(3)

REVIEW BOARD ON THE USE OF HUMAN VOLUNTEERS

CRL

Principal Investigator R. Davis Trainee investigator(if any)

Application No 78-020 Supporting Agency(if Non-CRL)

Title of study A Comparative Study of the Intrafrontal Thickness Index

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

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

Source of Population:
a) Ill subjects Yes No NA
b) Non-ill subjects Yes No NA
c) Minors or persons under guardianship Yes No NA

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 possibly 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 NA
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 NA
f) Right to refuse to participate or to withdraw from study Yes No NA
g) Confidential handling of data Yes No 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 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 Board for review.

I agree to obtain approval of the Review Board on Use of Human Volunteers for any changes involving the rights and welfare of subjects before making such changes.

R. Davis

Principal Investigator

Recd 28/8/78

78-020

SECTION I - RESEARCH PROTOCOL

1) Title: A comparative Study of Anthropometric Nutritional Indices

2) Principle Investigator: Radheshyam Bairagi

3) Starting Date: June 1, 1978

4) Completion Date: April 30, 1979

5) Total Direct Cost: $ 5,624.60

6) Abstract Summary:

This protocol proposes an analysis of the longitudinal anthropometric, morbidity, and mortality data collected for two calender years since January 1975 for about 6,000 children and toddlers less than 10 years of age in 12 villages of Matlab. The data were collected as part of a longitudinal study on diarrhoeal diseases in relation to water use. The objective of this analytical study is to compare different anthropometric indices based on age, weight, and height as indicator of nutritional status in respect of their relationship with diarrhoeal diseases, and also with mortality. The socio-economic variables will be used as a control variable to investigate these relationship and also as an independent variable to investigate their relationships with different anthropometric indices.

7) Reviews:

a) Research Involving Human Subjects: _____

b) Research Committee: _____

c) Director: _____

d) BMRC: _____

e) Controller/Administrator: _____

SECTION II - RESEARCH PLAN

A. INTRODUCTION

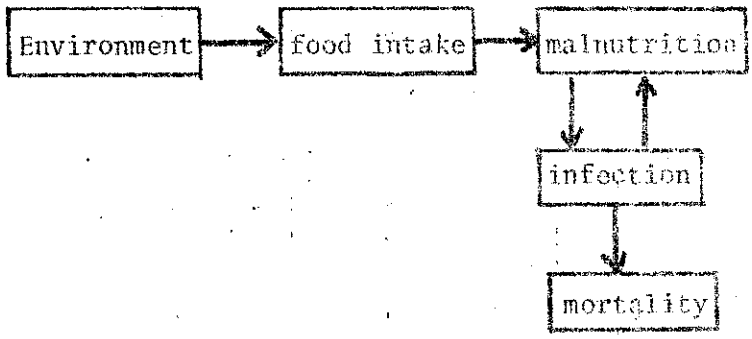
1. Objectives:

The objective of this study is to compare different anthropometric indices based on age, weight and height as predictor of diarrhoeal diseases and child mortality and also to investigate how these indices are affected by diarrhoeal diseases.

2. Background:

Malnutrition is a serious problem in developing world. In Bangladesh, 60 percent of rural households had deficient calorie consumption, and 30 percent were consuming insufficient quantities of protein (Ahmad et al, 1977). And deficient of protein and calorie consumption is probably the most important determinants of the nutritional status of the population. The adverse affects of this malnutrition for the children are many. It is thought to be the most important cause of the deaths of the children of the developing countries. Food and Agriculture Organization (FAO) condents that "malnutrition is the biggest single contributor of child mortality in the developing countries (FAO, 1970). In a large longitudinal study in South America it was observed that more than 50% of the death of children under 5 years of age was directly or indirectly related to malnutrition (Puffer and Serrano, 1975). Scrimshaw et al. (1968) postulated a synergism whereby infection contributes to deterioration of the malnutrition state, while malnutrition reduces or supresses host resistance, worsen the outcome of infection and thus establishes a vicious cycle of major public health problem. Mata (1975) mentioned that "malnutrition affects the host capacity to respond to infection and antibody synthesis is imparrid in children with severe forms of protein-calorie malnutrition. The relationship between diarrhoeal diseases and nutritional status of the children have been discussed and established in many studies. And in many parts of the developing world and particularly in Bangladesh, diarrhoeal diseases is thought to be main cause of child mortality. Some of the studies also suggest that suffering from severe malnutrition in the early period of life may impair the mental development permanently (Valquist, 1972; Craviote, 1966).

