant

|                      | 3,800 |
|                      | Sub Total |

Supplies and Materials (Description of Items)

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Sub Totals

| 2800 |
| Sub Totals |


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<td><strong>US$</strong></td>
<td>43,456</td>
<td>6,519</td>
<td>49,975</td>
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* These line items will be funded from the World Bank General Grant (WBGG)

---

M. Rahman Chowdhury  
Senior Budget & Cost Officer  
ICDDR, B, Mohakhali  
Dhaka-1212, Bangladesh.
Budget Justifications

Please provide one page statement justifying the budgeted amount for each major item. Justify use of man power, major equipment, and laboratory services.

One Senior Operations Researcher will need to work full time (12) and will have the overall responsibility in undertaking the activities of the study. The Senior Operations Researcher will work under the guidance and close collaboration of the Principal Investigator and Consultants. Considering the number of households and the amount of information to be collected from the households and Community Nutrition Centres (CNCs), it has been estimated that around seven Field Research Assistant will be needed to complete the work within the stipulated time of data collection (8 months). One Field Research Officer will be needed to supervise the Field Research Assistants for 8 months. The Data Management officer will be employed for 6 months, who will help in data entry design and management and also assist in analysis of the data.

The travel and per diem expenditure is designed for staff members (PI, Consultants, research assistants and investigators). While calculating the total expenses, the standard ICDDR,B per diem rate and travel has been taken into account.

Other Support

Describe sources, amount, duration, and grant number of all other research funding currently granted to PI or under consideration. (DO NOT EXCEED ONE PAGE FOR EACH INVESTIGATOR)

<table>
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<td>US$ 129,396</td>
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APPENDIX
International Centre for Diarrhoeal Disease Research, Bangladesh
Voluntary Consent Form

Title of the Research Project: Cost Effectiveness of Nutritional Intervention Activities in Rural Bangladesh

Principal Investigator: Dr. Shkil Ahmed

Before recruiting into the study, the study subject must be informed about the objectives, procedures, and potential benefits and risks involved in the study. Details of all procedures must be provided including their risks, utility, duration, frequencies, and severity. All questions of the subject must be answered to his/her satisfaction, indicating that the participation is purely voluntary. For children, consents must be obtained from their parents or legal guardians. The subject must indicate his/her acceptance of participation by signing or thumb printing on this form.

English Version:

We are going to study Cost effectiveness of nutritional intervention activities in rural Bangladesh. This study will help us to obtain information on cost effectiveness of nutritional intervention programme in order to examine the efficiency of resource allocation in different nutritional intervention activities. The results of this study will help to improve the policy for nutritional intervention programme. Please feel free to answer the questions. All individual information will be kept strictly confidential and will be used for research study only. We are requesting you take part in this study. You have the option to accept or to refuse participation. If you agree, you may please sign your name or give thumb impression on this form.

Bangla Version: Attached

Signature of Investigator/or agents
Date:

Signature of Subject/Guardian
Date:
Check List

After completing the protocol, please check that the following selected items have been included.

1. Face Sheet Included [X]
2. Approval of the Division Director on Face Sheet [X]
3. Certification and Signature of PI on Face Sheet, #9 and #10 [X]
4. Table on Contents [X]
5. Project Summary [X]
6. Literature Cited [X]
7. Biography of Investigators [X]
8. Ethical Assurance [X]
9. Consent Forms [X]
10. Detailed Budget [X]
সম্পতি পত্র

প্রকল্পের নাম: “Cost effectiveness of nutritional intervention activities in rural Bangladesh.”

আর্থিক উদ্যোগের পদ্ধতিগত ক্ষেত্রে একজন পর্যাপ্ত কার্যকর হিসাবে আমি কিছু তথ্য সংগ্রহ করিনি। মহিলাদের ও দুই বছর বয়সের কম বয়সের মাছাড়ার উচ্চতা ও ওজন নির্দেশ। যাহা-পৃথিবীর শিক্ষা, অনুশীলন, মানসিক ক্ষেত্র সহ ইত্যাদি সমস্ত তথ্য নির্দেশ। ওজন ও উচ্চতা বাড়িতে অন্য কোন শরীরিক পরিক্ষা করা হবে না। এই সকলকার বড়োরা ৩০ মিনিট সময় লাগবে। আমি এই কার্যক্রমের সমস্ত কর্ম প্রক্রিয়াটি পড়া এবং কোন অংশ না যুক্ত থাকলে তা ব্যাখ্যা করবো। এই সমস্যা আপনার/শিশু কোন শরীরিক ও মানসিক ক্ষতির কারণ হবে না বং আমার আশা করি এর ফলাফল মার্পো শিশুদের জন্য কিছু সুফল বহে আদরে। আপনি যে সমস্ত তথ্য প্রদান করবেন তা গোপন রাখা হবে এবং আপনার নাম প্রকাশনায় ব্যবহার করা হবে না বা আপনাকে চিহ্নিত করা হবে না। যদি কোন চর্চার উত্তর আপনি না দিতে চান তবে সেখান থেকে বাদ করা হবে। সমস্যার যে কোন সময় বা বছরে আপনি সে বহে পাবনেন। তবে একেবারে আপনার নিয়ম নতুন করে ফেলা হবে।

যদি আপনি উপরের বিবরণ বুঝতে এবং সমীক্ষায় অংশ গ্রহণ করতে চান তবে নিম্নের সম্পতি পত্র যাচ্ছে করবে।

আমি উপরে বর্ণিত বিবরণ থেকে বুঝতে পেরেছি এবং আমার সত্যিকারের সহিত উত্তর দিয়েছি। আমি এই কার্যক্রমে অংশ গ্রহণ করতে রাজি এটা বুঝতে পেরে যে, একুশ যুক্তিকর্ম ছাড়াই আমি সে থেকে খরচ পাব। আমি সীমার করি এই সমীক্ষার সামগ্রিক উপাদান প্রকাশ করা যেতে পারে এই শর্তে যে, আমার নাম বা অন্য কোন সনাতনীর তথ্য ব্যবহার করা হবে না।

শ্রেষ্ঠ শ্রেষ্ঠ

(অংশ গ্রহকারের শ্রেষ্ঠ) (অন্য শ্রেষ্ঠের শ্রেষ্ঠ)

নির্দেশনার শ্রেষ্ঠ

(অন্য শ্রেষ্ঠের শ্রেষ্ঠ)
Abstract Summary

Cost effectiveness of nutritional intervention activities in rural Bangladesh

Shakil Ahmed, M. Mahmud Khan, Zahidul Quayyum, S. K. Roy

Purpose of the Study

- To identify and measure the effects or positive intermediate outcomes of the food supplementation and health-nutrition education
- To calculate cost-effectiveness ratios of various nutrition intervention activities
- To examine the characteristics of the individuals participating in the nutrition intervention program and to see whether the target groups are correctly identified.
- To examine the effect of health education on the users of the nutrition services.
- To understand the knowledge of the population about the nutritional status of mothers and children.
- To formulate recommendations for policy makers on resource allocation, strengthening the nutritional intervention programme

Methods and Procedures:

1. The subject population will be selected from intervention and control areas. The requirements for a subject population for this study include: Pregnant women, Lactating mothers, Children under 2 and new born baby. For the household survey, the information will be collected from pregnant women / lactating mothers and mother or care taker of children.

