

Principal Investigator R.F. Stanton ^{ICDDR,B Library} Trainee Investigator (if any)

Application No. 84-023

Supporting Agency (if Non-ICDDR,B)

Title of Study WATER AND NUTRITION EDUCATION IN RAJSHAHI, BANGLADESH

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

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

Source of Population:

- (a) Ill subjects Yes No
- (b) Non-ill subjects Yes No
- (c) Minors or persons under guardianship Yes No

Does the study involve:

- (a) Physical risks to the subjects Yes No
- (b) Social Risks Yes No
- (c) Psychological risks to subjects Yes No
- (d) Discomfort to subjects Yes No
- (e) Invasion of privacy Yes No
- (f) Disclosure of information damaging to subject or others Yes No

Does the study involve:

- (a) Use of records, (hospital, medical, death, birth or other) Yes No
- (b) Use of fetal tissue or abortus Yes No
- (c) Use of organs or body fluids Yes No

Are subjects clearly informed about:

- (a) Nature and purposes of study Yes No
- (b) Procedures to be followed including alternatives used Yes No *NA*
- (c) Physical risks Yes No *NA*
- (d) Sensitive questions Yes No *NA*
- (e) Benefits to be derived Yes No
- (f) Right to refuse to participate or to withdraw from study Yes No
- (g) Confidential handling of data Yes No
- (h) Compensation &/or treatment where there are risks or privacy is involved in any particular procedure Yes *NA*

5. Will signed consent form be required:

- (a) From subjects Yes No
- (b) From parent or guardian (if subjects are minors) Yes No

6. Will precautions be taken to protect anonymity of subjects Yes No

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 Cttee. for review.

* See Abstract Summary

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

R.F. Stanton M.D.
Principal Investigator

22 MAY 1984

Trainee

SECTION I: RESEARCH PROTOCOL

Title : Water and Sanitation Education in Dhaka, Bangladesh

Investigator : Bonita Stanton, M.D.

Co-Investigators : John Clemens, Tajkera Khair & M.M. Rahaman

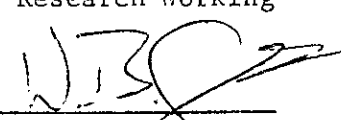
Starting date : 15 July 1984

Completion date : 14 July 1986

Total direct cost : US \$102,390

Scientific Program Head

This protocol has been approved by the Community Services Research Working Group.

Signature of Acting Associate Director for CSRWG: 

Date: 21 MAY 1984

Abstract summary:

Diarrhoea appears to be a problem of significant magnitude in Dhaka. Improper water and sanitation practices undoubtedly are a major factor in the spread of diarrhoea. It is the hypothesis of the study that educational programs designed for specific communities and delivered at the community level will alter target practices and hence reduce the incidence of diarrhoea. In order to evaluate any impact on diarrhoea incidence a surveillance system of diarrhoea and other water-related diseases, of growth in children <6 years and of water and sanitation practices by their families will be established in 50 communities throughout Dhaka. Each community will be defined by the presence of one volunteer from the Urban Volunteer Program. The first 4 months of data will be evaluated in order to assign communities to be control or intervention communities using a stratified random allocation based on the incidence of diarrhoea. The educational program will consist of principles of hygiene which have been subjected to scientific validation and of practices, which differ between low and high risk families in the present study as determined by indirect standardization. Experienced trainers and the volunteer from the community will teach that community. Surveillance will continue to measure the impact of the training program on water practices, and morbidity and growth of children less than 6 years of age.

Reviews:

- a) Ethical Review Committee: _____
- b) Research Review Committee: _____
- c) Director: _____

SECTION II: RESEARCH PLAN

A. INTRODUCTION

1. Objectives:

The overall aim of the project is to assess the impact of a community based educational program in hygiene and water sanitation on disease incidence and growth parameters in children under 5 living in Dhaka, and to establish a water-related morbidity and mortality screening of children less than 6 in an urban area of Bangladesh.

2. Background:

Extensive data are available on mortality and morbidity in rural Bangladesh, through the Matlab DSS and MCH-FP Project, Extension Projects, Teknaf Water and Sanitation and DSS Projects, and the new surveillance system being established in Mirzapur. Lacking is a surveillance of morbidity and mortality in an urban area.