Nutrition is the result of a whole range of different physical and cultural factors in the environment. The relationship of environment, diseases, and mortality with nutritional status can be explained by the following schematic diagram:



Nutritional status can be assessed by clinical, biochemical or by anthropometric measurements. All the methods are derived form changes of the human body (quantitatively or qualitatively) in response to nutritional wellbeing. Among these methods the last has some advantages, such as easy to perform and require simple apparatus. Moreover, mild and moderate protein-calorie deficient in children are deficient in children are difficult to detect by clinical examination or by biochemical indicators but has been mostly defined in terms of anthropometry. Anthropometric indices are based on the measurements, one variable of human body thought to be greatly affected by malnutrition compared with one less affected. A great variety of anthropometric indices have been used as a measure of nutritional status. Sastry et al. (1976) showed that the quantum of malnutrition depending on age,, weight, and height for a group of children varied from 76 percent to 97 percent depending on the criterion used. The major difficulty in fixing these levels is the absence of information regarding the functional significance of growth retardation. The importance of an index lies with its power for classification of the group of people according to different levels of risk morbidity and mortality. As accurately an index can classify the population, as useful this index is for screen out children requiring intensive care or for monitoring the progress of a nutrition program. The quantification of the effects of the diseases on nutritional status is also necessary to take appropriate measures. These effects are expected to be reflected in different indices not in the same way at the same time.

Among the anthropometric measurements, the most common is weight for age. Weight is a composite measure, any changes in which can be due to changes in body fluid, in lean body mass, or in fat. It is reported from the evidence from many parts of the world that well-nourished infants and pre-school children attain at least weight levels closely approximating the Harvard median (Jelliffe, 1966). That is ethnic difference plays a small role in comparison with environmental factors in growth in weight. But a deficit in weight for age may contain two different kind of deficits - wasting and stunting. Waterlow and Rutishauser (1973), and Seoane and Lathan (1971) mentioned that stunting and wasting has different history of malnutrition. Stunting is a sign of cronic malnutrition where as wasting is a sign for acute malnutrition. If the body is stunted but not wasted than it may be presumed that the gross composition of the body is normal. Of course Mone Keber et al. (1968) demonstrated that there was general decrease in activity, form of adaptation, is for the severely stunted children. However, it will be interesting to know for public health program whether 'stunting' and 'wasting' has any special significance in diarrhoeal disease, and in mortality.

'A child's growth rate reflects, better than any other single index, his state of health and nutrition; and often his psychological situation also' (Eveleth, and Tanner, 1976 p 7) It is felt that growth pattern has more important role to play with diarrhoeal diseases and, mortality of the children. So it is important to investigate not only the effect of total weight or height at a point of time on diarrhoeal diseases or mortality, but the effect of rate of increment of these measurements.

Another method of expressing weight or height deficit is the development quotient (DQ) for height or for weight. The biological age of a given child is the age of a normal child of the same weight or height, taken from some standards, such as the Harvard ones. The DQ is the ratio of the child's biological age to its cronological age, both being calculated from conception rather than from birth. It has been shown (Waterlow and Rutishauser, 1973) that the relationship between DQ and corresponding weight for height or weight for age are not linear. Each 10% reduction in height or weight for age becomes progressively less important, in terms of DQ as one goes down the scale. The deficit in DQ is proportionately much higher than that in height for age, particularly at

the top of the scale. Again the relationship is not the same at different ages; at 90% height for age a four years old child is more retarted in terms of DQ than a 1 year child. If diarrhoeal diseases or mortality are associated with the anthropometric indices, one may ask: which index of growth retardation gives the most realistic picture. To obtain the longitudinal data, is time consuming and in most developing countries the accurate aged are unknown. Consequently, an age independent index based on observations at a point of time has practical importance. A variety of screening methods have been described which do not use the age of the child but use a measurement unaffected by nutritional status to estimate age. Most use the height and they include the use of the expected weight for height tables (Dugdale, 1971),(Ehrenberg, 1965; Rao, and Singh, 1970; Sastry, and Srikantia, 1970). It is extremely important to know how these various indices work as a predictor of diarrhoeal diseases or mortality or a reflector of diarrhoeal diseases.

