Attachment 1.

Date 1.6.81

ETHICAL REVIEW COMMITTEE, ICDDR,B.

Principal Investigator DR. M. U. KHAN Trainee Investigator (if any) _____

Application No. 81-C25 Supporting Agency (if Non-ICDDR,B) _____

Title of Study Intervention of Environmental Contamination with Intestinal pathogen by using Oxfam Latrines

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) Ill subjects (Yes) No
   (b) Non-ill subjects (Yes) No
   (c) Minors or persons under guardianship (Yes) No
2. 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)
3. 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; Stool Sample (Yes) No
4. Are subjects clearly informed about:
   (a) Nature and purposes of study (Yes) No
   (b) Procedures to be followed including alternatives used (Yes) No
   (c) Physical risks Yes (No)
   (d) Sensitive questions Yes (No)
   (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) No
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.

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

M. U. Khan
Principal Investigator

Trainee

81-023
rec'd 8/6/81

SECTION I - RESEARCH PROTOCOL

1. Title : Intervention of Environmental Contamination with intestinal pathogens by using Oxfam Sanitary unit in a peri-urban Refugee Camp.

2. Principal Investigator : Dr. M.U. Khan

3. Starting Date : After approval and assignment of budget (May - 1981)

4. Completion Date : 1 year after actual start, may be extended.

5. Total Direct Cost : $ 23,910.00

6. Scientific Program Head

This protocol has been approved by the Disease Transmission Working Group.

Signature of Scientific Program Head : [signature]

Date : 28/1/1981

7. Abstract Summary :

It has not been examined, whether the environmental contamination of intestinal pathogens which has an impact on health, can be intervened with the introduction of a sanitary unit (Oxfam) without changing any SES or behavioural pattern of the people, in a crowded poor socio-economic urban area. We would like to test the efficacy of such a sanitary unit in a refugee camp in Dacca.

Residents of Tongi Refugee Camp will form the study population. Another group of people living 7 miles away at Seker Kalsi but not using the Oxfam unit, will form the control population. The measuring indexes will be no. I Re-infection with parasites (giardia, lamblia, hook worm, E. histolytica V.F., Ascaries, and no. II Incidences of Diarrhoeal diseases from these groups. Stool microscopy will be done

for protozoa and parasites initially. Infested people will be dewarmed and then monthly microscopy of stool of all will be made to see reinfection. Morbidity and mortality from diarrhoeal diseases will be recorded by alternate day home visits.

This study will show whether and to what extend sanitary intervention with Oxfam unit is effective in poor socioeconomic areas in reducing the incidence and reinfection with parasites, protozoa and diarrhoeal illness and thus indirectly improving status of health without changing other variables.

8. Reviews :

a. Ethical Review Committee : _____

b. Research Review Committee : _____

c. Director : _____

d. BMRC : _____

A. INTRODUCTION

1. Objectives :

a. To study whether significant intervention of environmental contamination with soil and water transmitted parasites and protozoa is possible simply by installing sanitary units as has been devised by the Oxfam.

b. To study whether there is any effect of such an intervention on incidences of diarrhoeal disease morbidity and mortality in a poor socioeconomic condition.

c. To study whether the intervention has any impact on health.

2. Background :

Howard et al reported that faecal pollution of the environment on a massive scale has made excreta-derived disease a normal part of life in Bangladesh. They believe that there are probably more than 250,000 cases of clinical cholera annually in Bangladesh(1). To fight this magnitude of enteric disease some occasional attempts have been made in this country for its remedy. Similar attempts have been made in many other developing countries to reduce transmission of intestinal pathogens and parasites by introducing water supply, bored hole latrine and water sealed latrine in rural area without interfering with other variables. Many scientists introduced different types of latrine. But in most cases these did not prove very effective and did not gain any popularity. A WHO team found that with improvement

of sanitation and fly control the incidence of diarrhoea decreased(2). Azurine found that use of sanitary latrine reduces diarrhoea by 68%(3). Schliessmann found 50% reduction in shigellosis by provision of privies and water within the house compound(4). The excreted agents may either directly reach other or excreta may help breeding insects which can transmit agents to man(5). During early 1960s Pakistan introduced covered bored hole latrines on pilot basis in different rural areas to stop transmission of diarrhoeal disease. Jaydevpur is one of those areas where bored hole latrine was provided. But these latrines are no more in use. This is possibly because people were not taught its use and efficacy. An intervention study run by ICDDR,B is in progress in Teknaf where both latrine and water have been provided in rural areas. The efficacy of such intervention has not been analysed. But the situations in crowded urban slums are different from rural areas. In Dacca urban area it had been found by Khan et al that the presence of piped water and sanitary latrine significantly reduced the incidence of cholera(6).

