

ETHICAL REVIEW COMMITTEE, ICDDR,B.

Principal Investigator DR. SHAMEEM AHMED Trainee Investigator (if any) 2
Application No. 85-032 Supporting Agency (if Non-ICDDR,B) _____

Title of Study Breast Feeding, Weaning & Infant Growth in Rural Bangladesh Project status:
() New Study
() Continuation with change
() No change (do not fill out rest of form)

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
- Risks 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
- Other risks 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
 - (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 or 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. 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.

(PTO)

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

Shameem Ahmed
Principal Investigator
(SHAMEEM AHMED)

Trainee

SECTION - I :

R E S E A R C H P R O T O C O L

85-032
24.9.85

- 1. TITLE : BREAST FEEDING, WEANING AND INFANT GROWTH IN RURAL BANGLADESH

- 2. PRINCIPAL INVESTIGATOR : DR. SHAMEEM AHMED

- CO-INVESTIGATOR : DR. ABDUL BARI

- CONSULTANT : DR. MGM ROWLAND

- 3. STARTING DATE : MID. OCTOBER, 1985

- 4. COMPLETION DATE : JUNE, 1987

- 5. TOTAL BUDGET : TAKA 169,268

- 6. SCIENTIFIC PROGRAMME : (THIS PROTOCOL HAS BEEN APPROVED BY THE NUTRITION WORKING GROUP) 17 Sept 85

- PROGRAMME HEAD : MGM Rowland pp Dr MM Rahama
(Signature of Programme Head)
Date: 22.9.85

- AND THE COMMUNITY SERVICES RESEARCH GROUP 15. Sept 85

- PROGRAMME HEAD : MGM Rowland
(Signature of Programme Head)
22.9.85

7. ABSTRACT SUMMARY

Although almost all infants in rural Bangladesh are breast fed their growth tend to falter from 3-4 months onward. This could be due to too early introduction of supplementary foods leading to increased diarrhoeal illness, malnutrition and increased risk of death or due to too late introduction of weaning foods leading to undernutrition, increased diarrhoeal morbidity and increased risk of death.

This study will examine the effect of weaning at different ages on the growth and morbidity (particularly diarrhoeal illnesses) on a group of infants. The effect of maternal nutritional status on the growth of the infants will be assessed also. Attitude of mothers regarding breast feeding and weaning of infants will be recorded at the beginning of the study. Breast feeding practices will be closely observed in a few mothers and their infants.

The fat and micronutrient content of breast milk will be assessed and related to the nutritional status of the mothers and the growth of their infants.

At the end of this study we expect to identify the optimal period for introducing supplementary foods, any deficiencies in breast milk that may exist and good breast feeding practices. These findings may help in nutrition intervention programmes for mothers and children in Bangladesh.

8. Reviews

(i) Ethical Review Committee: _____
(Approved/Not Approved)

(ii) Research Review Committee: _____
(Approved/Not Approved)

(iii) Director's Signature and remarks, if any _____

c.

SECTION II RESEARCH PLAN

A. INTRODUCTION

1. OBJECTIVE:

The objective of this study will be to assess the effect of the onset of weaning, morbidity and mother's nutritional status on the growth of breast fed infants. Breast feeding practices will be observed in a few mothers and infants and this will include the frequency of putting the child to the breast and the duration of each feed.

The change in fat and micronutrient content of breast milk at different times of lactation will be measured and related to the mothers' nutritional status and growth of the infants.