There is ample reason to believe that the morbidity and mortality patterns in Dhaka city will be remarkably different from those in the rural areas. Causes and presentation of diarrhoea differ dramatically between the two rural areas of Teknaf and Matlab (1). Mortality patterns of urban children (2) differ from those of rural children (3) when followed after discharge from a diarrhoea centre. Rates of another disease - xerophthalmia - are quite dissimilar between urban and rural areas (4).

Further, risk factors for diseases differ between rural and urban areas in Bangladesh. Rural areas tend to have a lower literacy and ~~educational rate, lower employment rate, and less potential access to~~ medical facilities on the one hand but a lower rate of increase of population, more access to most food types, less crowded living conditions and a greater extended family network than urban areas on the other hand (5).

That epidemiological surveillance is desirable for development of specific health interventions and for monitoring their impact has been well documented in the literature (6). Therefore before embarking on a specific health intervention it would be desirable to establish a surveillance system for the diseases and their outcomes likely to be modified by that intervention.

Access to clean water is a major problem in Dhaka city, particularly, in the "slums" where half of the population lives. Only an estimated 6.5% of households in Dhaka city have a family water tap or tubewell. Only 23% of households have their own latrine, 73% share latrines with upto 40 families and 4% have no latrines (7). Further, a paucity of information

exists as to the pathogenic load - both viral and bacterial - in the drinking water at the source and in the homes of the urban dwellers in developing countries (10, 11). Non-intervention studies (i.e. no new equipment) were generally performed in rural, not urban areas. Although in at least two-thirds of the studies water quality and use and active surveillance of patients was undertaken, in less than 9% of all studies were the methods of health education mentioned: this implies that health education per se was not the major thrust of the project. In another analysis by Blum and Feachem (9), 44 studies were examined, of which only 3 studies listed health education as one intervention and none had that as their only intervention.

Hughes (8) cites that "the majority of the studies obtained some behavioural data on water supply..... such data were rarely systematically collected and complete. Most studies lacked information on maintenance of facilities being evaluated and data on water quality throughout the study." Finally, most studies, ~~as~~ pointed out by Blum and Feachem (9) failed to observe usage of new facilities or changed behaviours.

It would appear then that the efficacy of health education on hygiene and consequently the impact on diarrhoea and nutritional status has not been tested in an urban setting.

The Urban Volunteer Program provides an excellent vehicle for testing such an intervention. First, the volunteers are members of the communities to be studied. As such they can provide important data about the current uses and abuses of water and general hygiene as well as about local customs regarding water. Second, the volunteers already hold a position of high regard in the eyes of the local community members with regard to health because of their activities with ORS and vitamin A distribution. Hence, they are likely to be listened to by the community and, the community is likely to identify with them. Third, the residence of the volunteers in the community will allow surveillance at frequent intervals to avoid the problem of poor health indicator recall. Fourth, the volunteers are motivated to establish health intervention programs. They have requested information on how to repair and maintain tubewells, on what ponds are safe for drinking and for washing, and on acceptable sites for latrines.

✓ 3. Rationale:

A basic understanding of the faecal-oral transmission of diarrhoeal pathogens and of the role people play in this transmission are necessary before other interventions will make a substantial impact on diarrhoeal incidence. People familiar with local customs and pattern of water usage must be involved in tailoring the educational program to the

individual communities and in helping to deliver the message if it is to be relevant and believable by the community members. In order to determine if the educational program has made a significant impact on the health of a community, a surveillance system must be established for diarrhoeal and nutritional morbidity.

B. SPECIFIC AIMS

- 1) To establish a morbidity and mortality surveillance system in Dhaka utilizing 50 sampling sites.
- 2) To evaluate the water retrieval, storage and usage and other hygienic practices of 50 housing enclaves within Dhaka city.
- 3) To evaluate the pathogenic load of the water sources available in these enclaves and their appropriateness for various uses.
- 4) To develop an educational program appropriate for each community to be delivered at the community level.
- 5) To evaluate the effect of this educational program on water utilization and hygiene practices.
- 6) To evaluate the impact of these changed behaviours on morbidity and growth, and the relationship between any observed changes with hygienic practices.
- 7) To evaluate changes in pathogenic/coliform load of water sources with environmental changes and/or intervention changes.
- 8) To evaluate calendar/photo character method of morbidity reporting compared to 2 week recall.

C. METHODS OF PROCEDURE

Summary:

The project will occur in 5 phases. Phase 1: Education of workers and selection of sites (1 month), Phase 2: Initiation of surveillance system for determining incidence of water-related diseases, and water and sanitation practices of communities (4 months), Phase 3: Analysis of surveillance data, preparation of educational packet, teaching volunteers educational packet (3 months), Phase 4: Educational intervention (2 months), Phase 5: Evaluation of impact of educational intervention (14 months).