Oxfam Sanitary Unit :

The Oxfam has introduced a combined unit of latrines with flushing arrangement and rubber made anarobic diagestive tank. Ten to 12 latrines, connected with two tanks by a common soil pipe, are constructed on a raised place which is covered and fenced with bamboo. Water is pumped up from a tubewell and stored in a container placed at a higher level than the latrines. This water is used for manually

flushing the latrines periodically by a man placed on duty. The effluent from the rubber tanks, with some faeces, drains into a small pond. During winter when the pond dries out the scum is taken out and dried for using as manure. During monsoon the effluent flows out from the pond through small katcha drains to be discharged to canal or field. Some such units are in operation at four different refugee camps at Dacca; one is in Demra, one in Tongi, one in Mirpur and one in Bhashan Tek. Oluwandi found that the open drains (containing effluent from septic tank) act as infective foci in such situation(7). Although the infants do not use them in most cases the Oxfam units seem to be useful in disposing night soil and preventing transmission of pathogen in urban situation if properly maintained. One unit can serve 1000-1200 population. Though expensive an unit seems to operate for 5 to 10 years if maintained properly. But the efficacy of these units in reducing transmission of intestinal protozoa and parasites and improving health, without changing other variables, have not been evaluated.

In urban slums, refugee camps and in some army camps, there are definite contamination of the environment with pathogenic organism. And as such protection of the environment is most essential. To do this improved supply of water and proper sanitary disposal of night soil are the absolute pre-requisites. But in many developing countries, these measures are not within their financial reach. Improvement of other facilities are also not within their means. Cvjetanovic observed that in developing countries though sanitation involved capital

investment, it has permanent value and have better efficacy in preventing diarrhoeal illness than immunization which is temporary and disease oriented(8). Therefore, keeping all other existing lacunae as these are, some useful intervention are essential for protecting the people. The Oxfam unit, although may not be quite useful in rural areas where the habitations are scattered, may be used in cities, refugee camps, in crowded areas or in temporary camp areas. As ICDDR,B is an international institution and there is a global diarrhoea control programme, this method of intervention deserves trial and evaluation.

The ICDDR,B and the Oxfam can jointly attempt to evaluate the efficacy of the unit in reducing transmission of intestinal parasites and protozoa and this may provide a favourable impact on health of the population using the units.

If it is found to be useful it may be recommended for use at suitable places and situations.

3. Rationale :

In over crowded situations, slums, and refugee camps, it is essential to control spread of intestinal pathogen in the environment and thus help in maintaining better health. But in many situations provision of potable water, sanitary latrine and hygienic housing for proper control are not within the financial capability of less developed countries. The Oxfam unit can be set quickly and needs a small area and is expected to be an effective alternative. Therefore, testing

of its efficacy is essential in poor socioeconomic areas where other changes are not immediately possible.

This study will evaluate the impact of such an unit on health. It is therefore, essential to conduct the study and evaluate its effectiveness.

B. SPECIFIC AIMS :

1. To prevent open soiling and the environmental contamination by faecal pathogens by using a simple and ready made device, the Oxfam sanitary unit, keeping other variables unchanged.

2. To control diarrhoeal morbidity and mortality in crowded urban slums.

3. To examine whether the unit has any impact on health and economy.

C. METHODS AND PROCEDURE :

Although there are Oxfam sanitation units at Demra, Tongi, Mirpur and Bhashan Tek refugee camps, comparable population for using as controls are not available near any of them. Demra camp is by the river side and Mirpur camp consists of non-local refugees and so, comparable groups are not available. So, Tongi camp only may form the study area. In the Seker Kalsi camp of Mirpur area some comparable groups of families, who are not availing the Oxfam units, are available. Seker Kalsi may thus form the control area. It is about 7 miles apart from the Tongi camp. About 250 families living nearest to these Oxfam units of Tongi camp will form study population. Fifty families nearest to each of the five control units will

be selected. An equal number of the non-users will be selected from Seker Kalsi area as control who do not use Oxfam units and are living away from the study group. There being about 200-250 families in the control area all of them will be included as controls.