2. BACKGROUND

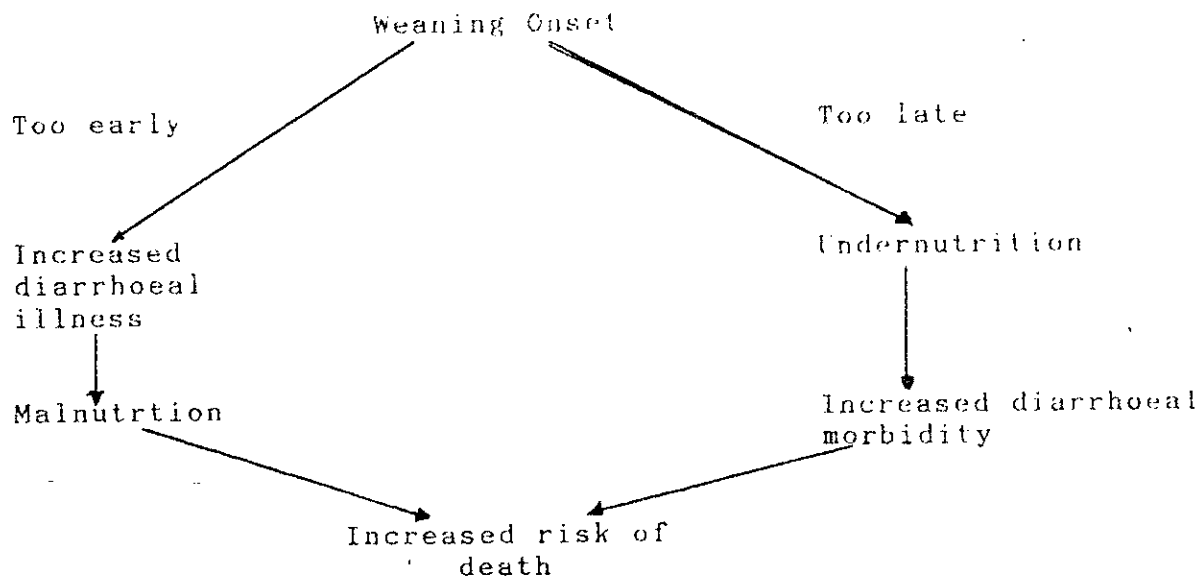
Breast feeding is the traditional and almost universal form of infant nutrition in rural Bangladesh(1,2). Khan(1) has found 98% of rural Bangladeshi mothers breastfeeding their infants at 1 yr. of age, while Brown et al(3) and Huffman et al(4) found the almost universal continuation of breast feeding upto 24 months of age and beyond. The World Fertility Survey has shown that Bangladesh has the longest median period(31 months) of breast feeding among all the countries studied.

Observations in many rural communities of the developing world indicate that in most cases infants thrive well on breast milk alone, for the first 4-6 months of life(5). Jelliffe and Jelliffe(6) and Mata and Wyatt(7) have shown that breast feeding enhances survival during early months of life. In most developing

countries the average growth rate of infants is satisfactory upto 3 months of age, but then begins to fall sharply(8). Khan and Curlin(9) have shown that the growth curves of Bangladeshi children fall far behind those of developed nations from the 4th month onward. Exclusive breast feeding is capable of supporting excellent growth before 3 months of age(10). Ahn and MacClean(11) and Kawser and Talukder(12) have shown an apparent fall off in growth after 3-4 months of age in groups of otherwise successfully breast fed infants.

Despite the fact that all rural Bangladeshi mothers breast feed their infants the prevalence of malnutrition in infancy is to the extent of 80%(13) and the infant mortality of 142/1000 live births, is one of the highest in the world. The reasons for this could be explained by the "Weaning's Dilemma" (14) presented schematically below:

THE WEANLING'S DILEMMA



Logically the timing of the introduction of additional foods to the diet of the breast fed child should be determined by the quantity and the quality and the duration of production of the mother's milk and the adequacy of the infant's growth in relation to this(14). However this is not possible in practice and the weaning period has long been recognised as a particularly hazardous phase in childhood(15). Since the standards of personal hygiene and sanitation are low in many communities of the developing countries, contamination of infant food with pathogenic microorganisms may be an important source of infectious diarrhoea(16). Black et al(17) have specifically found that in rural Bangladesh, E. coli contamination of weaning foods was significantly related to the children's annual incidence of diarrhoea.

Also in the third world communities suboptimal maternal health and nutrition may result in lower or less well sustained milk output(10). Studies by Whitehead et al(18) and Lonnerdal et al(19) on breast milk output did not show an increase in output sustained over the course of lactation. Growth may falter because of disparity between milk production by the mother and the child's needs. The child will then be mainourished, becoming predisposed to diarrhoea(3) and again diarrhoea has adverse effects on growth(20)

Due to the problems associated with the onset of weaning it has been advocated that weaning should be delayed in underprivileged communities for as long as possible(21). However, despite universal breast feeding in rural Bangladesh, Brown et al(3) have

reported that the consumption of nutrients by the infants is grossly inadequate compared with international standards. Indeed, the growth rate of the infants was already faltering compared with an international reference population before they were 6 months old. The important question then is, "how long is breast milk alone adequate for the normal physical development of the infant?"

An attempt to solve the dispute centering around the merits of early supplementation and the dangers of weaning foods was made by Watkinson(22). He showed that children receiving the highest breast milk intakes had later weaning dates, a delayed onset of diarrhoea induced weight loss and a significantly greater weight than their less privileged counterparts by the age of one year. Another important question that arises is whether mothers, particularly in the third world, introduce weaning foods inappropriately early, reducing their milk output(23), and prematurely exposing their infants to the risk of gastrointestinal infection and thereby malnutrition(24). Jelliffe and Jelliffe(25) have suggested that early supplementation with semisolids reduces the reflex prolactin secretion. In the Gambia, Rowland et al(24) have shown a general trend for growth faltering in children who were weaned before three months of age.