The surveillance system initiated in Phase 2 will be maintained throughout the remaining 3 phases of the project

Phase 1: Education of the personnel volunteers

The 50 volunteers will receive refresher training for 5 days at ICDDR,B in (1) recognition of the targeted diseases; (2) how to obtain a stool specimen/rectal swab; and (3) how to fill out the "illiterate" calender. This course will not discuss water, sanitation or hygiene and will be given in 4 sessions to the 4 groups of volunteers by thana.

Interviewers:

These 10 workers will be trained in 1 group to interview patients to obtain a 2 week disease recall and 3 day sanitation practice recall history, and to obtain lengths by a length board and weights by a hanging scale.

Field Researchers:

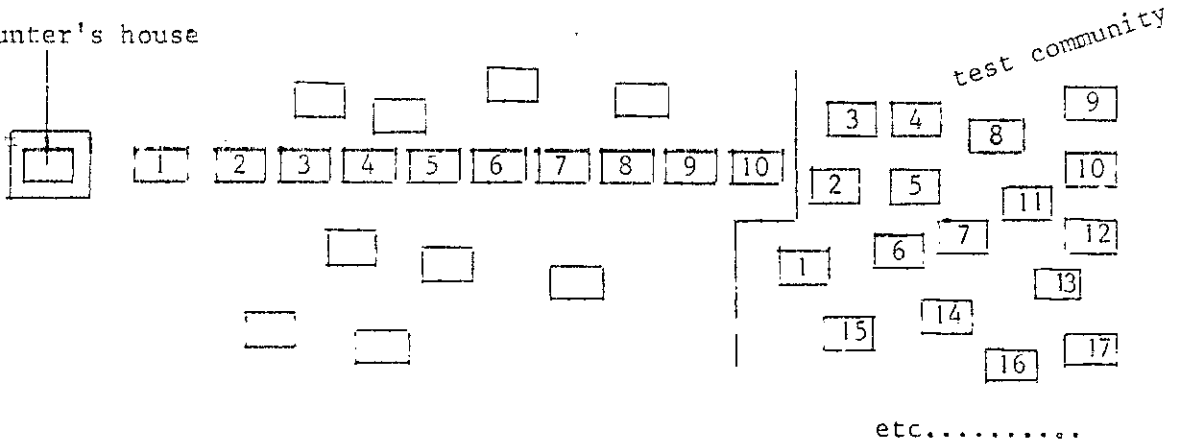
These 5 workers will receive training from the Bacteriology Laboratory in the correct method of obtaining water samples. They will receive training in how to observe families for water and sanitation practices (see Appendix I and Appendix II for candidate water-related behaviours to be observed).

During this phase the responsibilities of Data Management Branch, Computer Programmer, Laboratory Technician and the Secretary will be outlined and established.

Selection of Sites:

Four thanas of Dhaka will be chosen: Sutrapur, Lalbagh, Mohammadpur and Mirpur. These 4 thanas were chosen because they are (1) urban; (2) are not geographically isolated (i.e. cut off by a river) so are easily accessible by ICDDR,B; (3) have communities with an interest in health education; and (4) have active urban volunteers. Ten volunteers and their "communities" will be chosen from each thana except Sutrapur from which 20 volunteers will be chosen. The "community" around each volunteer will be defined as: beginning counting 10 houses to the right from the volunteer's house and then the next 50 houses in all other directions:

Volunter's house



By counting "down" ten houses we hope to lessen the problem of including family members of the volunteers, although a "direct" relative (mother, father, brother, sister, daughter or son) if living in one of the 50 chosen homes would be excluded. Also to be excluded would be any one who is in Dhaka temporarily (i.e. visiting, on home leave).

Utilizing a random number chart for each community 5 of the 50 families will be chosen to become "sentinel" families, whose function will be described later. Maps will be drawn and houses numbered for a central registry. This phase will be completed by the Principal Investigator and Field Researchers with the help of the volunteers and will be given as soon as possible. Initially the selection of sites and the establishment of the surveillance system will begin in 1 thana on a pilot basis.