The environmental contamination with parasites and protozoa in the study area as compared to the control area is expected to be less. In both areas there exist some hand pump tubewells and some ditches(map). The socioeconomic conditions and literacy rates appear to be identical in both areas. The people are primarily day labourers in either cases. However, a comparibility test will be made after the census. All study and control families will be censused using precoded forms. Sketch maps are to be made showing Oxfam units, sampling and control families. To prevent environmental soiling and contamination with the excreta, the members of the study families will be encouraged to use the Oxfam latrine. The mothers will be advised to escort and help the children to use the latrines. The mothers in the study area will be advised to clean the stool of their infants immediately after defecation in the premises. Health Assistants will have to watch around the premises of each family and if any excreta is found around the premises the mothers will be advised to clean and throw that into the Oxfam latrines. Every member will be asked to tell us the place of defecation used by them every month. We shall visit each family thrice weekly. We will record all illnesses, specially all cases of diarrhoea on the days of visit using pre-coded forms. We will obtain stool from all

diarrhoeal cases for microscopy only. The diarrhoeal patients will be instructed to report to our microscopy teams when they get diarrhoea. Some treatment for worm and diarrhoea will attract them to report to us. In addition, if any member is sent to any hospital or dispensary with diarrhoea would be recorded. Duration of all diarrhoeal illness and death from diarrhoea will be obtained. All migration in and out would be recorded. All births and deaths with causes will be maintained. Stool cups with census no. and dates will be kept in the houses for collecting stool of all the members for microscopic examination initially for basic pattern and then every month. Mild purgative will be given before collection of samples. Microscopic examination of stool will be done in the field while the stool remains fresh using one or two portable clinical microscopes.

We have 2 H.A.s who were trained by Dr. Gillman in microscopy of stool. They will be deputed in the field with one or two microscopes for examining the stool. They will look for parasites, specially for hook worm and for protozoa using both saline and iodine preparations. They will be assisted by a trained cleaner in preparing slides. The microscopists and the assistant would be trained in ICDDR,B clinical pathology section and evaluated before sending them to the field. This will creat interest of the people to get their stool tested.

Identically, census, history of illness, collection of stool for microscopy and equal number of visits will be done for the control families also. The members of control families will not be instructed

or influenced in the matter of usual defication habits, disposal of stool, cleaning and hygienic practice. Severe diarrhoea cases only will be referred to ICDDR,B hospital. Mild diarrhoea cases would be treated in the field. Cases showing worm will be treated and watched for reinfection again.

We would select 2 indexes for measuring the efficacy of the Oxfam units :

Index I. Re infection with Hook worm, G. lamblia, E. histolytica and Ascaris. Re-infection will be evaluated by initial and subsequent monthly microscopy.

Index II. The incidence of diarrhoea of all causes. Shigellosis and diarrhoeal diseases are said to be indication of primitive sanitation(10). In control area fly may harbour pathogen on its body more often the study area due to poor sanitary environment. Prof. A.R. Khan found that 8% samples of fly carries Shigella(11). We may culture diarrhoea stool using standard method(12) if it is deemed necessary in course of study. Peterson found that coliform count of water is associated with diarrhoeal illness(13). Water may also be cultured for coliform count from these areas depending on the volume of work involved. This will be under taken if other parameters are found to be in conclusive.

We will study about 150 families from each of the two groups. Each family visiting team will consist of a male and a female H.A. Each team will visit 90 families daily, and collect information of illness,

mortality and demographic events. Two persons will be in charge of microscopic examination of stool of both areas. One senior H.A. will be in charge of supervision. In addition, he will work in place of any absentee. One transport will be needed 6 days a week to work with the teams for the whole day. A centrally placed room for microscopy will be highered in each area.

Analysis :

The data will be punched and transferred to computer tapes and tabulated from the already coded forms. Significance tests will be made using suitable x^2 tests depending on the size of observation and results. A programmer will help in programming. Some dummay tables are provisionally proposed for analysis of data.

D. SIGNIFICANCE

The Oxfam units, if found effective in preventing transmission of parasites and protozoa to the environment, reduces diarrhoea and exert a favourable impact on health of the population using it, may serve as a short cut and handy device for controlling environmental contamination of crowded poor urban areas of less developed countries, refugee camps, disaster camps, temporary cantonment camps or in temporary industrial exhibition.