In Bangladesh, there is no consistent pattern for introduction of weaning foods. Khan(1), working in a rural area in Meheran, Comilla found that by age three months, 11% of the infants were given rice and wheat products in the form of liquid and semiliquid preparation. Islam(25), working in another rural area

found that supplementary foods were added between 1 and 13 months of age. Also, in rural Bangladesh the diet of weanlings is severely limited, both in quantity and quality(3).

The other question that arises is whether mothers in rural Bangladesh start to give supplementary foods because their breast milk becomes inadequate for the growth of their children.

The nutritional adequacy of breast milk can be roughly assessed by measuring the 24 hour output and chemical composition or by the recording of satisfactory growth and good health of their infants(25). However, the technical difficulties of obtaining representative samples, especially on a 24 hour basis for determining breast milk volume are great, particularly in the field(25). As fat is the major determinant of the energy value of breast milk, soluble vitamins and essential fatty acids(27), assessing fat content by a simple method would be more worthwhile in rural Bangladeshi mothers. We also intend to assess the zinc, iron and copper content of breast milk at different periods of lactation. Again the quality of breast milk would depend on the maternal nutritional status and the frequency and duration of suckling. This study will also assess the nutritional status of the mothers. The suckling frequency and duration of each feed will be closely observed in a few mother-infant groups.

3. RATIONALE

Almost all infants are breast fed in rural Bangladesh, but many of them do not grow well. Supplementary foods are not introduced in an infant's diet at any particular time. In some it is started too early and in some it is too late. Again, the fall in growth could be due to poor nutritional status of the mothers leading to poor quality of milk. No longitudinal study of all these factors has so far been done in Bangladesh. Thus, it would be worthwhile to study the effect of weaning, the mothers' nutritional status and breast milk fat and micronutrient content over the period of lactation on the growth of infants in rural Bangladesh.

B. SPECIFIC AIMS:

The specific aims of this study will be test the following hypotheses that:

1. Too early introduction of supplementary foods is an important cause of growth faltering in infants in rural Bangladesh.
2. Growth of breast fed infants is related to their mother's present nutritional status.
3. Growth faltering due to illnesses contributes substantially to the overall growth deficit in rural Bangladeshi infants.
4. Good breast feeding practices, that is regular sustained suckling leads to improved lactational performance, which can be detected by satisfactory growth of the infants.
5. Fat, zinc, iron and copper content of breast milk may be rate limiting factors in the growth of infants.

METHODS OF PROCEDURE:

The study will be carried out in the ICDDR,B field project area in Chandpur, which is 40 miles to the south east of Dhaka and about 12 miles to the south of Matlab. The Chandpur field area is less intensively studied than the other ICDDR,B project areas. At present a field comparison of WHO-ORS and Rice-Salt ORS is going on there in seven villages, comprising of 12000 people. The present study will also be undertaken in these villages. All these villages are approachable throughout the year and the socioeconomic and educational status of the mothers in these villages are comparable.

The study will be for one year and six months; one year for field work and six months for data processing and analysis. A total of 100 mothers and their infants born consecutively between mid October to December, 1985 will be selected for this study. The birth rate in the area is 40/1000 population and the highest births take place during October to December. Two health assistants will motivate mothers during their pregnancy to participate in this study. Multiple births and children born with congenital malformation will be excluded.

Weight, length and arm circumference of the infants will be taken as soon after birth as possible and then once every month. The weight, arm circumference and skinfold thickness of the mothers will be taken when the measurements of her child are taken for the first time, and then once every three months. The heights of the mothers will be recorded once during the study. Portable Salter spring balances with 100 gm graduation will be

used and checked frequently with known weights. The weights of the mothers will be taken on portable scales. All the measurements will be taken by two health assistants except the skinfold thickness of the mothers, which will be taken by the principal investigator. At the beginning of the study, the knowledge and attitude of each mother regarding breast feeding and weaning will be recorded.

To determine the exact time of introduction of supplementary foods, the dietary intakes of the infants will be recorded fortnightly. Weaning will be considered to have started if there is regular addition of other foods to the infant's diet documented in three successive weeks. The mother's reasons for starting supplementary foods will be noted. The type and amount and the frequency of giving these foods will be recorded by a 24 hour recall by the mother. History of illnesses, duration and treatment given will be noted. In case of diarrhoeal illness, the type of ORS given will be recorded.

Breast milk will be collected from the mothers once during the first month and then once every three months. It will be collected between 10am and 2pm, when maximum concentration of fat occurs(29). Milk will be taken at the beginning and at the end of a feed, from both breasts, so that variation in fat content during a feed can be overcome. The fat content will be estimated by the "Crematocrit" method (27), by the principal investigator. Zinc, iron and copper concentration will be determined by flame atomic absorption spectroscopy as described by Mendelson et al (30). This will be done in the St. Thomas' Hospital in London.