The severe malnutrition can of course be detected clinically but milder degrees of malnutrition or growth failure are easily missed (Shakir et al, 1972). But growth failure also can be missed by observational error. In field situation a limited amount of observational error is always possible even under careful observation. If a child is not gaining his weight or height in the expected direction, we can't detect it by taking two measurements within five minutes of each other, and may not be within five days even. First we should know about what should be termed as growth failure and secondly we should determine the maximum or average time required to detect the growth failure. It is also important to know, how much measuremental error may be tolerated in developing different indices. Most of the questions about the measuremental error are unanswered yet in the literature and an attempt to find the solutions is thought to be very important. The indices which takes less time to detect abnormality or less sensitive to observational error should be considered better than the other.

3. Rationale:

The relationship of nutritional status with diarrhoeal diseases, and with mortality is well recognised. A quantification of the effects of diarrhoeal diseases on nutritional status will

be helpful for taking necessary measures. And the comparisions of different anthropometric indices with respect to their relationship with diarrhoeal diseases, and mortality will be helpful to use the indices properly to understand the magnitude of the problem and also to screen out the children requiry intensive care.

B. Specific Aims:

The following are some of the hypothesis to be tested for mortality:

i) Growth rate is a better progresticator of mortality than growth:-

a) for all ages (0-1, 1-2, 2-5, 5-9 years)

b) for all measures (weight, height)

c) for long term period (6-12 months)

d) for short term period (0-6 months)

ii) Growth rate in weight is a better indicator of risk of mortality than growth rate in height for all ages for short term period as well as for long term period.

iii) A combination of growth rate in weight and growth rate in height is a better indicator than growth rate in weight alone.

iv) DQ is better than other indices.

v) As cross-sectional measures:

a) Weight for age is a better indicator than height for age.

b) Weight for height is better indicator than height for age.

c) Controlling weight for age, height is negatively related to mortality

vi) There is no difference between the corresponding indices based on Harvard standard and local standard as indicator of mortality.

For short term (0-3 months) and long term (3-6 months) diarrhoeal diseases (for episodes, as well for duration) all the above hypothesis and the following hypothesis will be tested:

vii) There is an interaction between the initial weight for age and short term diarrhoeal diseases on growth rate, i.e. rate of growth will be more affected in case of initial malnourished child.

viii) The average duration of diarrhoea is longer for initially malnourished children.

ix) Weight will be more affected by diarrhoeal diseases than height.

x) The relationships between all the indices with diarrhoeal diseases will be stronger in case of duration than episodes:

To study the relationship between anthropometric indices and socio-economic and demographic variables.

xi) As age increases, the relationship between different indices with socio-economic and demographic variables will be more apparent.

xii) An index based on local standard is better than an index based on Harvard standard to show the effects of socio-economic and demographic variables.

xiii) In a cross-sectional study, weight for age and height for age is equally related with different socio-economic status after 5 years of age, but before that weight for age is more related than height for age.

xiv) Weight for height is not strongly related to socio-economic and demographic variables.

xv) Seasonal effect of nutritional status will be related in weight for age and weight for height but not in height for age.

xvi) Average time required to detect growth failure is a function of measuremental error variance and rate of failure.

C. Methods and Procedure:

A study was taken in 12 villages of Matlab area to investigate the relationship between water use and diarrhoeal diseases in January 1975. It was continued upto Dec. 31, 1976. All the people of these villages were included in the study. Weekly report of the diarrhoeal diseases and water use for drinking, bathing, washing were collected through home visit. The monthly sheet for 1975 and 1976 is shown in Appendix 1A and 1B. If there was any diarrhoeal diseases, whether any treatment was sought or not were also collected. From April 1975, monthly weight and height of the children and toddler of less than 10 years of age was also collected. Data on taking 'panta bhat' (rice put into water in the evening and taking in the following morning) and left over food were collected since January 1976. Workers recorded overnight absences from home and the number of days a person had diarrhoea (defined as two or more watery stools or soft stools with blood or mucus per day). An episode was defined as having diarrhoea for at least one day following a minimum of two days of normal stool. The field staff was instructed to follow the definition of diarrhoea, but no cross-check was done to see whether two observers would obtain similar rates in the same village.