E. FACILITIES REQUIRED

Some extra facilities will be required. This study will take place in Tongi Refugee camp where the Oxfam units are already operating. The control population will be in Seker Kalsi about 7 miles apart. We have

trained staff, suitable for the study and laboratory work. We shall have to depute them to this work. In addition, we will be in need of two field microscops, some appliances and a transport for the purpose. ICDDR,B hospital will deliver service to hospitalised diarrhoea cases from the areas. Mild diarrhoea and parasite infested cases will need treatment. The budgetary aspects of this study is expected to be taken care by the Oxfam(already committed) due to our budgetary limitation and priority competition.

F. COLLABORATIVE ARRANGEMENTS

This will be a collaborative study between the Oxfam of England and the ICDDR,B.

SECTION III - BUDGET

A. DETAILED BUDGET

1. PERSONNEL SERVICES

NAME	PERCENT OF TIME	GROSS SALARY ANNUAL EXPENSE US $
Dr. M.U. Khan	20%	4,800
Dr. A.R. Samadi	5%	1,800
F.R.O. - 1	5%	120
Sr. H.A.- 1	100%	1,250
Microscopists - 2	100%	2,200
Health Asstt. - 4	100%	4,400
Oxfam man	5%	-
Helper for the microscopists - 1	100%	600
Secretary - 1	10%	225
Statistical Asstt. - 1	50%(2 months)	100
Helper in field - 1	100%	500
		Sub total $ 15,995

2. SUPPLIES AND MATERIALS

ITEM	QUANTITY	AMOUNT	US $
Oral saline	6000 pkt.	@ Tk. 2/ORS	750
Vitamin, Multv. syrup	300 btl. 6	@ Tk. 7.50	140
Vitamin, Multv. tablet	10,000	@ Tk. 80/1000	150
Baloon	20 gross	@ Tk. 20/gross	25
Ung. whit field	25 lb	@ Tk. 30/2 lb	25
Ampicillin caps	5000	$ 60/1000	300
Purgative, medicine cups			400
Ampicillin syrup	100 btl.	$ 20/100 ml	200
Stationaries	Miscellaneous		100
Bags for field	3	Tk. 500 each	100
		Sub total $ 2,190	

3. EQUIPMENTS

Microscope with appliences(field type) - 2 (two) $ 900

4. PATIENT HOSPITALISATION

Nil

5. OUT PATIENT CARE

Home delivery (shown in supply section)

6. TRANSPORT

@ 30 miles daily (including waiting) $ 2000

7. TRAVEL AND TRANSPORTATION

Presentation local	$ 125
Presentation outside	$ 2000
Sub total	$ 2125

8. TRANSPORTATION OF THINGS — $ 125

9. RENT, COMMUNICATION, UTILITY $ 50

10. PRINTING & REPRODUCTION (publication) $ 350

11. OTHER CONTRACTUAL SERVICES

Nil

12. CONSTRUCTION, RENOVATION, ALTERATION — $. 175

BUDGET SUMMARY

1.	Personnel	$	15,995
2.	Supplies and Material	$	2,190
3.	Equipment	$	900
4.	Patient Hospitalisation		-
5.	Out patient care(included in supplies)		-
6.	Transport	$	2,000
7.	Travel & Transportation	$	2,125
8.	Transportation of things	$	125
9.	Rent, communication, utility	$	50
10.	Printing reproduction	$	350
11.	Contractual services		-
12.	Construction, renovation, alteration	$	175
	Total	$	23,910

ABSTRACT SUMMARY

People in urban slums often suffer from diseases related to sanitation. Nevertheless, provision of proper sanitation in urban slums is not possible for many developing countries. We want to examine if the transmission of parasites and protozoa and diarrhoeal disease incidence can be reduced by introducing a sanitary unit (Oxfam) keeping all other variables unchanged. For this purpose we want to keep track of incidence of diarrhoea of all causes, reinfection with hook worm, giardia, ascaris and E. Histolytica in the study and control areas; one provided with Oxfam unit and another wihtout Oxfam unit. Initial and monthly examination of stool will be made. We would visit all families thrice weekly, obtain diarrhoeal and demographic history. Four H.A.s for 2 teams,one incharge, and two microcopist and two helpers will be needed. Treatment will be provided for suitable diarrhoea and helminthiasis cases. Data will be analysed at the end of study and compared using statistical significance testing. Periodical progress report will be made. Initially study will be continued for 1 year.