The suckling pattern of a group of infants (twenty), selected randomly at the beginning of the study will be observed for 12 hours on two consecutive days once every three months. The number of times the infant is put to the breast and the duration of each feed will be recorded. This will be undertaken by the two health assistants.

Each child in the study will be given a growth card in which the weights will be plotted every month.

The two health assistants, helping in the study, will be trained by the principal investigator, in taking the measurements and filling in the information sheets, at the beginning of the study.

Basic primary health care will be given to the mothers and their children during the period of study. If necessary, they will be referred to a nearby hospital. Advice about nutrition and contraception will be offered, when asked for.

DATA ANALYSIS

The weights of all the infants will be plotted against the 50th percentile of the NCHS standard (31) to see the overall growth pattern of the infants (fig.I). The infants will be grouped according to the age of onset of weaning into early, mid and late weaning groups. These will be 0-3 months, 4-6 months, and after 7 months. The mean weights of these groups of infants will be then plotted against the 50th percentile of the NCHS standard to compare the difference in their growth (Fig.II). Appropriate statistical tests will be done to find out if there is any

significant difference in these 4 groups. The number and percentage of children weaned at different ages will be calculated and plotted as in fig.III. The number of children getting diarrhoea will be related to the time of introduction of supplementary foods to their diets.

The fat content of breast milk will be related to the time of lactation (Fig IV) and maternal nutritional status (Fig V).

The effect of incidences of illnesses, maternal breast milk fat content and time of introduction of weaning foods on growth of the infants will be derived from a multiple regression analysis. Other relevant statistical tests will be done where appropriate.

D. SIGNIFICANCE:

In Bangladesh supplementary foods are not introduced in an infant's diet at any particular time. In some it is started too early and in some it is too late. The effect of introduction of supplementary foods at different ages on the growth of infants, and the fat and micronutrient content of breast milk at different stages of lactation may help in a more realistic assessment of the adequacy of breast milk as the sole source of nutrition in the early months of life. This is critical in nutrition intervention programmes for infants in Bangladesh.

E. FACILITIES REQUIRED:

Data analysis facilities at the ICDDR,B.

F. COLLABORATIVE ARRANGEMENTS.

This will be a collaborative study of the Institute of Post Graduate Medicine and Research, Dhaka, ICDDR,B and the Institute of Child Health, London.

d. REFERENCES

1. Khan M. (1980). Infant feeding practices in rural Meheran, Comilla, Bangladesh. The American Journal of Clinical Nutrition. Nov. 33:2356-2364
2. Khuda B. and Chowdhury A A (1982). Breast feeding in rural Bangladesh. A study of a Comilla village. Working Paper No. 5, Bangladesh Institute of Development Studies, Dhaka
3. Brown KH, Black RE, Becker S, Nahar S, Sawyer J (1982). Consumption of foods and nutrients by weanlings in rural Bangladesh. The American Journal of Clinical Nutrition. 36:878-889.
4. Huffman SL, Chowdhury AKMA, Chakravarty J, Simpson NK (1980). Breast feeding patterns in rural Bangladesh. The American Journal of Clinical Nutrition. 33:144-54
5. World Health Organisation (1981). Report on the WHO collaborative study on breast feeding. WHO. Cologne. Geneva.
6. Jelliffe DB and Jelliffe EFP (1971). The uniqueness of human milk. Introduction. The American Journal of Clinical Nutrition. 24:968
7. Mata LJ and Wyatt RG (1971). The uniqueness of human milk: Host resistance of infection. The American Journal of Clinical Nutrition. 24:976
8. Habicht JP et al (1974). Height and weight standards for pre-school children. How relevant are ethnic differences in growth potential? Lancet. i:611-15

9. Khan MU and Curlin GT(1979). Growth and development of rural children, Meheran, Comilla.Bangladesh Medical Journal.7:74
10. Rowland MGM, Paul AA and Whitehead RG(1981). Lactation and infant nutrition.British Medical Bulletin.37:i:77-82
11. Ahn CH and MacClean WC Jr.(198).Growth of the exclusively breast-fed infants. The American Journal of Clinical Nutrition.33:183-192
12. Kawser CA and Talukder MQK (1983). Growth of the exclusively breast fed infants.FCPS dissertation. Bangladesh College of Physicians and Surgeons,Dhaka, Bangladesh. A paper also presented at an ICDDR,B seminar by one of the authors.
13. National Institute of Public Nutrition(1982).National nutrition survey.
14. Rowland MGM (1985). Infant feeding practices. In:Diarrhoea,Disease and Malnutrition:A Clinical Update.Gracey M ed. Churchill Livinstone.
15. Welbourn HF (1955). The danger period during weaning.Journal of Tropical Paediatrics.1:34-46
16. Brown KH(1978). Weaning foods in developing countries. The American Journal of Clinical Nutrition.31:2066-2072
17. Black RF, Brown KH, Becker S, Alim ARMA and Merson NH. Contamination of weaning foods and transmission of enterogenic E.coli diarrhoea in children in rural Bangladesh. Transactions of the Royal Society of Tropical Medicine and Hygiene.76:2:
18. Whitehead RG, Paul AA and Rowland MGM(1980).Nutrition in childhood. In:Wharton BA ed.Topics in Paediatrics. Pitman