Phase 2: Initiation of Surveillance System

The 10 interviewers will begin the surveillance system by obtaining a baseline one-time family profile utilizing the questionnaires in operation in Teknaf. A two-week recall of 3 water-related diseases (diarrhea,

scabies and/or impetigo and conjunctivitis), a 3-day recall of water and sanitation practices, and anthropomorphic measurements of all children under age 6 ("target children") will also be obtained at this time. Both historical recall interviews will be repeated fortnightly and the anthropomorphic measures and major changes in the family, monthly henceforth. It is expected that this initial round of data gathering will take 1 month to complete and subsequent rounds can readily be completed every two weeks.

The interviewer will also give the family a calendar with an attached polaroid picture of each target child, and a set of 10 stickers with an identification name and number. The calendar will have a figure depicting the (3) water-related diseases in each daily block. The family will be instructed to ✓ the appropriate picture whenever the condition exists. The interviewer will bring a new calendar every 2 weeks. The 2 week health recall will be done independent of the calendar.

July 1	July 2	July 3
✓	✓	✓
	✓	✓

Beginning in Phase 2 the volunteer will serve four roles (1) to ensure that the families understand the chart; (2) to motivate families to keep it accurately; (3) to collect the charts on the day of the interviewer visit before she comes; and (4) to collect stool specimens. Twice a week she will visit each of her families and ascertain if the charts are being kept and obtain stool cultures or rectal swabs from children with diarrhoea. (One of the individualized "stickers" will be taken from the chart and affixed to the carrying media bottle after the specimen is obtained.) Families will be instructed to not wait for her visits but to come to her with a stool specimen when their child develops diarrhoea, and to come as usual for ORS.

In this phase the field researcher will have 2 major roles. First she will be responsible for the bacteriology specimens. She will obtain specimens of the community's water supplies and of the water stored in the homes of the sentinel families, and she will collect the stool specimens obtained by each volunteer. The water specimens will be obtained bi-monthly. The stool specimens will be brought to ICDDR,B daily. She will bring the health calendars to ICDDR,B every 2 weeks on the day the volunteer collects them.

Second, to validate the hygienic and water collection behaviours reported to the interviewers by the families the field researcher will make unannounced visits to 5 sentinel families within each community and observe them for periods of 6 to 12 hours. Two sentinel families per week will be observed. The Data Management Branch will be "cleaning" and coding data at all times in this phase, as well as throughout the remaining 3 phases.

The bacteriologic specimens will be processed daily beginning in this phase. Stool and water specimens will be processed at ICDDR,B to identify Shigella, Salmonella, Copytobader, V. Cholerae, Enterotoxigenic E. coli and rotavirus. Diarrhoea lasting more than 1 week will be checked for E. histolytica and Giarhia. Total coliform and fecal coliform counts will be made on water samples. The selection and orientation of the five "trainers" will be done in this phase.

Phase 3: Analysis of Surveillance Data

After 4 months of data collection the data will be analyzed to enable (1) stratified random allocation of communities to either receive the intervention ("intervention communities") or to not receive the intervention ("control communities"), and (2) prepare the educational program.

The 50 communities will be ranked corresponding to the total number of episodes of diarrhoea experienced by the target children (standardized for numbers of children per community), and by a scoring system rating their hygienic practices.

<u>Community</u>	<u>No. of episodes of diarrhoea per community per 100 children</u>	<u>Rank No.</u>
A	40	1
B	51	2
C	63	3
D	65	4
⋮	⋮	⋮
⋮	⋮	⋮
⋮	⋮	⋮
Q	69	47
R	70	48
S	74	49
T	82	50



Then the communities with ranks 1 and 2 will be randomly assigned to intervention or control, ranks 3 and 4 randomly assigned; the resultant groups will be compared to determine that the distribution of family size and SES are approximately equivalent. This method will greatly enhance the likelihood of an equi distribution of outcome to be measured (diarrhoea) between groups.

The educational packet will be prepared using the indirect standardization method. Mean number of episodes of diarrhoea per child per age will be determined based on the experience of all 50 communities. A ratio of observed episodes of diarrhoea per all target children in that family over expected episodes per same age children will be made for each family (i.e. family A has a 2-year old with 3 episodes of diarrhoea and a four-year old with 2 episodes. The average number of episodes of diarrhoea for all 2 year olds in the study is 4 and for 4 year olds is 3. Therefore the ratio for family A will be:

$$\frac{3 + 2}{4 + 3} = \frac{5}{7}$$

All families then will be ranked in order by this ratio. The 25% of families with the highest ratios will be "high risk" and the 25% of families with the lowest ratios will be "low risk."