1. Population : All age groups will be included. Consent will be obtained from all and in case of children from their parents.

2. Potential Risk : Stool will be obtained. This involves no risk to the patient. We will however, prefer freshly passed stool if available for microscopic examination.

3. Procedure for minimising risk : This will involve no risk or introduction of pathogen. Only trained field staff will obtain stool.

4. Confidentiality : The data will be used under code number. No personal identification will be made after obtaining the data. The data will be kept in confidence with the investigator and there will be no chance for leakage.

5. Informed consent :

   a. Signed consent will be obtained.
   b. No information will be withheld from the subject.
   c. There will be no risk of any kind for the patient. Treatment will be available free of expenses for diarrhoeal illness and for worms.

6. Interview : The study will involve interview. The team will interview them at their own premises. The usual time of first interview will be about 20 minutes. For subsequent interview 3 - 5 minutes will be enough.

7. Benefits to patients : The patients will receive treatment for diarrhoea and worms right at their doors. The severe cases of diarrhoea would be referred to ICDDR,B hospital. This definitely outweighs the little time taken for interview. Microscopy result will help them in getting better treatment.

8. Use of records : We need the dates of birth only if available. History of illness is also required both for treatment and study.

CONSENT FORM

Diarrhoeal and parasitic diseases are very common in your area. The Oxfam and the ICDDR,B have been trying to help you in limiting the spread of pathogens and diarrhoeal illness. We want to examine whether diarrhoea is increasing or decreasing in your area and whether these Oxfam units are useful and whether new Oxfam units can be recommended further.

For this purpose we will visit your family thrice weekly to inquire about diarrhoeal illness among the members of your family. We will also require to examine stool samples from all every month. We would provide treatment for moderate diarrhoea and confirmed helminthiasis cases in your house. For severe diarrhoea cases free treatment will be available if they are taken to ICDDR,B Mohakhali Hospital.

If you agree to cooperate with our proposal then put your signature or left thumb impression.

L.T.I. OF
Mr/Mrs. _____

House no._____ Location_____

_____

Tongi/Seker Kalsi Refugee Camp_____

Date _____

Signature of H.A. _____

সম্মতি পত্র

আপনার এলাকায় প্রায়ই ক্রিমি ও উদরাময় রোগ দেখা যায়। অক্সফ্যাম এবং আন্তর্জাতিক উদরাময় গবেষনা কেন্দ্র এসব রোগের বিস্তার রোধের জন্য আপনাদের সাহায্য করিয়া আসিতেছে। আপনার এলাকায় উদরাময় ও ক্রিমি রোগ বিস্তার লাভ করিতেছে না করিতেছে তাহা আমরা পরীক্ষা করিয়া দেখিতে চাই। অক্সফ্যাম সৌচাগার গুলি কার্যকরী কিনা অথবা নতুন কোন অক্সফ্যাম সৌচাগার স্থাপনের প্রস্তাব দেওয়া যায় কিনা তাহা আমরা বিবেচনা করিয়া দেখিতে চাই।

এই উদ্দেশ্যে আমরা সপ্তাহে তিনদিন আপনার বাসায় উপস্থিত হইয়া আপনার পরিবারের সকলের উদরাময় রোগ সম্বন্ধে তথ্য সংগ্রহ করিব। এই জন্য সকলের মল পরীক্ষার প্রয়োজন হইবে। আমরা আপনার বাসায় উদরাময় এবং ক্রিমিরোগে আক্রান্ত সদস্যদের চিকিৎসার ব্যবস্থা করিব। মারাত্মকভাবে উদরাময়ে আক্রান্ত রোগীর বিনা মূল্যে চিকিৎসার জন্য তাহাকে আন্তর্জাতিক উদরাময় গবেষনা কেন্দ্রের মহাখালী হাসপাতালে নিলে বিনা খরচে চিকিৎসা ব্যবস্থা করা হইবে।