Medical. Turnbridge Wells.

19. Lonnerdal B, Forsum F, and Hambreus I (1976). A longitudinal study of the protein, nitrogen and lactose contents of human milk from Swedish well nourished mothers. The American Journal of Clinical Nutrition.29:1127-33
20. Rowland MGM, Cole TJ, and Whitehead RG (1977). A quantitative study into the role of infection in determining nutritional status in Gambian village children. British Journal of Nutrition.37:441-450
21. Anon (1977). A Swedish code of ethics for marketing of infant foods. Acta paediatrica Scandinavica.66:129-131
22. Watkinson M (1981). Delayed onset of weaning diarrhoea associated with high breast milk intake. Transactions of the Royal Society of Hygiene and Tropical Medicine.75:432-435
23. Scrimshaw NS and Underwood BA (1980). Timely and appropriate complementary feeding of the breast-fed infant. An overview. Food and Nutrition Bulletin.2:19-22
24. Rowland MGM, Goh SGJ, Tulloch S, Dunn DT and Hayes RJ (1983). Growth and weaning in urban Gambian Infants. A paper presented at the sixth Nutricia Symposium, "Child health in the Tropics". Leuven, Belgium.
25. Jelliffe DB and Jelliffe EFP (198) . The volume and composition of human milk in poorly nourished communities-A Review. The American Journal of Clinical Nutrition.31:492-515
26. Islam A, Stoll BJ, Ljungstrom I, Biswas J, Nazrul H and Huldt G. (1983). Giardia lamblia infections in a cohort of

- Bangladeshi mothers and infants followed for one year. The Journal of Paediatrics,103:996-1000
27. Lucas A, Gibbs JAH, Lyster RLJ, and Baum JD(1978).
Crematocrit:Simple clinical technique for estimating fat concentration and energy value of human milk. British Medical Journal,1:1018-1020
28. Jelliffe DB and Jelliffe EFP (1978). Human milk in the modern world. Oxford University Press.
29. Deem HE (1931). Archives of Diseases of Children,6,53
30. Mendelson RA, Anderson GH and Bryan MH (1982). Zinc, iron copper and iron content of milk from mothers of preterm and full term infants. Early Human Development. 6,145-151
31. Hamill PVV, Drizd TA, Johnson CL, Reed RB, Roche AF and Moore WM (1979). Physical growth: National Centre for Health Statistics Percentiles. The American Journal of Clinical Nutrition 32:667-696.

e. ABSTRACT SUMMARY (For ethical committee)

1. This study will assess the effect of weaning, mothers' nutritional status and the breast milk fat and micronutrient content of mothers on the growth of infants. Growth will be monitored in infants from birth to one year of age. The mothers' breast milk fat and micronutrient content will be assessed also.
2. There is no risk involved.
3. Does not apply.
4. Subjects will be referred by number only.
5. Signed consent will be obtained from the authorised legal guardian or parent of each infant.
6. Fortnightly interviews with mothers of approximately 15 mins. duration.
7. Each of the infants will be given a growth card. Their growth will be monitored longitudinally over a period of one year. The mothers and their infants will receive health care throughout the study.
8. This project requires the use of birth records.

f. SECTION III: BUDGET

A DETAILED BUDGET

1. Personnel services

<u>Position</u>	<u>%effort</u>	<u>No. of</u>	<u>Annual</u> <u>days</u>	<u>Project</u> <u>salary</u>	<u>requirements</u> <u>Taka</u>	<u>Dollars</u>
Principal Investigator	100		1yr.	-	-	-
Co-Investigator	10		1yr.	122,617	12,261	12,261
Health Asstts (2)	100		1yr.	75,614	75,614	75,614
Secretary(GII)	10%		3months	46,440	1,161	1,161
sub-total					89,036	

2. Supplies and Materials

<u>Stationary:</u>	<u>Unit cost</u>	<u>Annual</u> <u>requirement</u>	
Paper	Tk. 0.50/sheet	2000	1000
Ballpoint pens	Tk. 9.00	40	360
Clipboards	20.00	20	400
Files(A4)	7.00	20	140
Stapler	180.00	1	180
			2080