A summary sheet for each person less than 10 years of age will be prepared (Appendix 2). In five villages vital registration was started from 1966 and in other seven villages it was stated in 1968. So date of birth of the children born after May 1966 in those five villages and after May 1968 in those seven villages are available. The toddler who born before the registration, their date of birth will be collected from 1974 census report of the Matlab area done by CRL. If a children born after January 1, 1975 and included into the study, it will be collected from vital registration record with date. Migration in, migration out, and death between January 1, 1975 and December 31, 1977 also will collected from the records of vital events.

Nutritional status, and diarrhoeal diseases are related to age. So analysis will be done separately for different age group. The main age group will be 0-6, 6-12, 12-24, 24-60, 60^{+} months. Again nutritional status and diarrhoeal diseases are related to seasons. The following two monthly or seasons

will be selected: i) peak season of diarrheal diseases, ii) lowest season of diarrheal diseases, iii) [illegible] (weight for age) best nutritional status, iv) [illegible] worst nutritional status. Details analysis will be confined for the children 24-60 months for the following reasons:

i) this age group is considered least [illegible]
ii) this group is virtually passed the weaning [illegible]
iii) exact age of this age group is available,
iv) both weight and height measurements are available for this group.

Weight for age, height for age, weight for height, DQ weight, DQ height and DQ weight/DQ height for each child for the above seasons will be calculated for Harvard standard and for local standard. Increment in weight and in height will be also calculated and will be expressed in standard percentage. Now all the indices will be related with the subsequent diarrheal diseases of 0-3, and of 3-6 months controlling the socio-economic variables. This relationship also will be observed for mortality for the time interval 0-6, 6-12 months respectively. For diarrheal diseases, number of days suffered, and number of episodes, both will be used as dependent variable in the analysis. Again, people suffered from diarrheal diseases and not suffered from diarrheal diseases will be separated and their initial and subsequent indices will be compared.

A multiple regression analysis and if feasible a factor analysis also will be done using episodes, and duration of diarrhea diseases as dependent variable. A correlation matrix will be calculated for all the indices and including diarrheal diseases will be done first which will give the idea which indices should be included into the multiple regression analysis. If the correlation is 0.5 or more between two indices then one index should be excluded from the regression analysis.

D. SIGNIFICANCE

This study is expected to provide a quantitative measure of evidence of the risk of diarrheal diseases and mortality associated with different nutritional status of the children. Among the anthropometric indices based on age weight and height, which one can classify the children at risk of diarrheal diseases and mortality more reliably should also be clear from this investigation.

E. FACILITIES REQUIRED

This project will not involve any extra cost for data collection but requires some person time for transcription coding, punching and computer programming. This work mostly can be done by the unoccupied workers of Matlab.

F. COLLABORATIVE ARRANGEMENTS

This project will be a collaborative project of Cholera Research Laboratory and the Institute of Statistical Research and Training, University of Dacca. ISRT will provide the time of the Principal Investigator and CRL will arrange all other necessary facilities.

REFERENCES

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SECTION III - BUDGET

A. DETAILED BUDGET

June 1, 1978 through May 30, 1979

1. PERSONNEL SERVICES

Position	% Effort	No. of Days	Ann. Salary	Project Taka	Requirement Dollar
Investigator (R.Bairagi)	25	365			
1 Supervisor (Mr.Sardar)	10	180	38.976	1.949	
5 Coding Assistant	100	180	12,000	30,000	
2 Key Punch Operator	100	60	12,000	4,000	
1 Program Assistant	25	120	12,000	1,000	
1 Programmer	25	120	30,000	2,500	
1 Typist	10	365	18,000	1,800	

2. SUPPLIES AND MATERIALS

Items	Unit Cost	Amount required	Project Taka	Requirement Dollar
Pens, Papers & Stationery			2,000	
IBM Cards	$48/1,000	40,000		192
IBM Tape	$ 8/Tape	2		16