2. There will be no potential risk of physical, psychological, social, legal and of any other kind. The study do not involve any physical risks because it does not involve any physical intervention on the subjects. No sensitive questions will be asked in interviews that may have adverse psychological affect on the subjects.

3. Not applicable

4. In order to safeguard the confidentiality and the protection of anonymity, the questionnaires will be coded to represent the households and / or the individual. The questionnaire will be marked as "confidential" and the data information will be used for study purpose only.

5. For collecting the information, a consent form will be used (as attached). This will be signed consent from. For illiterate mothers, the contents of the consent form will be read out and consent will be obtained.

6. Study will involve an interview. It will take place in the household of the respondent and the respondents will be pregnant women, lactating mothers and mother / care taker of under 2 children or new born babies. Trained female interviewers will conduct the interview using structured and semi structured questionnaire. Approximate length of time required for the interview will be 30 minutes.

7. The study will examine the efficiency of resource allocation for the services delivered by BINP. It will also help in improving the resource allocation between services that will help in improving the efficiency of the service delivery and improve the quality of services and also improve the nutritional status of the population.

8. Some information will be collected on number of beneficiaries, target from the Management information system of BINP.
Curriculum Vitae

Shakil Ahmed
Health Economics Programme, PHSD
ICDDR, B GPO Box-128, Dhaka-1000, Bangladesh
Tel: 871751-60, Ext-2215, 2218
E-mail: sahmed@icddrb.org

EDUCATION

Tulane University, New Orleans, LA, USA
School of Public Health & Tropical Medicine
Department of International Health & Development
Master of Public Health, May 1998

University of Dhaka, Dhaka, Bangladesh
Mymensingh Medical College
Bachelor of Medicine & Surgery MBBS, May 1994

EMPLOYMENT

June 98 – Present
Senior Operations Researcher
Health Economics Programme,
Public Health Sciences Division, ICDDR,B

Assist the Acting Programme Head in cost benefit, cost effective analysis of
different health interventions and also looking in strategies for cost recovery.
Specific responsibilities include, identification of areas in need of research,
writing proposals, supervising ongoing researches, data management and analysis
of data, report writing, preparing seminar documents, attending various
workshops and seminars.

Presently involved as the Principal Investigator in the following projects:

Health Carte Seeking Bahavior, Willingness and Ability to Pay for Health
Services delivered through NGO-run facilities of UFHP

Health Carte Seeking Bahavior, Willingness and Ability to Pay for Health
Services and Costing of the ESP Components delivered through NGO-run
facilities of RSDP

Was involved as a Co-investigator in the following projects:

Costing of Integrated Management of Childhood Illness (IMCI)
Costing of Bangladesh Integrated Nutrition Project (BINP) at the community
level
Cost estimates for the National Nutrition Program and potentials for local
resource mobilization
Aug 97 - May 98  Research Assistant, Tulane University  
Data collection, entry, verification, and statistical analysis of different projects of the Department of International Health & Development.

Jan. 97 - Jun 97  Short - Term Evaluator  
AVSC International, Bangladesh Country Office, Dhaka, Bangladesh  
Completed Training Impact Evaluation (TIE) of clinical service courses as well as comprehensive training on clinical contraception conducted by AVSC International. Was responsible for assisting the principal evaluator of the training impact evaluation of the IUD, injectable and family planning counselling training programs. Gained knowledge in developing data collection plan, designing data collection instruments, data processing and data analyzing using computer packages.

Nov. 95 - April 96  Trainer  
AITAM (Associates In Training And Management), an organization funded by USAID through AVSC International, Bangladesh Country Office. Conducted training courses and refresher training courses for NGO Doctors, Clinic Managers and Paramedics on RTI / STD. Was responsible for assisting the Program Director of the Organization in training program development, training management, developing training MIS, monitoring and evaluation. Identified training needs for the service providers working in the National Family Planning Program for the improvement of the quality of service delivery. Developed curriculum of any new training programs and modified the existing training curricula as needed.

TRAINING


Participated in an international course on “Applied Health Economics for Developing Countries” organized by Health Economics Programme of ICDDR,B from 06-17 December, 1998 at the Sasakawa International Conference Centre, ICDDR,B, Dhaka.

Participated in a course on “Clinical Economics” organized by Health Economics Programme of ICDDR,B from 02-06 May, 1999 at the Sasakawa International Conference Centre, ICDDR,B, Dhaka.

REPORTS  
Costing of Integrated Management of Childhood Illness (IMCI)  
Costing of Bangladesh Integrated Nutrition Project (BINP) at the community level  
Cost estimates for the National Nutrition Program and potentials for local resource mobilization

Signature: [Signature]


19. M. Khan, Y. Celik et al., "Inappropriate Use of Hospital Beds in tertiary hospital of Turkey", accepted for publication. Forthcoming in World Hospital.

CURRENT RESEARCH

2. Macroeconomic aspects of health sector of Bangladesh
3. Effect of development programmes on health and nutrition
4. Costing IMCI activities at the community level
5. Costing Integrated Nutrition Project of Bangladesh.

PRESENTATIONS (since 1997)

February 1999
Presented two papers on Expanded Program Immunization in Bangladesh at the Annual Scientific Conference of ICDDR,B, 14-15 February

February 1999
Presented a paper researching findings on Status of Immunization Costs, Xcost-effectiveness and Financing: Bangladesh Case, Meeting on Sustainable Financing for Vaccination, organized by Child Vaccine Initiative, New York, 4-5 February

February 1998
Poster presentation at ASCON VII organized by ICDDR,B on 14-15 February, 1998. Title of the paper: Economics of Hepatitis B Vaccination for Bangladesh,

February 1998

December 1997
Paper presented at the workshop on "Women’s Health in the Community: Operationalizing the Cairo and Beijing Agendas in Bangladesh", jointly organized by Harvard School of Public Health and BRAC. Title of the paper: Community Financing of Medical Care Services in China: Lessons for Bangladesh.