Factors in water and sanitation practice differing between these 2 groups will form the skeletal of educational intervention.

The above analysis will be repeated for each family within a community to add features of importance to that community only in order to "tailor" the package to the community.

In addition, specific items which are of proven efficacy (i.e. hand washing with soap) or with strong "common sense" appeal (i.e. not drinking water obtained from a pond with a hanging latrine) will be included in the program even if they do not appear as a differential between the high and low risk groups.

When these educational packets have been created the 25 intervention volunteers will receive 3 weeks of instruction by the trainers and investigators on (1) the overall educational program messages, (2) the individual community messages and (3) on training techniques to be used. The volunteers will practice these principles on patients in the hospital and treatment centre and on each other. The principles of the educational program will be tested by the volunteers in their own homes for feasibility.

Phase 4: Intervention

The education of the community will occur over 6 weeks. The volunteer, trainer and central staff of the program will be involved in the effort. The volunteer will continuously home visit, encourage, organize discussions, dramatizations and idea sharing sessions. The community will discuss locally obtained photographs for water and hygiene "do's" and "dont's" and will suggest new sites. Posters and bulletin boards will be established by the community. Intervention communities will be encouraged to engage in "clean-up" contests with other communities.

During the 3 weeks of their course and the 8 weeks intensive community training the "intervention" volunteers will receive additional stipends.

The "non-intervention" volunteers will not be prohibited from teaching their communities but nor will they receive no special training or extra stipends.

All families and all volunteers will be trained that the recognition of the targeted diseases and their accurate reporting is as important in this study as water utilization and that in no way should they feel a need to minimize the presence of the disease.

Phase 5:

Surveillance activities will continue as described in phase 2. Phase 5 will last approximately 14 months. Educational "pulses" of one theme selected from the original program will be given to the volunteers and then by the volunteers every 2 months each lasting one week.

SIGNIFICANCE

New information on water-related morbidity and mortality in urban Bangladesh will be generated. New modes of data collection (calender with pictures) will be compared with traditional measures (2 week recall). Community tailored educational programs will be designed. The effect of these programs will be evaluated with regard to disease and nutritional measures.

E. FACILITIES REQUIRED

1. Office Space - desks for 2 Data Analyst/Coders and 2 desks for 5 field researchers will be required, and 1 desk for the Secretary.
2. Training Space - a room suitable for the 10 interviewers and 5 field researchers for 1 month; educating 4 groups of 12 volunteers for 4 weeks at and then 25 volunteers for 3 weeks.
3. Laboratory Space - no additional space required.
4. 3 trips per week using ICDDR,B vehicle.

F. EQUIPMENT

1. Carrying media for cultures of stool
 - (a) 500 baseline C/S + microscopic
 - (b) 500 routine 4 times per year = 2,000
 - (c) Approximately 3,600 children with approximately 3 episodes of diarrhoea year = 10,000 stools for culture12,000 carrying media + stools to be evaluated/year.
2. Carrying media for cultures and evaluation of water sources weekly
 - (a) Average of 6 sources/community x 50 = 300
 - (b) 300 x 12 sampling = 3,600/year
 - (c) 25 sentinel families x 6 sampling times x 4 sites in home = 600
3. 10 polaraid camera and film for 6,000 photos of children and 2,000 photos of water sources, (poor and good water usage, etc.) for picutres.

REFERENCES

1. Rahaman Mf. Unpublished data, 1984.
2. Stanton B, et al. Pilot Protocol "Post-discharge mortality of children less than 6 years of age presenting with diarrhoea". Unpublished data.
3. Roy SK, et al. Excess mortality among children discharged from hospital after treatment for diarrhoea in rural Bangladesh. B M J, 287: 1097-1099, 1983.
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5. Editorial, Epidemiological Surveillance. International Journal of Epidemiology, Vol. 5, 1978.
7. Nazrul Islam. The urban poor in Bangladesh. Comprehensive summary report. Centre for Urban Studies, 1979.
8. Hughes James M. Potential impacts of improved water supply and excreta disposal in diarrhoeal disease morbidity: An assessment based on a review of published studies. November 10, 1980, January 26, 1983.
9. Blum D, and Feachem RG. Measuring the impact of water supply and sanitation investments on diarrhoeal diseases: Problems of methodology. International Journal of Epidemiology, Vol. 12, 1983, p.357-365.
10. Feachem, R.G. et al. Sanitation & Disease. John Wiley & Sons, Chichester, 1983.
11. Torun, B. Environmental and educational interventions. Diarrhoea and Malnutrition, ed. Chen, L. and Scrimshaw, N. 1972.