	Items	Unit Cost	Amount required	Project Taka	Requirement Dollar
3.	EQUIPMENT				
4.	PATIENT HOSPITALIZATION				
5.	OUTPATIENT CARE				
6.	CRL TRANSPORT				
7.	TRAVEL & TRANSPORTATION OF PERSONS				
8.	TRANSPORTATION OF THINGS				
9.	RENT, COMMUNICATION & UTILITIES				
.	PRINTING AND REPRODUCTION			3,000	
.	OTHER CONTRACTUAL SERVICES (Computer for 50 hours)			30,000	
.	CONSTRUCTION				
.	MISCELLANEOUS			5,000	
	TOTAL			81,000	208

Total $ 5,626.60

Conversion rate $1 = Tk.15.00

B. BUDGET SUMMARY

CATEGORY		TAKA	DOLLAR
1.	Personnel Services	41,249	
2.	Supplies & Materials	2,000	20
3.	Equipment		
4.	Patient Hospitalization		
5.	Out Patient care		
6.	CRL Transport		
7.	Travel & Transportation of persons		
8.	Transportation of things		
9.	Rent, Communication & Utilities		
10.	Printing & Reproduction	3,000	
11.	Other Contructual Services	30,000	
12.	Construction		
13.	Miscellaneous	5,000	
	TOTAL	81,249	208

Total amount in $ 5,624.60

APPENDIX IA

September Name : _____ Age/DOB _____ Sex : m f Census No.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
★	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	★	★	★	★

September Name : _____ Age/DOB _____ Sex : m f Census No. _____

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
★	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	★	★	★	★

APPENDIX IB

DECEMBER, 1976

ıe _____ Census # _____ Age _____ Sex _____

sehold containers # _____ Use : _____ Checked : _____

ces used in last 24 hours for Drink _____ Bath _____ Utensil wash _____

: পান্তা ভাত : yes _____ no _____ Take Leftover food : yes _____ no _____

_____ Ht _____ Date taken _____

unday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
★	★	★	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	★

DECEMBER, 1976

ıe _____ Census # _____ Age _____ Sex _____

sehold containers # _____ Use : _____ Checked : _____

ces used in last 24 hours for Drink _____ Bath _____ Utensil wash _____

: পান্তা ভাত : yes _____ no _____ Take Leftover food : yes _____ no _____

_____ Ht _____ Date taken _____

unday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
★	★	★	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	★

APPENDIX 2

NUTRITION, MORBIDITY AND MORTALITY: 1975-76

	Census #		DOB
M/F	Religion I/H/O	Birth order	[illegible] family
es	H. Occupation	H. Education	Mothers Edu[illegible]
a) Length			
b) Breadth	No of cows	No. of boats	FW Distance
ition/birth MI/MO/BR/None		Date of migration/birth	
: Died/No death	Date of death		DOB Est Yes/No

h of observation 1975		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct	Nov.	Dec
r used in last 24 hrs:	Drinking												
	Others												
of days overnight from home													
of days complaining diarrhea													
f episodes of diarrhea													
f days of dysentery													
of episodes of dysentery													
ment													
ht													
nt													
taker													
976													
used in last 24 hours	Drinking												
	Others												
of days overnight from home													
of days complaining diarrhea													
of episodes of diarrhea													
of days of dysentery													
of episodes of dysentery													
ment (NT-0, MC-1, CRL-2, Hosp.-3)													
ght													

APPENDIX 5

NUTRITION, MORBIDITY AND MORTALITY: 1975-76
CODING SHEET

Item	Column	Code
Card #	1	1
Study #	2-4	202
Census #:		
Village #	5-6	Codes are given
Family #	7-9	40 = 040
Individual #	10-11	6 = 06
Date of birth (DOB):		
Day	12-13	3 = 03, 11=11
Month	14-15	6 = 06, 12 = 12
Year	16-17	69=69
DOB Estimated (Est.)	18	Yes = 1, No = 2
Sex	19	Male = 1, Female = 2
Religion	20	Islam=1, Hinduism=2, Other=3
Birth order	21	8 or more = 8
# in family	22-23	6=06, 12=12
Articles	21-25	7=07, 18=18
Occupation of head	21-27	5=05, 10=10
Education of head	28-29	4=04, 12=12
Mother's education	30-37	5=05, 11=11
Floor:		
Lengths	32-33	9=09, 28=28
Breadths	34-35	8=08, 27=27
No. of cows	36	8=8 or more
No. of boats	37	8=8 or more