CONSULTANTSHIPS (since 1997)

Fall 1999
Consultant, Abt Associates, for Health Care Seeking Behavior, Willingness and Ability to Pay for Health Services delivered through NGO-run facilities of UFHP

Summer 1998
Consultant, Abt Associates, for economic evaluation of Expanded Programme on Immunization (EPI), Bangladesh.

Summer 1997
Consultant, World Bank, South Asia I, Washington D.C. to prepare a report on Regulatory Framework faced by the Private Health Care Sector of Bangladesh.

Summer 1996
Consultant, WIO Nutrition group.
PUBLICATIONS (since 1992)


CURRICULUM VITAE
M. Mahmud Khan

PRESENT POSITION
Associate Professor
Department of International Health and Development
and Department of Health Systems Management
Tulane School of Public Health and Tropical Medicine
1440 Canal Street, New Orleans, LA 70112, USA
E-mail: khan@mailhost.tcs.tulane.edu

EDUCATION
B.S.S. University of Dhaka, Bangladesh
Major: Economics, Secured first position in the first class 1978
M.S.S. University of Dhaka, Bangladesh
Economics, Secured first position in the first class 1980
M.A. Stanford University, California
Production Economics, Development
M.A. Stanford University, California
Economics, Areas: Econometrics, Labor Economics, 1987
Development theory, Micro-economics
Ph.D. Stanford University, California
Applied Economics, Household modelling 1988
Major: Household behavior,
Applied Micro-economics, Econometrics
Dissertation topic: Time Allocation Pattern
in Rural Bangladesh

POSITIONS HELD
Feb 1980 to Aug. 1981 Lecturer, Dept. of Economics, University of Dhaka, Bangladesh
Jan 1984 to June 1985 Asst. Professor, Dept. of Economics, University of Dhaka, Bangladesh
July-Sept '85 Visiting Fellow, Warwick University
Development Economics Research Center, Coventry, UK
August 1987 Assistant Professor
to July 1988 Economics Department, University of Washington, Seattle, USA
July 1988 Assistant Professor
to May 1992 International Health Program
Tulane University, USA
June 1992 Assistant Professor
to June 1994 Department of Health Systems Management
and Department of International Health and Development
July 1994- Associate Professor
Department of International Health and Development
and Department of Health Systems Management
January 1997 Head, Health Economics Programme, ICDDR.B, Dhaka (on secondment from Tulane University)
to August 1999
CURRICULUM VITAE
Of
Zahidul Quayyum

PRESENT POSITION

Assistant Professor
Institute of Health Economics
University of Dhaka, Dhaka – 1000, Bangladesh.
Tel: +880-2- 9661920-Ext.6303 (W), 9117400 (R).
E-mail: duregstr@bangla.net Attn: IHE, or zquayyum@icddrb.org

Also working as Consultant for the Health Economics Programme of Public Health Sciences Division, ICDDR,B. The major work include technical guidance and supervising the research study.

EDUCATION

M. Sc. Health Policy, Planning and Financing
London School of Hygiene and Tropical Medicine and London School of Economics
University of London, UK
Major Subject Studied: Health Economics, Health Care Evaluation, Health Services Management, Health Policy, Research Methods

Masters of Arts (MA), Economics
Thammsat University, Bangkok, Thailand

Masters of Social Science (MSS)
Economics
University of Dhaka, Dhaka, Bangladesh
Subjects Studied: Microeconomic theory, Macroeconomic theory, Econometrics and International Trade

Bachelors of Social Science (BSS)
(Honours)
University of Dhaka, Dhaka, Bangladesh
Major: Economics
Subsidiary: Statistics, Mathematics, and Public Administration

POSITIONS HELD

12 April 1999 to 31 July 1999
Senior Operations Researcher, Health Economics Programme, Public Health Science Division ICDDR,B. Dhaka

Major Responsibilities include:
Design and undertake studies on costing, financing, economic evaluation, major health policy issues of the health systems.
Faculty for the short training courses organised by the programme.
1 August 1997 to 12 April 1999

Major Responsibilities included: Design and implement operations research interventions, and studies on financial sustainability. Prepare research reports.

1 December 1994 to 31 July 1997
Senior Operations Researcher, Urban MCH-FP Extension Project Health and Population Extension Division, ICDDR,B, Dhaka

Design and implement interventions and studies on financial sustainability. Prepare research reports.

7 November 1993 to 30 November 1994
Research Investigator Urban Health Extension Project Community Health Sciences Division, ICDDR,B, Dhaka.

Major Responsibilities included: Supervise the urban health and demographic surveillance system. Prepare research reports.

1 February 1985 to 6 November 1993
Research and Statistical Officer International Jute Organisation Dhaka, Bangladesh

Major Responsibilities included: Writing on reports on market and trade situation of jute and jute products. Assist in project preparation and implementation.

1 October, 1984 to 31 January, 1985
Research Associate Bangladesh Institute of Development

Major Responsibilities included, Analysis of data and writing report.

PUBLICATIONS/RESEARCH REPORTS


4. Impact of national immunization days on polio-related knowledge and practice of urban women in Bangladesh. Working Paper of the Urban Health Extension Project, ICDDR,B published in 1997. I am one of the co-authors of the paper.

5. Impact of national immunization days on polio-related knowledge and practice of urban women in Bangladesh. A journal article published in the journal: “Health Policy and Planning”, 12(4), published in 1997. I am one of the co-authors of the paper.


Response to the reviewers' comment on the proposal on "Cost effectiveness of nutritional intervention activities in rural Bangladesh"

This proposal was sent to two external reviewers,

(1) Professor Sayed A. Hye, Department of Economics, Jahangirnagar University
(2) Damian Walker, Research Fellow in Health Economics, London School of Hygiene & Tropical Medicine, Health Policy Unit

Copies of comments from them are enclosed.

Our responses to Professor Sayed A. Hye's comments are:

(1) Section: Background information, Problem Statement, and BINP

The revised protocol now includes information on the importance of the study in Bangladesh context and reviewed by literatures.

(2) Section: Data collection method

The revised protocol now intends to cover first phase BINP activities. NGO-led thana is excluded in the revised proposal.
Selection of households in the programme and intervention area has been changed.
Measure 'indirect costs' include estimate of income loss due to illness, morbidity, disability and time cost due to illness in the household.
The minimum length of the follow-up will be for six months and it is stated in the proposal now.

(3) Section: Analytical Methodology

According to revised proposal, we are going to see 'indirect economic benefits' and economic losses due to morbidity'.

Sensitivity Analysis is included.