3. EQUIPMENT

Salter Scales	2	2400
Harpender skinfold caliper	1	2800
Length boards	2	2400
Measuring tapes	2	480
Microhaematocrit tubes	1000	800
Microhaematocrit Reader	1	1600
Sealing material		280
Microhaematocrit centrifuge machine	1	10,000
TOTAL		20,760

4. PATIENT HOSPITALISATION		Not applicable	
5. OUT-PATIENT CARE			5,000
6. <u>TRANSPORT</u>			
Launch trip from Dhaka to Chandpur and back (once a week)	50		16,000
7. <u>TRAVEL AND TRANSPORTATION OF PERSONS</u>			
Rickshaw fare for health workers. (Taka 20/day)			7,300
			<hr/>
			28,300
8. Transpotation of things			
10. <u>PRINTING AND REPRODUCTION</u>		Unit cost	
paper printing, photocopying			2,000
11. <u>UTILITIES, RENT and COMMUNICATION</u>			
Room rent in Chandpur	1000/month		12,000
Computer costs			
L3 Coding assts.(2)	1 month	55,740	4,644
L4 Data entry asst(1)	15 days	23,225 (junior)	1,161
L6 Computer programmer	1 month	65,010	5,417
L5 Statistical Officer	1 month	46440	3,870
			<hr/>
			27,092

B. BUDGET SUMMARY

<u>CATEGORIES</u>	<u>PROJECT REQUIREMENTS</u>	
	Taka	Dollars
1. Personal services	89,036	
2. Supplies	2,080	
3. Equipment	20,760	
4. Transport	28,300	
5. Printing and reproduction	2,000	
6. Rent, Communication and Utilities	27,092	

	TOTAL	169,268

FIG. I The mean weights of infants at different ages

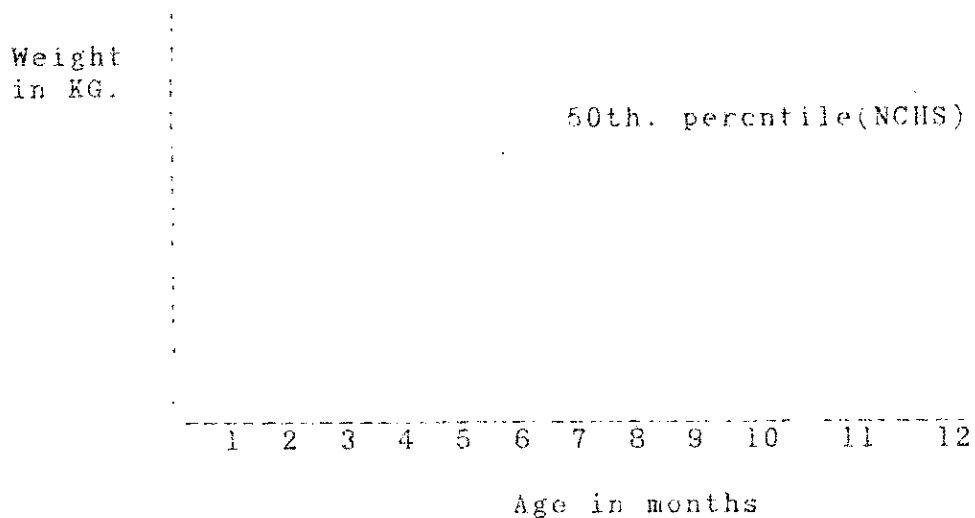


FIG. II. The mean weights of the infants grouped according to the age of onset of weaning.