** for not avaialble or not applicable 9's will be punched

Item	Column	Code
Distance of TW	38-40	48=048
Migration/birth	41	MI=1, MO=2, birth=3 None=0
Date of migration/birth:		
Day	42-43	
Month	44-45	
Year	46-47	
Death	48	Died=1, not died=2
Date of death:		
Day	49-50	
Month	51-52	
Year	53--54	
Water use, morbidity and anthropometry for Jan.-Feb. 1975		
Drinking Jan.	**55-56**	as coded in summary sheet
Other in Jan	57-58	
No. of days overnight	59-60	
Days of diarrhoea	61-62	
# diarrhoea episodes	63	
Days of dysentery	64-65	
No. dysentery episodes	66	
Treatment	67	No treatment=0, MC=1, CRI=2, Both=3.
Drinking in Feb.	68-69	
Other in Feb.	70-71	
No. of days overnight	72-73	
Days of diarrhoea	74-75	
# diarrhoea episodes	76	

Item	Column	Code
Days of dysentery	77-78	
# dysentery episodes	79	
Treatment	80	as in Jan. 1975
Card #	1	2
Study #	2-4	202
Census #		
Village #	5-6	
Family #	7-9	
Individual #	10-11	
Date of birth	12-17	as in card #1
Anthropometry for Jan - Feb. 1975		
Weight	18-20	8.5 = 085 NA=999
Height	21-24	70.5=0705 NA = 9999
Date taken:		
Day	25-26	07=07, 11=11
Month	27-28	8=08, 22=22
Water use, morbidity and anthropometry for Mar.-April, 1975		
Drinking in March	29-30	as in summary sheet
Other in March	31-32	"
No. of days overnight	33-34	
Days of diarrhoea in March	35-36	
# of diarrhoea episodes	37	

Days of dysentery episodes	38-39	
# dysentery episodes	40	
Treatment	41	
Drinking in April	42-43	
Other in April	44-45	
No. of days overnight	46-47	
Days of diarrhoea in April	48-49	as in for Jan.-Feb.
# diarrhoea episodes	50	"
Days of dysentery	51-52	"
# dysentery episodes	53	"
Treatment	54	"
Weight	55-57	"
Height	58-61	"
Date taken:		"
Day	62-63	
Month	64-65	2=02

Water use, morbidity and anthropometry for May-June, 1975

drinking in May	66-67	as in Jan.-Feb.
Other in May	68-69	"
No. of days overnight	70-71	"
Days of diarrhoea	72-73	"
# diarrhoea episodes	74	
DAys of dysentery	75-76	
# dysentery episodes	77	
Treatment	78	

Days of dysentery episodes	38-39	
# dysentery episodes	40	
Treatment	41	
Drinking in April	42-43	
Other in April	44-45	
No. of days overnight	46-47	
Days of diarrhoea in April	48-49	as in for Jan.-Feb.
# diarrhoea episodes	50	"
Days of dysentery	51-52	"
# dysentery episodes	53	"
Treatment	54	"
Weight	55-57	"
Height	58-61	"
Date taken:		"
Day	62-63	
Month	64-65	2=02

Water use, morbidity and anthropometry for May-June, 1975

drinking in May	66-67	as in Jan.-Feb.
Other in May	68-69	"
No. of days overnight	70-71	"
Days of diarrhoea	72-73	"
# diarrhoea episodes	74	
DAys of dysentery	75-76	
# dysentery episodes	77	
Treatment	78	