(4) Section: Measuring the impact, and significance of the study

It is rephrased and revised now which information will be collected during longitudinal survey.

The idea of 'Study should be able to indicate total social cost due to malnutrition' is now excluded.
Our responses to Damian Walker's comments are:

(A) Section: Background information, Problem Statement, and BINP

   The revised protocol now include information on the importance of the study in Bangladesh context and reviewed by literatures.

   The term efficiency used in the proposal refers to technical efficiency.

(B) Objectives of the study

   This is now changed according to format of RRC.
   This study is going to assess the cost-effectiveness of community based nutrition component of BINP.
   The investigators state that the perspective of the study is that of the 'project'. ...
   This is taken care of. The perspective is cost effectiveness of programme itself.
   However, the measure of direct and indirect benefits will have societal perspective as well.

(C) Data collection method

   Study site will be randomly selected from the first phase BINP thanas. It is mentioned in the methodology part.
   Longitudinal information collection will be for 6 months.

(D) Analytical Methodology

   Lot of comments is now no more relevant within the context of revised proposal.
   Technical efficiency will be assessed.
   A major portion of indicators of effectiveness from 'percentage of .....' to 'number of ....' have been changed as this will facilitate the CEA.
   Sensitivity analysis is included.

(E) List of some basic information to be collected.

   The socio-economic status of participants will be collected.
   Other comments are now irrelevant for the present revised proposal.

(F) Measuring the impact of nutrition programme

   The revised proposal takes care of these points.

(G) Significance of the study: It is rephrased and revised now.

   Budget: Budget has been revised and rechecked by finance department.

References: Mentioned References are incorporated in the proposal.
Response to the reviewers’ comment on the proposal on “Cost effectiveness of nutritional intervention activities in rural Bangladesh”

This proposal was sent to two external reviewers,

(1) Professor Sayed A. Hye, Department of Economics, Jahangirnagar University
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   Measure ‘indirect costs’ include estimate of income loss due to illness, morbidity, disability and time cost due to illness in the household.
   The minimum length of the follow-up will be for six months and it is stated in the proposal now.

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The investigators state that the perspective of the study is that of the 'project'. ...
This is taken care of. The perspective is cost effectiveness of programme itself. However, the measure of direct and indirect benefits will have societal perspective as well.

(C) Data collection method
Study site will be randomly selected from the first phase BINP thanas. It is mentioned in the methodology part. Longitudinal information collection will be for 6 months.

(D) Analytical Methodology
Lot of comments is now no more relevant within the context of revised proposal. Technical efficiency will be assessed. A major portion of indicators of effectiveness from 'percentage of .....' to 'number of ....' have been changed as this will facilitate the CEA. Sensitivity analysis is included.

(E) List of some basic information to be collected.
The socio-economic status of participants will be collected. Other comments are now irrelevant for the present revised proposal.

(F) Measuring the impact of nutrition programme
The revised proposal takes care of these points.

(G) Significance of the study: It is rephrased and revised now.

Budget: Budget has been revised and rechecked by finance department.

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**Response to the reviewers' comment on the proposal on “Cost effectiveness of nutritional intervention activities in rural Bangladesh”**

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**Our responses to Professor Sayed A. Hye’s comments are:**

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(2) Section: Data collection method

The revised protocol now intends to cover First phase BINP activities. NGO-led thana is excluded in the revised proposal. Selection of households in the programme and intervention area has been changed. Measure ‘indirect costs’ include estimate of income loss due to illness, morbidity, disability and time cost due to illness in the household. The minimum length of the follow-up will be for six months and it is stated in the proposal now.

(3) Section: Analytical Methodology

According to revised proposal, we are going to see ‘indirect economic benefits’ and economic loses due to morbidity’.

Sensitivity Analysis is included.

(4) Section: Measuring the impact, and significance of the study

It is rephrased and revised now which information will be collected during longitudinal survey.

The idea of ‘Study should be able to indicate total social cost due to malnutrition’ is now excluded.
Our responses to Damian Walker’s comments are:

(A) Section: Background information, Problem Statement, and BINP

The revised protocol now include information on the importance of the study in Bangladesh context and reviewed by literatures.

The term efficiency used in the proposal refers to technical efficiency.

(B) Objectives of the study

This is now changed according to format of RRC.
This study is going to assess the cost-effectiveness of community based nutrition component of BINP.
The investigators state that the perspective of the study is that of the ‘project’. ... This is taken care of. The perspective is cost effectiveness of programme itself.
However, the measure of direct and indirect benefits will have societal perspective as well.

(C) Data collection method
Study site will be randomly selected from the first phase BINP thanas. It is mentioned in the methodology part.
Longitudinal information collection will be for 6 months.

(D) Analytical Methodology
Lot of comments is now no more relevant within the context of revised proposal.
Technical efficiency will be assessed.
A major portion of indicators of effectiveness from ‘percentage of .....’ to ‘number of ....’ have been changed as this will facilitate the CEA.
Sensitivity analysis is included.

(E) List of some basic information to be collected.
The socio-economic status of participants will be collected.
Other comments are now irrelevant for the present revised proposal.

(F) Measuring the impact of nutrition programme
The revised proposal takes care of these points.

(G) Significance of the study: It is rephrased and revised now.

Budget: Budget has been revised and rechecked by finance department.

References: Mentioned References are incorporated in the proposal.
Dear Dr. Mahmud Khan,

I had the pleasure to go through the research proposal on “Cost-Effectiveness of Nutritional Intervention Activities in Rural Bangladesh.” Overall, the proposal seems to be o.k. But some modifications particularly, in the Data Collection Method and Analytical Methodology sections of the proposal, I think, are important to be made. My comments in detail are enclosed herewith for your perusal. Please do not hesitate to contact me if you have any queries with respect to my comments.

Yours sincerely,

Prof. S.A. Hye

Date: 01 August 1999
Project Title: Cost-effectiveness of Nutritional Intervention Activities in Rural Bangladesh

A. General Comments:

Most people in Bangladesh particularly, women and children suffer from malnutrition. To improve the situation BINP has been adopted in the country. The present study is designed to look into the cost-effectiveness of this programme. The importance of the study in a poor country like Bangladesh is self-explanatory. It has the potential to provide valuable information to planners and policy-makers. The budget and the time horizon of the study (one year) appear to be appropriate. However, the study may benefit if the following specific comments/observations are considered.

B. Specific Comments/Observations

Sections: Background Information, Problem Statement, and BINP

- A separate sub-section may be developed stating the importance of the study in the context of Bangladesh.
- A short review of current literature on the subject and discussions on the relevant other studies, if there is any, may be made with a view to emphasizing the importance and the significant of the study.