যদি আপনি সহযোগিতা করিতে ইচ্ছুক থাকেন তাহা হইলে নীচে টিপ-সই দিন।

টিপ-সই—

মিঃ/মিসেস— ----------

বাসার নং— ---------- স্কুলের নাম— ----------

ভাসানটেক/শেরের কলনী রিফিউজি ক্যাম্প

তারিখ— ----------

স্বাস্থ্যকর্মীর স্বাক্ষর— ----------

TABLE I

COMPARATIBILITY OF STUDY AND CONTROL AREAS

Group	Total families	Total Population	Family size	No./person /room	Drink T.W. water	Use surface water	Monthly Income	Day Labour	Service	Head's Literacy Average
Study										
Control										
P =										

TABLE 2

INCIDENCE OF DIARRHOEA BY ALL CAUSES

Group	Population in the area	No. of diarrhoea form all causes	Diarrhoea rate/year/100	Severe diarrhoea rate/year/100	Hospital admitted diarrhoea
Study					
Control					
p =					

TABLE 3

RATES OF DIARRHOEA BY AGE AND SEX

Group		0 - < 1	1 - 4	5 - 9	10 - 19	20 - 29	30 +	Total	M F Ratio
Study	M								
	F								
Control	M								
	F								
P =									

TABLE 4

SEASONALITY OF DIARRHOEA BY ALL PATHOGENS IN PERCENT

(Study families)

Group	January	February	March	April	May	June	July	August	September	October	November	December	Total #	Total %
All Diarrhoea														
Study group														
Control group														
P =														

TABLE 5

INCIDENCE OF HOOKWORM, INFECTION AND RE-INFECTION

Group	No. of members	No. of hook worm initial	Hook worm initial	Third month re-infected	Six month re-infected	Nine month re-infected	Twelve month re-infected
Study							
Control							
P =							

TABLE 6

INCIDENCE OF GIARDIA LAMBLIA INFECTION AND RE-INFECTION

Group	No. of members	No. of initial infection	Initial infection	Third month re-infected	Six month re-infected	Nine month re-infected	Twelve month re-infected
Study							
Control							
P =							

TABLE 7

INCIDENCE OF E. HISTOLYTICUS INFECTION AND RE-INFECTION

Group	No. of members	No. of initial infection	Initial infection rate	Third month re-infected	Six month re-infected	Nine month re-infected	Twelve month re-infected
Study							
Control							
P =							

TABLE 8

INCIDENCE OF ASCARIES LAMBRICOIDES, INFECTION AND RE-INFECTION

Group	No. of members	No. of initial infection	Initial infection	Third month re-infected	Six month re-infected	Nine month re-infected	Twelve month re-infected
Study							
Control							
P =							

TABLE 9

SEASONAL INCIDENCE OF HOOK WORM, G. LAMBLIA, E. HISTOLYTICA AND ASCARIS LAMBRICOIDES BY MONTHS AND PERCENT

Group	Total Exam.	Total +ve	Total %	January	February	March	April	May	June	July	August	September	October	November	Decembe.
Hook worm															
Study															
Control															
G. Lamblia															
Study															
Control															
E. Histolytica															
Study															
Control															
Ascaris-Lambricoides															
Study															
Control															

TABLE 10

SUMMARY OF FINDINGS BASIC AND SUBSEQUENT

Group	Total members	Diarrhoea incidence	Diarrhoea mortality	Diarrhoea associated with any pathogen	Hook worm	G.lamblia	Ent. histolytica	Ascaris	All
STUDY									
Initial									
3rd month									
6th month									
9th month									
12th month									
CONTROL									
Initial									
3rd month									
6th month									
9th month									
12th month									

SANITATION INTERVENTION CENSUS FORM(1)

heker Kalsi camp : House No..... Family No..... Date of census .....

e	Sex	Education	Occupation primary	Occupation secondary	Duration of stay in this camp	Monthly income of family	Source of drinking water of family	Source of bathing water	Source of washing water	Use Oxfam latrine	Use open or suri-

SANITATION INTERVENTION QUESTION FORM (2)

____, House no_____ Tongi/Sheker Kalsi

et ea	Duration continued	Loose stool	Watery stool	Mucoid stool	Bloody stool	Mucous +blood in stool	Pain abdomen	Fever in diarrhoea	Vomiting	Prolapse rectum	Passed worms	Took un-usual food	Stool sent exam.

SANITATION INTERVENTION STOOL EXAM...

mp/Sheker Kalshi campl Family No._____ House No._____

	Age	Sex	Dates of examinations											
			Initial	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th