Item	Column	Code
Card #	1	A
Study #	2-3	26
Census #		
Village #	4-6	
Family #	7-9	
Individual #	10-11	
Water use, morbidity, and anthropometry for May-June 1975		
Drinking in June	12-13	as for Jan., Feb.
Other in June	14-15	"
No. of days overnight	16-17	"
Days of diarrhoea in June	18-19	"
# diarrhoea episodes	20	"
Days of dysentery	21-22	"
# dysentery episodes	23	"
Treatment	24	"
Weight	25-27	"
Height	28-31	"
Date taken		
Day	32-33	"
Month	34-35	"
Water use, morbidity and anthropometry for July-Aug. 1975		
Drinking in July	36-37	as for Jan., Feb.
Other in July	38-39	"
No. of days overnihgt	40-41	"

Item	Column	Code
Days of diarrhoea in July	42-43	as for last
# episodes of diarrhoea	44	"
Days of dysentery in July	45-46	"
# episodes of dysentery	47	"
Treatment	48	"
Drinking in August	49-50	"
Other in August	51-52	"
No. of days overnight	53-54	"
Days of diarrhoea in August	55-56	"
# diarrhoea episodes	57	"
Days of dysentery in August	58-59	"
# dysentery episodes "	60	"
Treatment "	61	
Weight "	62-64	
Height "	65-68	
Date taken		
Day	69-70	
Month	71-72	

Item	Column	Code
Card #	1	4
Study #	2-4	202
Census #		
Village #	5-6	
Family #	7-9	
Individual #	10-11	
Water use, morbidity and anthropometry for Sept. - Oct., 1975		
Drinking in Sept.	12-13	
Other in Sept.	14-15	
No. of days overnight in Sept.	16-17	
Days of diarrhoea "	18-19	
# diarrhoea episodes	20	
Days of dysentery	21-22	
# dysentery episodes	23	
Treatment	24	
Drinking in Oct.	25-26	
Other "	27-28	
No. of days overnight	29-30	
Days of diarrhoea in Oct.	31-32	
# diarrhoea episodes	33	
Days of dysentery	34-35	
# dysentery episodes	36	
Treatment	37	

Item	Column	Code
Weight	38-40	
Height	41-43	
Date taken		
Day	45-46	
Month	47-48	
Water use, morbidity and anthropometry for November		
Drinking in Nov.	49-50	As in Jan.
Other in Nov.	51-52	"
No. of days overnight	53-54	"
Days of diarrhoea	55-56	"
# episodes of diarrhoea	57	"
Days of dysentery	58-59	"
# episodes of dysentery	60	"
Treatment	61	"
Drinking in Dec.	62-63	"
Other "	64-65	
No. of days overnight	66-67	
Days of diarrhoea	68-69	
# diarrhoea episodes	70	
Days of dysentery	71-72	
# dysentery episodes	73	
Treatment	74	

Item	Column	Code
Drinking in Feb.	44-45	as for Jan.-Feb. 1975
Other " "	46-47	"
Days overnight	48-49	"
Days of diarrhoea	50-51	"
# diarrhoea episodes	52	
Days of dysentery	53-54	
# dysentery episodes	55	
Treatment	56	
Weight	57-59	
Height	60-63	
Date taken		
Day	64-65	
Month	66-67	
Take panta	68	
Take leftover food	69	

Water use, morbidity and anthropometry for March-April, 1976

Drinking in March	70-71
Other " "	72-73
Days of overnight in March	74-75
Days of diarrhoea "	76-77
# Days of diarrhoe episodes	78

Item	Column	Code
Card #	1	5
Study	2-4	202
Census #		
Village #	5-6	as in card 1
Family #	7-9	"
Individual #	10-11	"
Date of birth		"
Day	12-13	"
Month	14-15	"
Year	16-17	"
Anthropometry for Nov.-Dec. 1975		as for Jan-Feb. 1975
Weight	18-20	
Height	21-24	
Date taken		
Day	25-26	
Month	27-28	
Water use, morbidity and anthropometry for Jan.-Feb. 1976		
Drinking in Jan.	29-30	as for Jan-Feb. 1975
Other in Jan.	31-32	
No. of days overnight in Jan.	33-34	
Days of diarrhoea	35-36	
# episodes of diarrhoea	37	
Days of dysentery	38-39	
Treatment	41	
Take panta	42	
Take left over food	43	