Section: Data Collection Method

- Explain the justification of considering the Second phase of BINP only. Why the First phase in particular is left out? One would expect that the First phase would give a longer follow-up period and thus would facilitate the evaluation.
- Why 2 NGO-led thanas are proposed to be selected as samples? The study specifies the cost-effectiveness analysis of the community based nutrition component of BINP (res. sec. 2). Are CBNCs organized by NGOs only?
- Random selection of 70 households from each village of the defined cluster may not represent all the three target groups (pregnant women, lactating women, and children under 2) in proportion to the population. There is the risk of under-representation or over-representation of one or the other group. The study may therefore, consider to make lists of the household from its cause having the member(s) of one or the other beneficiary groups and then draw the samples (households) randomly from these lists. Care should be taken that the samples of each group are proportional to the total population of the target groups. The same method should also be followed in drawing samples from the 'control' groups.
• Specify what are the ‘indirect costs’

• The minimum length of the follow-up period for impact assessment of BINP should be stated clearly.

Section: Analytical Methodology

• What are ‘indirect economic benefits’ and how are ‘economic losses due to morbidity’ etc. are to be evaluated? Should sensitivity analysis be included? The study proposal should contain an explanation to these questions in clear terms.

Section: Measuring the Impact, and Significance of the Study

• Longitudinal information on health status is an uncommon phrase. Explain what is meant by this.

• It is unclear how the ‘study should be able to indicate total social cost due to malnutrition.

Prof. S.A. Iye
Department of Economics
Jahangirnagar University
Savar, Dhaka
E-Mail: sahye@juniv.edu
13 July 1999

Dear Dr Kahn

Please find enclosed my comments on the project “Cost-effectiveness of nutritional activities in rural Bangladesh”. If you have any queries with respect to my comments, please do not hesitate to contact me.

Yours sincerely

[Signature]

Damian Walker
Project Title: Cost-effectiveness of nutritional intervention activities in rural Bangladesh

General comments
This study will examine the cost-effectiveness of the Bangladesh Integrated Nutrition Project (BINP). It is an important study because of the high prevalence of malnutrition in Bangladesh. The project has the potential to provide valuable information to policy-makers on a wide range of topics. However, the project would benefit from a clearer delineation of its aims and objectives, and the activities which will be undertaken in order to achieve these. The budget appears to be appropriate and would represent value for money if all the stated aims and objectives were achieved within the stated one-year time horizon. However, the time horizon may need to be changed once the methodology has been revised.

Specific comments
A. Background information and problem statement
- This section would benefit from a short review of the current literature with respect to the effectiveness, cost and cost-effectiveness of nutritional intervention activities. If it is shown that there is a dearth of such studies (as I suspect), this would significantly increase the value of the proposed project.
- ‘Despite quite rapid growth...’ to where does this sentence refer to? Is it a general comment with respect to trends in developing countries, or does it refer to Bangladesh? – unclear.
- ‘Bangladesh probably shows...’ – some comparison with prevalence rates from other countries would be useful, or a reference which supports the statement.
- When and where was BINP introduced? This should help to clarify the meaning of ‘...new areas’, but additional clarification is required here also.
- Why does the ‘expansion in new areas... require a CEA’? Be explicit with respect to listing the strengths of an economic evaluation – what information can a CEA provide decision-makers?
- Which type of efficiency does the investigator mean? – technical or allocative?

B. Objectives of the study
- This section would benefit from a split between the main aim and the specific objectives of the project.
- Be more specific than ‘cost-effectiveness of nutrition intervention activities...’ – is the study going to assess the cost-effectiveness of BINP or the community based nutrition component of BINP?
- The investigators state that the perspective of the study is that of the ‘project’. Yet, the viewpoint appears to be much wider, encompassing both costs and benefits borne by patients and society as a whole – a societal perspective appears more appropriate.

C. Data collection method
- Where are the 40 thanas situated?
- Where is the study site?
- The section on the collection of cost data is insufficient. More information is required with respect to how this data will be collected; e.g. will an ingredients approach be used; will standard guidelines be use in order to ensure consistency in
data collection? - if so, the guidelines in the references (Parker & Creese and WHO) should be referred to here; over what period of time etc.?

- Unclear what is meant by 'direct and indirect cost'.
- Over what period of time will the populations be followed in order to assess whether the nutritional intervention has had an impact on nutritional status? - has this follow-up period been included in the project time frame and budget?
- Unclear what is meant by 'net cost'.

F. Analytical methodology
- Unclear what is meant by 'direct and indirect economic benefits'.
- How will 'economic loss due to 'morbidity, school attendance, school performance etc.' be evaluated?
- The indicators of effectiveness are process and intermediate measures. This immediately restricts the analysis to an assessment of technical efficiency - is this desired aim?
- Suggest change indicators of effectiveness from 'percentage of...' to 'number of...' as this will facilitate the CEA.
- Sensitivity analysis should be included.

F. List of some basic information to be collected
- The socio-economic status of participants needs to be collected.
- No information has been provided as to the methods with which the investigators will collect data pertaining to the cost of medical care, income loss due to illness, morbidity and disability, and the opportunity cost of time lost due to illness in the household. This information will require facility-based and household surveys.
- The investigators may also wish to investigate the cost associated to care-giving.

F. Measuring the impact of nutrition programme
- As it is unclear when BLP activities were introduced, it is difficult to ascertain whether this project will realistically be able to estimate a statistical significance between the two populations - provide more background data.
- Unclear what is meant by 'Longitudinal information on...'.

G. Significance of the study
- Unclear what is meant by 'total social cost'.
- Reiterate the importance of cost-effectiveness analysis in providing evidence-based policy.

Budget
- The total under Travel/per diem should equal $6308
- A short budget justification would help to clarify why the field research officer and interviewers are budgeted for 8 months each, yet data collection last for 6 months.

References
- Creese & Parker (1988) and WHO (1988) are not quoted in the text.
Identification information:

Union name/No. │ Village Name/No. │ House name/No.

Name of the fieldworker/Code │ Revised HH No.