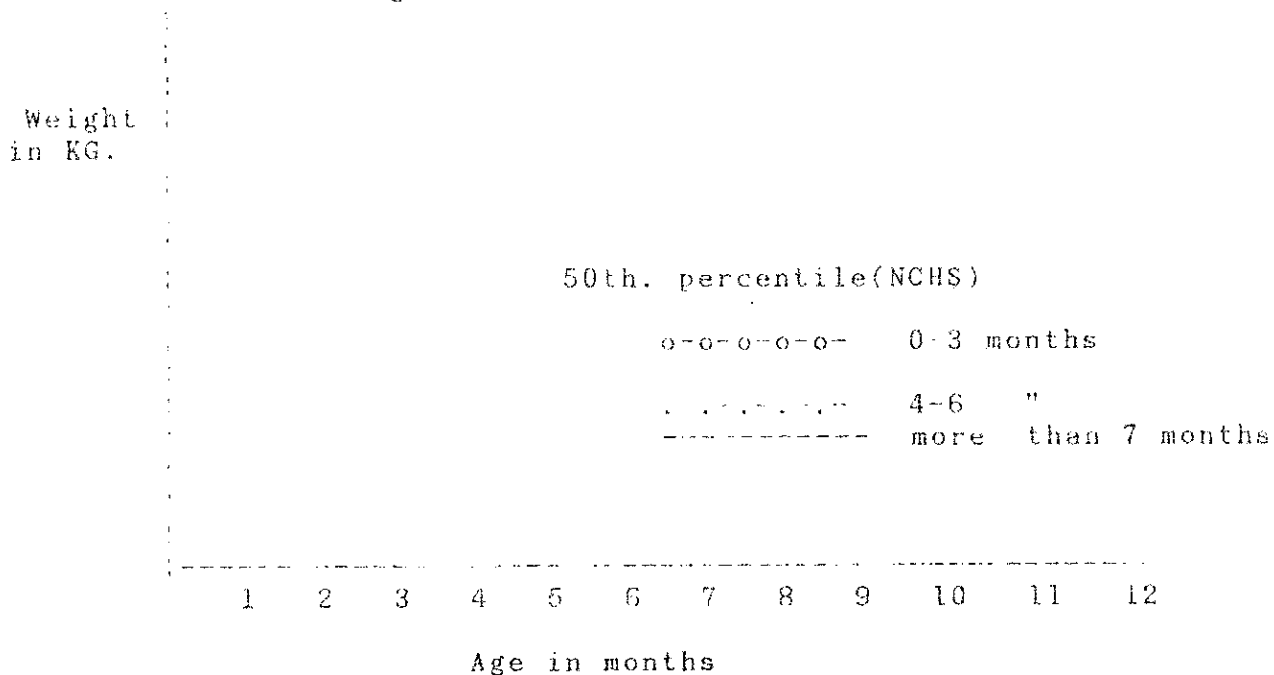


FIG III Introduction of weaning foods at the different ages



FIG IV. Percentage of mothers having different fat concentrations in their breast milk at different times of lactation

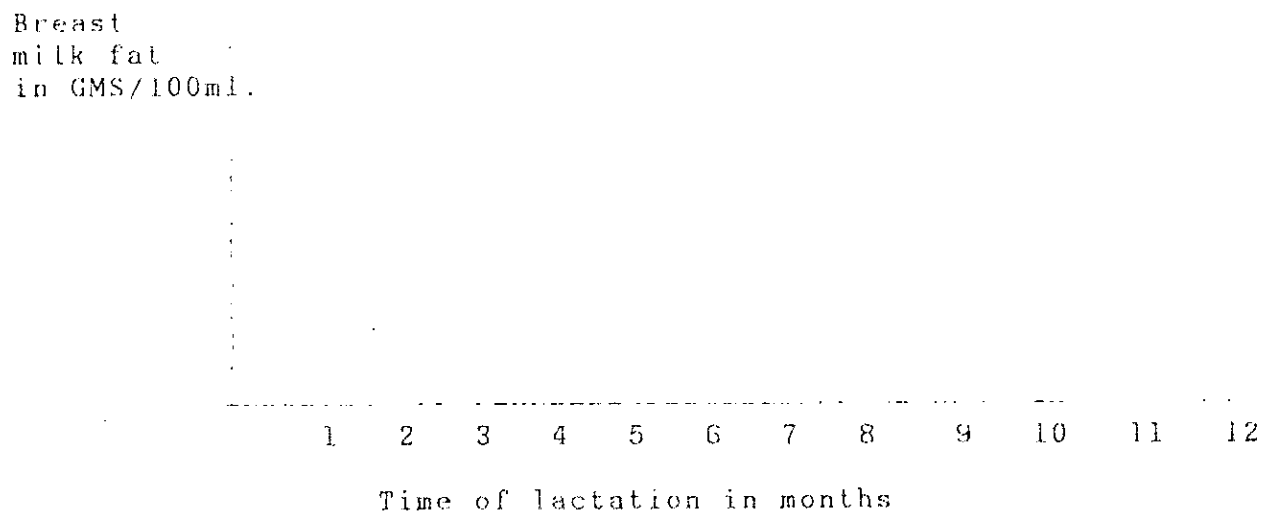
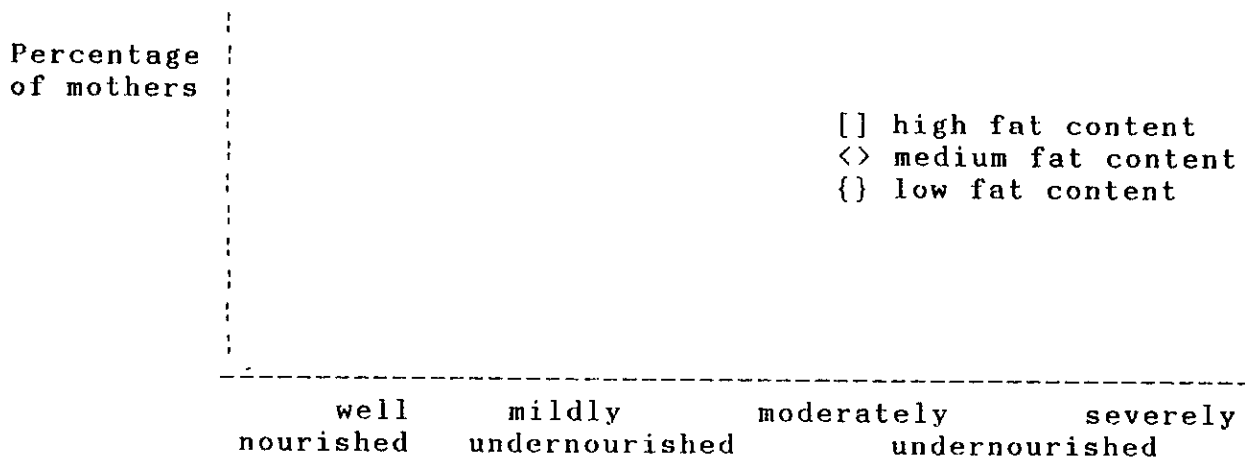