Item	Column	Code
Card #	1	5
Study #	2-4	202
Census #		
Village #	5-6	
Family #	7-9	
Individual #	10-11	

Water use, morbidity and water use for March-April, 1976

Days of dysentery in March	12-13
# dysentery episodes	14
Treatment	15
Take panta	16
Take leftover food	17
Drinking in April	18-19
Other in April	20-21
Days overnight in April	22-23
Days of diarrhoea	24-25
# episodes of diarrhoea	26
Days of dysentery	27-28
# episodes of dysentery	29
Treatment	30
Weight	31-33
Height	34-37
Date taken	
Day	38-39
Month	40-41

Items	Column	Code
Take panta bhat	42	
Take leftover food	43	
Water use, morbidity and anthropometry for May-June 1976		
Drinking in May	44-45	
Others in May	46-47	
Days overnight in May	48-49	
Days of diarrhoea	50-51	
# diarrhoea episodes	52	
Days of dysentery	53-54	
# dysentery episodes	55	
Treatment	56	
Take panta	57	
Take leftover food	58	
Drinking in June	59-60	
Other in June	61-62	
Days overnight	63-64	
Days of diarrhoea	65-66	
# diarrhoea episodes	67	
Days of dysentery	68-69	
# dysentery episodes	70	
Treatment	71	
Weight	72-74	
Height	75-78	
Date taken		
Day	79-80	

Item	Column	Code
Card #	1	6
Study #	2-4	202
Census #		
Village #	5-6	
Family #	7-9	
Individual #	10-11	
Month	12-13	
Take panta in June	14	
Take leftover food	15	
Water use, morbidity, and anthropometry for July-Aug. 1976		
Drinking in July	16-17	
Other in July	18-19	
Days overnight	20-21	
Days of diarrhoea	22-23	
# diarrhoea episodes	24	
Days of dysentery	25-26	
# dysentery episodes	27	
Treatment	28	
Take panta	29	
Take leftover food	30	
Drinking in Aug.	31-32	
Other in Aug.	33-34	
Day overnight	35-36	
Days of diarrhoea	37-38	
# diarrhoea episodes	39	
Days of dysentery	40-41	
# dysentery episodes	42	

Item	Column	Code
Treatment	43	
Weight	44-46	
Height	47-50	
Date taken		
Day	51-52	
Month	53-54	
Take panta in Aug.	55	
Take leftover food	56	

Water use, morbidity and anthropometry for Sept.-Oct. 1976

Drinking in Sept.	57-58	
Other in Sept.	59-60	
Days overnight in Sept.	61-62	
Days of diarrhoea in Sept.	63-64	
# diarrhoea episodes in Sept.	65	
Days of dysentery "	66-67	
# dysentery "	68	
Treatment "	69	
Take panta bhat	70	
Take leftover food	71	
Drinking in Oct.	72-75	
Days overnight	76-77	

Item	Column	Code
Card #	1	7
Study #	2-4	102
Census #		
Village #	5-6	
Family #	7-9	
Individual #	**10-11**	

Water use, morbidity and anthropometry for Sept. - Oct. 1976

Days of diarrhoea in Oct.	12-13	
# diarrhoea episodes in Oct.	14	
Days of dysentery "	15-16	
# dysentery episodes "	17	
Treatment "	18	
Weight "	19-21	
Height "	22-25	
Date taken "		
Day	26-27	
Month	28-29	
Take panta bhat	30	
Take leftover food	31	

Water use, morbidity and anthropometry for Nov.-Dec. 1976

Drinking in Nov.	32-33	
Other "	34-35	
Days overnight	36-37	
Days of diarrhoea	38-39	
# diarrhoea episodes	40	

Item	Column	Code
Days of dysentery in Nov.	41-42	
# dysentery episodes in Nov.	43	
Treatment	44	
Take panta bhat	45	
Take leftover food	46	
Drinking in December	47-48	
Other in December	49-50	
Days overnight in December	51-52	
Days of diarrhoea "	53-54	
# diarrhoea episodes	55	
Days of dysentery	56-57	
# dysentery episodes	58	
Treatment	59	
Weight	60-62	
Height	63-66	
Date taken		
Day	67-68	
Month	69-70	
Take panta	71	
Take leftover food	72	