Date of interview: 1. __/__/2000 2. __/__/2000 3. __/__/2000

and condition:  

Name of the head of the HH

Name of the respondent

Household part: [Respondent: Head of the HH or any adult member of the family]

<table>
<thead>
<tr>
<th>QUESTIONS</th>
<th>ANSWERS</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>101. Have any child, pregnant mother and lactating mother from your HH taken food from the CNC in the last four years?</td>
<td>Child 1.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pregnant mother 2.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lactating mother 3.</td>
<td></td>
</tr>
<tr>
<td>102. What is the condition of your household regarding food, does it remain in surplus, is it just equal to the need, is it in deficit sometimes or is it always in deficit?</td>
<td>Surplus 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Balanced 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sometimes in deficit 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Always in deficit 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Others (specify) 5</td>
<td></td>
</tr>
<tr>
<td>103. How long you and your family are living in this village?</td>
<td>_____ Years</td>
<td>_____ Months</td>
</tr>
<tr>
<td>104. Interviewer: See the condition of the respondent’s house and circle the answer code according to your own opinion.</td>
<td>Bad 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not Good 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Good 3</td>
<td></td>
</tr>
</tbody>
</table>
105. Information regarding members of the HH: [applicable for women aged between 10 to 49 (ever married) and children under 5 living in the HH]

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>Age Year</th>
<th>Age Month</th>
<th>Sex Male</th>
<th>Sex Female</th>
<th>Height (cm)</th>
<th>Weight (kg)</th>
<th>Enrolled in the program</th>
<th>If yes, how long (month)</th>
<th>Pregnant mother</th>
<th>Lactating mother</th>
<th>Child</th>
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<tbody>
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</table>
International Centre for Diarrhoeal Diseases Research, Bangladesh
Cost effectiveness of nutritional intervention activities in rural Bangladesh
In-depth household questionnaire

District: ______________________
Thana: ______________________
Union: ______________________
Village: ______________________
Date of Survey: ________________
Name of Enumerator: ____________

HOUSEHOLD CODE NUMBER: ____________
HOUSEHOLD CENSUS NUMBER: ____________

HOUSEHOLD INFORMATION

01. Name of household head: ______________________
02. Name of respondent: ______________________
SECTION -1
SOCIO – ECONOMIC INFORMATION

01. Health and Demographic Characteristics of Household Members

<table>
<thead>
<tr>
<th>SL No.</th>
<th>Name of the household members</th>
<th>Relation* with the head of the household</th>
<th>Age (in years)</th>
<th>Sex</th>
<th>Marital Status</th>
<th>Eligible as respondent</th>
<th>Years of schooling</th>
<th>Main Occupation**</th>
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<tbody>
<tr>
<td>01</td>
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<td>Yes = 1, No = 2</td>
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</tbody>
</table>

*Relation

<table>
<thead>
<tr>
<th>01 Household head</th>
<th>04 daughter/son-in-law</th>
<th>07 father/mother-in-law</th>
<th>10 driver</th>
</tr>
</thead>
<tbody>
<tr>
<td>02 Spouse</td>
<td>05 grandchild</td>
<td>08 brother/sister</td>
<td>11 not related</td>
</tr>
<tr>
<td>03 Son/daughter</td>
<td>06 mother/father</td>
<td>09 other relative</td>
<td></td>
</tr>
</tbody>
</table>

**Occupation

<table>
<thead>
<tr>
<th>01 Service</th>
<th>05 driver (rickshaw/van/push cart)/ boatman</th>
<th>09 daily laborer</th>
<th>13 small entrepreneur</th>
</tr>
</thead>
<tbody>
<tr>
<td>02 Agricultural worker</td>
<td>06 factory worker</td>
<td>10 driver</td>
<td>14 retired</td>
</tr>
<tr>
<td>03 Construction worker</td>
<td>07 business</td>
<td>11 unemployed</td>
<td>15 others (specify)</td>
</tr>
<tr>
<td>04 Housewife</td>
<td>08 poultry keeper</td>
<td>12 weaver</td>
<td></td>
</tr>
</tbody>
</table>

02. Construction Material of the Household (circle appropriate code)

a. Wall

<table>
<thead>
<tr>
<th></th>
<th>Jhupri</th>
<th>Bamboo</th>
<th>Clay</th>
<th>Tin/Wood</th>
<th>Pucca</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jhupri</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bamboo</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tin/Wood</td>
<td>4</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Pucca</td>
<td>5</td>
<td></td>
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</tbody>
</table>

b. Roof

<table>
<thead>
<tr>
<th></th>
<th>Jhupri</th>
<th>Bamboo</th>
<th>Tin/tally</th>
<th>Pucca</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jhupri</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bamboo</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tin/tally</td>
<td>4</td>
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<td></td>
</tr>
<tr>
<td>Pucca</td>
<td>5</td>
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</tbody>
</table>
03. Total number of rooms used for sleeping in the residential house

04. Land/dwelling house ownership pattern

<table>
<thead>
<tr>
<th>Land</th>
<th>Own</th>
<th>Rented</th>
<th>Governmental</th>
<th>Others (specify)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Rented</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Governmental</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others (specify)</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>House</th>
<th>Own</th>
<th>Rented</th>
<th>Governmental</th>
<th>Others (specify)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Rented</td>
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<tr>
<td>Governmental</td>
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<tr>
<td>Others (specify)</td>
<td></td>
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</tbody>
</table>

05. Ownership of other house or land beside this homestead

<table>
<thead>
<tr>
<th>House</th>
<th>Yes</th>
<th>No</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
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<table>
<thead>
<tr>
<th>Land</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
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<td>1</td>
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</table>

06. Do you have cultivatable land? If yes how much? (If not, write 0000, and skip to 07. if don’t know write 9997).

Decimal

07. Total monthly household expenditure (including own produced items):

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>Rent (if own house, write approx. imputed rent)</td>
<td>Tk</td>
</tr>
<tr>
<td>Food consumption (rice)</td>
<td>Tk</td>
</tr>
<tr>
<td>Food consumption (others)</td>
<td>Tk</td>
</tr>
<tr>
<td>Utilities</td>
<td>Tk</td>
</tr>
<tr>
<td>Gas / firewood (if gas bill is included in house rent write 99996)</td>
<td>Tk</td>
</tr>
<tr>
<td>Electricity (if electricity bill is included in house rent write 99996)</td>
<td>Tk</td>
</tr>
<tr>
<td>Water (if water bill is included in house rent write 99996)</td>
<td>Tk</td>
</tr>
<tr>
<td>Telephone</td>
<td>Tk</td>
</tr>
<tr>
<td>School fees/Tutors</td>
<td>Tk</td>
</tr>
<tr>
<td>Transport</td>
<td>Tk</td>
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</tbody>
</table>

08. What was the total medical expenditure for all the household members during the last three months? (Write 00000 if medical expenditure is nil)

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
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</thead>
<tbody>
<tr>
<td>Medical expenditure (excluding delivery care)</td>
<td>Tk</td>
</tr>
<tr>
<td>Delivery cares</td>
<td>Tk</td>
</tr>
</tbody>
</table>
09. Find out whether the following durable assets are available (in working conditions), number of such assets, and number purchased during the previous year?