ABSTRACT SUMMARY

Urban dwellers - 50 families in each of 50 communities. Each community will be located around an Urban Volunteer. Children less than 6 years of age will be the "target population" for water-related morbidity and mortality are greatest in this age group.

Only potential risk is "invasion of privacy" of the 25 sentinel families on whom prolonged observations will be made. These prolonged observations are on water and sanitation practices only and are necessary for validation of reported behaviours.

Field researchers will be told to observe water and sanitation practices only. The form on which they will be recording these observations will have a code number only as will all other questionnaires.

As above.

a) Most of these patients are illiterate. A verbal explanation of the surveillance project and educational project will be made by the interviewer to all families involved.

b) N.A.

c) N.A.

At home. Initial interview $\frac{1}{2}$ to 1 hour. Subsequent interviews 15-30 minutes every 2 weeks.

Children will have growth monitored and diarrhoea cultured. Communities will have water cultured. An algorithm will be established for triaging the at risk patients/families/communities to appropriate treatment. (This algorithm will be submitted to you for approval.)

Education will be provided.

N.A.

The specific questionnaire forms for

- 1) Surveillance data
- 2) 2 week medical recall
- 3) 3 day water and sanitation practice recall
- 4) Form for prolonged observation of sanitation practices

will be prepared with the aid of local anthropologic and teaching consultant as well as consultants from other countries. These forms will be submitted for approval to ERC and RRC.

The teaching format and specific program will also be prepared with the aid of local experts and submitted to ERC and RRC for your approval.

SECTION III: DETAILED BUDGET

<u>1. PERSONNEL SERVICES:</u>	<u>% Effort</u>	<u>Project Requirements in US dollar</u>
Physician Coordinator	50	30,000
Administrative Coordinator	20	1,100
2 Nurses aides	20	1,100
2 Teachers	20	120
5 Trainers (Level V)	100 x 6 mos.	4,423
5 Field Officers (Level V)	100	8,846
10 Interviewers (Level III)	100	10,420
1 Lab. Technician (Level III)	100	1,042
1 Secretary (Level VI)	100	2,400
2 Coding Assistants	100	2,084
1 Computer Programmer	50	1,238
50 Volunteers at Tk.125/month	100 x 12 mos.	3,000
25 Volunteers on augment salaries of additional \$10/m x 3 months		<u>750</u>
		Sub-total 66,565
 <u>2. SUPPLIES AND MATERIALS</u>		
Paper for calenders, 42,000 sheets/year @ \$11 for 100 sheets (04-0615-7)		4,620
Paper for interviews - initial and follow-up and observe (04-0645-4)		350
Paper, pencils, pens, etc. for office		1,000
Waterproff posters, 250 at \$14		1,000
Labels, peelbach 10/child = 35,000, @ 75¢/200		175
Computer paper, 20000 pages, @ Tk.50 = Tk.10,000		400
6000 polaraid prints, 50¢ each		<u>3,000</u>
		Sub-total 10,545
 <u>3. EQUIPMENT</u>		
1 Electric typewriter		1,200
10 polaraid cameras, @ @50 each		<u>500</u>
		Sub-total 1,700

Project Requirements
in US Dollars

4.	<u>PATIENT HOSPITALIZATION</u> - None	
5.	<u>OUT-PATIENT CARE</u>	
	Stool cultures @ Tk.15 x 12,500 = Tk.187,500	7,500
	4,200 water evaluation culture, @ Tk.7.50 each = Tk.31,500	1,280
	Coliform count, @ Tk. 30 each = Tk. 108,000	<u>4,320</u>
	Sub-total	13,100
6.	<u>ICDDR,B TRANSPORT</u> - None	
7.	<u>TRAVEL AND TRANSPORTATION OF PERSONS</u>	
	<u>Local Travel:</u>	
	Field Officers - \$6/week apace x 50 weeks x 5	1,500
	Interviewers/week = \$4 apace x 50 x 10	2,000
	Central Team x Tk.14/mile x 35 miles/week x 50 = Tk. 24,500	<u>980</u>
	Sub-total	4,480
	<u>International Travel:</u>	
	Consultant	3,000
	Meeting	<u>3,000</u>
	Sub-total	6,000
8.	<u>TRANSPORATION OF THINGS</u> - None	
9.	<u>RENT, COMMUNICATIONS & UTILITIES</u> - None	
10.	<u>INFORMATION SERVICES</u> (Library & Publications) - None	
11.	<u>PRINTING AND REPRODUCTION</u> - None	
12.	<u>OTHER CONTRACETUAL SERVICES</u> - None	
13.	<u>CONSTRUCTION, RENOVATION, ALTERATIONS</u> - None	