FIG V. Percentage of mothers having different fat concentration in their milk in relation to their nutritional status.



14. Housing

No. of sheds

Roof: Thatched/tin/ pucca

Type of floor: mud/pucca

Size of living area(in feet):

15. Drinking water

Tubewell	1
well	2
Pond	3
River	4

16. Washing water

Tubewell	1
Well	2
Pond	3
River	4

17. Toilet

Sanitary	1
Pit	2
Open	3

18. Number of people in the household:

19. Number of children born:

20. Number of children born:

21. CHILD SPACING

	1	2	3	4	5	6	7	8
AGE								
SEX								

M= Miscarriage, D= dead, A= alive
Mention cause of death where applicable

QUESTIONNAIRE FOR MOTHERS

22. When did you put this child to the breast ?

As soon as born	1
6-12 hrs. after birth	2
On the second day	3
On the third day	4
Later than the third day	5

23. What did you give prelacteally?

Nothing	1
Plain water	2
Honey	3
Other milk	4
Honey:sugar water	5
Honey and other milk	6
other	7

24. Did you take extra food during pregnancy?

Yes	1
No	2

25. Are you taking extra food now?

Yes	1
No	2

26. Upto what age do you intend to breast feed this child?
(in months)

27. Why do you want to stop?

Milk will be insufficient	1
I may be pregnant	2
I want to go to work	3
Our custom is to stop then	4
If child does not grow well	5
Others	6

28. How old was your last child when you stopped breast
feeding him/her?(in months)

29. Why did you stop?

Milk was not enough	1
Became pregnant	2
Went to work	3
Due to custom	4
Child was not growing well	5
Mother was not well	6
Others	7

30. How do you know whether your child is growing well or not?

31. At what age do you intend to start solid food in this child?
(In months)

OR

Mothers may mention milestones:

When child can turn/can sit up/ babbles/ crawls/ when teeth erupt
When child can stand/ when child can walk.

32. Why do you choose that time?

Breast milk will not be enough	1
Teeth would have erupted	2
I would like to go to work	3
It is our custom	4
Advice from mother, in-law/others	5
To save expenses of buying milk	6
Others	7

Nutritional study form

Breast feeding, weaning and infant growth in rural Bangladesh

Village: Bari: Family:

Name of head of household:

Name of the child:

Mother's name:

Father's name:

Sl No. of Vis it	Date of visit	MOTHER Weight MAC SFT	CHILD Length WT. MAC	ILLNESS Type dura
------------------------------	------------------	--------------------------	-------------------------	----------------------

ILLNESS

Type of duration TR.
diarrhoea

FEEDING HISTORY

BF Continuing weaning started
on

what was
given?

How much

How many
times?

Why was weaning
food started?

BREAST MILK COLLECTION

Sl NO.	Date of collection	NO. of sample	Result
--------	--------------------	---------------	--------

For coding

Types of illnesses

Measles = 1

Resp. infection

(cough & fever) = 2

Fever = 3

Skin disease = 4

Type of diarrhoea

watery = 1

Bloody mucoid = 2

Dehydration present = 3

WEANING

What was given?

Rice gruel=1
Flour gruel-2
Others-3

Why was it started?

Insufficient breast milk-1
illness of the mother-2
Mother is pregnant 3
On advice from mother-in-law/others =4
Custom 5
Dont know-6
Other-7