<table>
<thead>
<tr>
<th>Asset Type</th>
<th>Yes</th>
<th>No</th>
<th>Number purchased during last year</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Working Radio</td>
<td>1</td>
<td>2</td>
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</tr>
<tr>
<td>b. TV</td>
<td>1</td>
<td>2</td>
<td></td>
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<tr>
<td>c. Tape recorder</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>d. Refrigerator</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>e. Electric Fan</td>
<td>1</td>
<td>2</td>
<td></td>
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<tr>
<td>f. Bicycle</td>
<td>1</td>
<td>2</td>
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<tr>
<td>g. Motor cycle/car</td>
<td>1</td>
<td>2</td>
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<tr>
<td>h. Almirah/showcase</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>j. Bed/chowki</td>
<td>1</td>
<td>2</td>
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<tr>
<td>k. Wall clock/watch</td>
<td>1</td>
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</table>

10. Area of residential structures: (in local unit) = (in foot) =

<table>
<thead>
<tr>
<th>Structure</th>
<th>Structure</th>
<th>Structure</th>
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<td>1</td>
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</table>

Area (Length x Width) -

No. of Rooms -

Roof materials -

Wall materials -

Floor materials -

11. Source of drinking water.
1 = tap water, 2 = tube well, 3 = deep tubewell, 4 = ditch,
5 = pond/river, 6 = others (specify________) -

12. Type of household latrine.
1 = bush/field, 2 = mud hole, 3 = thatched wall latrine/riverside
4 = no fixed place, 5 = latrine surrounded by stagnant water,
6 = latrine not surrounded by stagnant water, 7 = others (specify________) -

13. Do you have electricity at your home? [1 = Yes, 2 = No] -
SECTION -2
HEALTH – NUTRITION EDUCATION

14. What are the benefits of breast-feeding?

15. How long exclusive breast-feeding should continue? (not even water)

16. Do you know what is colostrum? [1=Correct, 2=Incorrect]

17. When colostrum should be given to baby?

18. What are the benefits of giving colostrum to baby?

19. When should a mother start adding foods to breastfeeding (in months)?

20. What should be those foods additional to breastfeeding?

21. When prepare weaning food for the infant?

22. How long you keep weaning food after preparation for the baby?

23. What are the benefits of antenatal check up for pregnant women?
24. Tell the importance of giving TT (Tetanus toxoid) during pregnancy?

25. How many Tetanus toxoid injections does a pregnant woman need to protect the newborn infant from tetanus?

26. What types of work should pregnant women avoid?

27. Do you know who can get anaemia?

28. Which foods are good for curing anaemia?

29. How often should they be eaten per day?

30. Do you know about iron tablets? [1=Correct, 2=Incorrect]

31. For whom we need iron supplement?

32. Why do we need iron supplement?
33. Where can you obtain iron tablets?

34. What are the benefits of spacing and family planning?

35. What are the symptoms of diarrhoea?

36. How to treat diarrhoea in case of children?

37. How can you recognize that the child has Acute Respiratory Infections (ARI) / Pneumonia?

38. What is the management of ARI?

39. At what age children should receive the measles vaccine (in months)?
**40. MATERNAL HEALTH** [To be asked only married (including widow and divorced) female member of the household.] **[TWO DIGIT CODE]**

| Mother’s name         | C | O | D | E | What was the outcome of last pregnancy? | C | O | D | E | Time of the last outcome. | C | O | D | E | When the last child was born? | C | O | D | E | Where did you give birth to your last child? | C | O | D | E |
|                       |   |   |   |   |                                          |   |   |   |   |                            |   |   |   |   |                                          |   |   |   |   |                            |   |   |   |   |
|                       |   |   |   |   |                                          |   |   |   |   |                            |   |   |   |   |                                          |   |   |   |   |                            |   |   |   |   |
|                       |   |   |   |   |                                          |   |   |   |   |                            |   |   |   |   |                                          |   |   |   |   |                            |   |   |   |   |

| Was birth weight of the last child taken? | C | O | D | E | If yes, by whom? (provider / facilities) | C | O | D | E | How many doses of TT were given during your last pregnancy? | C | O | D | E | Did you receive Vit. A capsules within 2 weeks of delivery? 1=Yes, 2=No | C | O | D | E | Did you receive iron tablet during pregnancy? N=0, Y=months | C | O | D | E |
|                                           |   |   |   |   |                                          |   |   |   |   |                            |   |   |   |   |                                          |   |   |   |   |                            |   |   |   |   |
|                                           |   |   |   |   |                                          |   |   |   |   |                            |   |   |   |   |                                          |   |   |   |   |                            |   |   |   |   |
|                                           |   |   |   |   |                                          |   |   |   |   |                            |   |   |   |   |                                          |   |   |   |   |                            |   |   |   |   |

| Did you receive iron tablet during lactation? | C | O | D | E | How many antenatal check-ups or counseling did you receive during the last birth? | C | O | D | E | Where did you receive the last antenatal check-up? | C | O | D | E | Did you take extra amount of food during the time of pregnancy and lactation? 1=Y, 2=N | C | O | D | E | Did you breast feed your last child? | C | O | D | E |
|                                             |   |   |   |   |                                          |   |   |   |   |                            |   |   |   |   |                                          |   |   |   |   |                            |   |   |   |   |
|                                             |   |   |   |   |                                          |   |   |   |   |                            |   |   |   |   |                                          |   |   |   |   |                            |   |   |   |   |
|                                             |   |   |   |   |                                          |   |   |   |   |                            |   |   |   |   |                                          |   |   |   |   |                            |   |   |   |   |

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41. **CHILD HEALTH** 1 (Mother or primary care taker of the child under 5 years of age should be asked)

| Name | C | O | D | E | Has ever been Immunized? | 1 = Yes | 2 = No | Have EPI Card? | 1 = Y | 2 = N | Check from card or ask whether immunization has taken place? | 01 = BCG, 02 = DPT1, Polio 1, 03 = DPT2, Polio 2, 04 = DPT3, Polio 3, 05 = Polio 4, 06 = Measles, 08 = N/A, 09 = D.K./Missing, | Vitamin A capsules In last 6 months | 1 = Yes | 2 = No | Did your child have a rash & fever for 4 days or more in the last 3 months? | 1 = Yes, 2 = No | Did your child have cough with 2 or more days of fever and difficulty in breathing? | 1 = Yes, 2 = No |
### CHILD HEALTH 2
(Mother or primary care taker of the child under 5 years of age should be asked)

<table>
<thead>
<tr>
<th>Code: Whether the child had diarrhea in the last two weeks? 1=Yes, 2=No.</th>
<th>If yes, the number of stools on the worst day? 8=N/A</th>
<th>Did you do anything to treat diarrhoea? 1=Yes, 2=No. 8=N/A</th>
<th>If yes, what did you do? 8=N/A</th>
<th>Have you heard of ORS? 1=Yes, 2=No. 8=N/A</th>
<th>During the past 2 weeks have your child suffered from any illness/injury? 1=Yes, 2=No. 8=N/A</th>
<th>Have you sought any type of treatment? 1=Yes, 2=No. 8=N/A</th>
<th>If yes, where did you seek care? 8=N/A</th>
<th>How far is it from your HH? 8=N/A</th>
<th>Code:</th>
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</tbody>
</table>
42. Do you know the adverse effect of malnutrition in case of women?