B. SUMMARY BUDGET

	<u>Project Requirements in US dollar</u>
1. Personnel Services	66,565
2. Supplies and Materials	10,545
3. Equipment	1,700
4. Patient Hospitalization	-
5. Out-Patient Care	13,100
6. ICDDR,B Transport	-
7. Travel & Transportation of Persons	10,480
8. Transportation of Things	-
9. Rent, Communications & Utilities	-
10. Information Services (Library & Publications)	-
11. Printing and Reproduction	-
12. Other Contractual Services	-
13. Construction, Renovation, Alternations	-
	<u>TOTAL \$102,390</u> =====

CANDIDATE SPECIFIC OBJECTIVES

1. Safe water storage.
2. Safe food storage.
3. Water which will be used for any purpose that will result in oral intake is to be pure.
4. Improve standards of food preparation.
5. Increase use of handwashing with soap after defecation, before food preparation and before eating.
6. Begin process of sanctifying water sources specifically with regard to fecal contamination, animal contamination and contamination by other wastes.
7. Proper cleaning and maintaining of eating utensils.
8. Increased use of water for personal hygiene but in fashion to avoid ingestion.
9. Deliver concept of sanctity of eating area and sleeping area from wastes and animals.
10. Increase sanitary use/disposal of waste (burn as fuel, etc....) (doubt applicable).
11. Decrease the use of clothing as surrogate towels, wash clothes, dish towels, wipes, tissues, etc....
12. Clean interiors.
13. Clean exteriors.
14. Clean clothing.
15. Sanitation to protect water sources

CANDIDATE OBSERVATIONS

1. Recreation
 - a. Swimming in ponds, rivers with obvious fecal contamination
 - b. If swimming in contam water, not go underwater.
2. Bathing
 - a. Frequency
 1. Clean face
 2. Clean trunk
 - b. Source of water
 1. City water - at tap or from bucket
 2. Tubewell
 - a. away from platform
 - b. on platform
 3. Pond water, river water.
 - a. bathing of body only
 - b. poured over head so that runs in mouth
 - c. submerge
 - d. gargling
3. Drinking water
 - a. Source
 1. Original
 - a. city tap
 - b. tubewell
 - c. closed family pond with proximate hanging latrine
 - d. open pond
 - e. river
 - f. stagnant stream
 - g. miscellaneous
 1. rain cistern
 2. open well with casing/without casing
 3. swers
 2. Mode of carriage
Identify -
 - a. pot/basin/bucket with cover and used only for drinking water
 - b. pot/basin/bucket with cover
 - c. small necked pot used only for drinking water
 - d. small necked pot
 - e. basin/bucket used only for drinking water
 - f. basin/bucket
 - g. pot cleaned regularly

Carrier

- a. father
- b. mother
- c. other adult
- d. child >5
- e. child <5

3. Accessing water

- a. pour out of container only
- b. dip in special dipping cup used only for that purpose
- c. dip in clean cup
- d. dip in cup
- e. dip in other clean container
- f. dip in other container
- g. hand scoup
- h. drink directly from container

4. Sanctity of drinking water

- a. water from drinking container used only for drinking
- b. used for other sources but always removed by pouring.
- c. used for other sources but always removed by special cup/clean cup

b. Storage

1. Identify of storage container

- a. stored in same container as carried in
- b. stored in different container than carried in

1. contents of storage

- a. storage container empty when new water brought
- b. storage container emptied daily
- c. storage container not deliberately emptied on regular basis