43. Do you know the adverse effect of malnutrition in case of children?

44. Do you know the contents of the food packet provided by the project? [1=Yes, 2=No]
   If yes, tell the contents: 1=Correct, 2=Incorrect, 8=N/A

45. Do you know the importance of growth card/chart?

46. What is the importance of adequate growth of baby in the fetus?
47. What is the importance of attending GMP sessions?

48. Do you know the benefits of using iodized salt? [1=Yes, 2=No]

Please tell us about the benefits of using iodized salts?

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<th>Benefits</th>
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</table>

49. Did you buy iodized salt last time when you bought salt? [1=Yes, 2=No]

If no, Why?

50. Test the salt for iodine? Results: [1=Yes, 2=No, 3=Salt not available]

51. Do you know where the CNC is located? [1=Yes, 2=No]

If yes, please specify the location? [1=Correct, 2=Incorrect]

How far is the center from your HH?

52. Do you know what services delivered by the CNC?

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<tr>
<th>Services</th>
<th>Code</th>
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</tbody>
</table>
53. Has any member of the HH received services from the BINP during the last three years? [1=Yes, 2=No] If yes, please list the particular / types

<table>
<thead>
<tr>
<th>Recipient of the services</th>
<th>Code</th>
<th>Currently in project 1=Y, 2=N</th>
<th>How long? (months) Code</th>
<th>Type of services</th>
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</table>

15. Do you know how the CNC selects individuals to get service from them? Explain.

<table>
<thead>
<tr>
<th>Pregnant women</th>
<th>Lactating women</th>
<th>Growth faltered children</th>
<th>Malnourished children</th>
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</table>

16. Do you know for how many months the nutrition project provide services to the beneficiaries?

<table>
<thead>
<tr>
<th>Pregnant women</th>
<th>Lactating women</th>
<th>Children</th>
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<tbody>
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</tbody>
</table>

17. How many packets of food supplementation are given out by the project to:

<table>
<thead>
<tr>
<th>Packets / day</th>
<th>Days / week</th>
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</thead>
<tbody>
<tr>
<td>Pregnant women</td>
<td>Lactating women</td>
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</table>

18. What are the benefits of supplementary feeding in case of following population groups?

<table>
<thead>
<tr>
<th>Pregnant / Lactating women</th>
<th>Growth faltered / Malnourished child</th>
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</table>

19. What types of food should be taken by the following population group? [Better health / protect malnutrition] [Sufficient feeding at home even after the supplementation]

<table>
<thead>
<tr>
<th>Pregnant / Lactating women</th>
<th>Growth faltered / Malnourished child</th>
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13
20. What types of food should NOT be taken by the following population group?

<table>
<thead>
<tr>
<th>Pregnant / Lactating women</th>
<th>Growth faltered / Malnourished child</th>
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</table>
**International Centre for Diarrhoeal Diseases Research, Bangladesh**

**Cost effectiveness of nutritional intervention activities in rural Bangladesh**

**Questionnaire for costing nutritional intervention activities**

*(Shahrasti Thana)*

---

**INFORMATION ON COMMUNITY NUTRITION CENTRE**

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<th>CNC NUMBER</th>
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<th>CNC VISITING DATE</th>
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<th>NAME OF CNP</th>
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<th>WOMEN'S GROUP</th>
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</table>
**CAPITAL COST**

**SECTION C-1**

**LIST ALL THE CAPITAL INPUTS THAT YOU SEE AT THE SERVICE PROVIDING AREA**

<table>
<thead>
<tr>
<th>No</th>
<th>Description</th>
<th>Current market value (taka)</th>
<th>Lifetime (years)</th>
<th>From community</th>
<th>From Project fund</th>
<th>From outside</th>
<th>Total</th>
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**SECTION C-2**

**SPACE FOR COMMUNITY NUTRITION CENTRE**

<table>
<thead>
<tr>
<th>Description</th>
<th>Locally rent / month</th>
<th>Community donated</th>
<th>Locally procured</th>
<th>Procured from outside</th>
<th>Total Yearly rent</th>
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SECTION C – III:  FURNITURE (Report each pieces on separate line)

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<th>No</th>
<th>Description</th>
<th>Current market value (taka)</th>
<th>Lifetime (years)</th>
<th>From community</th>
<th>From Project fund</th>
<th>From outside</th>
<th>Total</th>
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RECURRENT COST

SECTION R - 1:  PERSONNEL INVOLVED IN PROJECT ACTIVITIES:

<table>
<thead>
<tr>
<th>List of personnel</th>
<th>Salary/month</th>
<th>Community involvement / voluntary</th>
<th>Community but project funded</th>
<th>Hired from outside</th>
<th>Total salary/year</th>
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</table>
SECTION R - II SOCIAL MOBILIZATION

<table>
<thead>
<tr>
<th>No</th>
<th>Description</th>
<th>Cost In taka</th>
<th>From Community</th>
<th>From Project fund</th>
<th>From outside</th>
<th>Total</th>
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SECTION R - III RECURRENT TRAINING

<table>
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<th>No</th>
<th>Description</th>
<th>Cost in taka</th>
<th>From Community</th>
<th>From Project fund</th>
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</table>
SECTION R - IV: List all the recurrent resource inputs that you see at the service providing area

<table>
<thead>
<tr>
<th>Input category</th>
<th>Quantity</th>
<th>Cost per unit</th>
<th>Community donated</th>
<th>Locally procured</th>
<th>Procured from outside</th>
<th>Total</th>
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<tbody>
<tr>
<td>Supplementation packet</td>
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<tr>
<td>Input category</td>
<td>Quantity</td>
<td>Cost per unit</td>
<td>Community donated</td>
<td>Locally procured</td>
<td>Procured from outside</td>
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