2. Storage tank uses

- a. used only for drinking water
- b. used for water from all sources

3. Storage tank covered or not

- c. description of storage closed/not closed
small necked/open

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2. Location of storage container
 - a. outside of house/inside of house
 1. top closed/open
 2. high place/low place
 3. animals/children access/no access
 4. other obvious sources of contamination
 5. location is in area that is/is not frequently observed by adult
 6. used for other sources but water removed
 7. water used for other sources within storage container
5. Preparation/Storage of food
 - a. Cleanliness of environment
 1. free of animals in entire kitchen
 2. cleaned before and after preparation of food
 3. unpeeled items washed before in contact with
 4. equipment touching unwashed food washed before using for other purpose.
 5. waste/excreta remote from preparation area
 6. scraps cleaned after meal
 - b. Sanctity of storage of food
 1. all prepared food (or food to be served uncooked) covered
 2. all prepared food above reach of children, animals
 3. stored food without insects/flyes
 4. unprocessed meats not stored before or after cooking.
6. Waste disposal.
 - a. Reuseable
 1. burnt as fuel
 2. feed in trough to animals
 - b. Not reuseable
 1. placed in city disposal
 2. or, stored for pick up
 3. or, burned
 4. not thrown out of house
 5. feeding of animals continued to/spot
7. Excreta disposal
 - a. Toilet, pit/slab latrine, night soil container used
 - b. Dispers washed in water which dumped in toilet, night soil container or pit latrine or buried. Diapers washed separately.
 - c. Infants wear diapers.

8. Hand washing (with soap/without soap)
 - a. before touching
 - b. before eating food
 - c. before drinking
 - d. after defecating
 - e. after urinating
 - f. after touching soiled clothes, diaper
 - g. after touching animals
 - h. after handling, touching person or secretions of person with diarrhea, conjunctivitis, skin infection

9. Clothing
 - a. should be washed frequently
 - b. should be used only to cover body not to
 1. wipe eyes
 2. blow nose
 3. cough into
 4. wipe hands
 5. wipe bottom
 6. dab at sores
 7. wash items
 8. clear dirty items
 9. clean clean items

 - c. all must be washed along with bedding in case of scabies, lice.

SUMMARY OF ACTIVITY OF PERSONNEL

INTERVIEWERS (10)

A. All Phases (2,3,4 & 5):

- (1) Initial data collecting (5 families/day): approximately 1 month
 - a) Family profile
 1. demographic indices
 2. SES indices
 3. 3 day water utilization recall
 4. 3 day sanitation practice recall
 - b) Children < 6 profile - obtain photo & personalized stickers
 1. age, sex
 2. weight
 3. instruct volunteer to obtain baseline stools for 0+p and microscopic exam on the children of the 5 sentinel families per community
 4. 2 week recall of:
 - a. diarrhoea
 - b. scabies, other skin infection
 - c. conjunctivitis
- (2) Update
 - a) Fortnightly
 1. 2 week health recall
 2. 3 day water and sanitation practice recall
 3. new health calender given
 - b) Monthly
 1. anthropomorphic measures
 2. birth, death, migration of family
 - c) Bi-monthly
 1. instruct valuner to obtain new stool sample on sentinel family

VOLUNTEERS

A. All Volunteers Phases 2-5:

- (1) Motivate families to keep calenders accurately filed out;
- (2) Collect stool specimens on patients with diarrhoea and affix sticker;

- (3) Give ORS, advise re-diarrhoea as usual;
- (4) Refer ill patients when necessary;
- (5) Obtain stool on all patient for O+P and C/S when instructed by interviewer;
- (6) Collect health calenders before interviewer arrives

B. "Control" Volunteers Phases 3-5:

- (1) As above (2-A-5)

C. "Intervention" Volunteers during Phases 3 & 4:

- (1) As above (2.A 1-5) and
- (2) Undergo training as described (Phase 3)
- (3) Train community as described (Phase 4)

D. "Intervention" Volunteer during Phase 5:

- (1) As above (2-A 1-5), and
- (2) Periodic refresher training of volunteer;
- (3) Periodic refresher training of community based on observations of water and hygiene practice

3. FIELD RESEARCHERS (5)

A. All Phases (2,3,4 & 5):

- (1) Collect stools daily that volunteers have obtained
- (2) Collect water source specimens bi-monthly - community and sentinel
- (3) Random, unannounced observations for 6-12 hours of sentinel families on water practices (1 day)
- (4) Return calenders that volunteer have collected fortnightly

TRAINERS

A. Phase 3:

- (1) With investigators help to prepare educational programs;
- (2) With investigators, teach "basic" program to all 25 intervention volunteers;

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- (3) Each trainer teach "individualized" component of program to the 5 intervention volunteers for whom she is responsible;
- (4) Practice, coach and advise volunteers in teaching methods (play acting, pictures, etc.)
- (5) Supervise volunteers who are trying out program for feasibility in own home

B. Phase 4:

- (1) Teach intervention community with volunteers using variety of educational approaches