

Application No. 85-011
 Title of Study "Dynamics of Fecundity"

Trained Investigator (if any) _____
 Supporting Agency (if Non-ICDDR,B) _____
 Project status:
 New Study
 Continuation with change
 No change (do not fill out rest of form)

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

- Source of Population:
- (a) Ill subjects Yes No
 - (b) Non-ill subjects Yes No
 - (c) Minors or persons under guardianship Yes No
- Does the study involve:
- (a) Physical risks to the subjects Yes No
 - (b) Social Risks Yes No
 - (c) Psychological risks to subjects Yes No
 - (d) Discomfort to subjects Yes No
 - (e) Invasion of privacy Yes No
 - (f) Disclosure of information damaging to subject or others Yes No
- Does the study involve:
- (a) Use of records, (hospital, medical, death, birth or other) Yes No
 - (b) Use of fetal tissue or abortus Yes No
 - (c) Use of organs or body fluids Yes No
- Are subjects clearly informed about:
- (a) Nature and purposes of study Yes No
 - (b) Procedures to be followed including alternatives used Yes No
 - (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 a 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.

Alvin D. Bay
 Principal Investigator

85-011
1/4/85

PROTOCOL

- 1. Title : Dynamics of Fecundibility*
- 2. Principal Investigator : A.K.M. Alauddin Chowdhury
- Co-investigator : Tania Zaman
- 3. Starting Date : As soon as protocol is approved
- 4. Completion Date : May 31st, 1986
- 5. Total Direct Cost : US \$25,204
- 6. Asso. Director In-charge:

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

Signature of the Asso. Director for CSRWG: [Signature]

Date: 18.2.85

7. Abstract Summary:

This study aims at exploring and identifying the factors responsible for seasonal changes in fecundability in rural Bangladesh.

It is hypothesized that the mechanisms via which the conception rate (fecundability) during lean periods is reduced include excessive malnutrition, spouse absence and/or migration, and a economically stressful environment. This study is intended to provide some empirical data which will allow the testing of the above hypotheses independently.

8. Review:

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

* Fecundability here is defined as the probability for a married woman to conceive during a month in the absence of any contraceptive practice intended to limit procreation.

NOTE

Seasonal cycles for a demographic variable such as births have been found in many populations (1,2,3). Such cycles occur mostly in agriculture-dominated economies in which temperature and rainfall are the primary determinants of the structure of the agricultural year, which in turn, give rise to seasonal patterns of work, migration, marriages and weaning of infants -- any, and all, of which can influence the level of conceptions (4). Figure 1 summarizes the hypothesized relationship between seasonality and fecundability. It is apparent from the schema that fecundability (and fertility) is affected by both cultural patterns and biological processes. The mechanism of interaction between culture and biology is best understood by explicating the concept of seasonality.

Seasonality, in addition to its 'hot', 'cold', 'dry' and 'wet' aspects, implies the existence of a 'good' and a 'bad' (lean) season; both of which are characterized by distinct time periods and activities and determined by their effects on income, nutrition and health (please see appendix 1).

It is clear from previous studies that all demographic events in Matlab exhibit seasonal patterns -- conceptions, births, deaths, marriages and diseases (5,6,7). The causes of the patterns are difficult to pinpoint as the patterns seem to be inter-related. Especially so, with regard to the marked seasonal pattern of births, extensively documented but inadequately explained (8). It has been suggested that seasonal absences of husband may explain part of the pattern (9). It has also been suggested that because the postpartum resumption of menses in November (post-harvest time) puts the number of women at risk of conception higher in the early months of the year, this would also lead to seasonality of births (10). But findings from another Matlab study, controlling for husband's absence, indicates that seasonal changes in frequency of coitus through a year was not enough to explain the sharp declines in fecundability that occurred at certain times of that year (11). Figures 2 and 3 graphically depict the findings and suggest that during that period some other variables might have suppressed conceptions. We hypothesize that conceptions were suppressed at those times due to excessive malnutrition and an overall economically stressful environment.

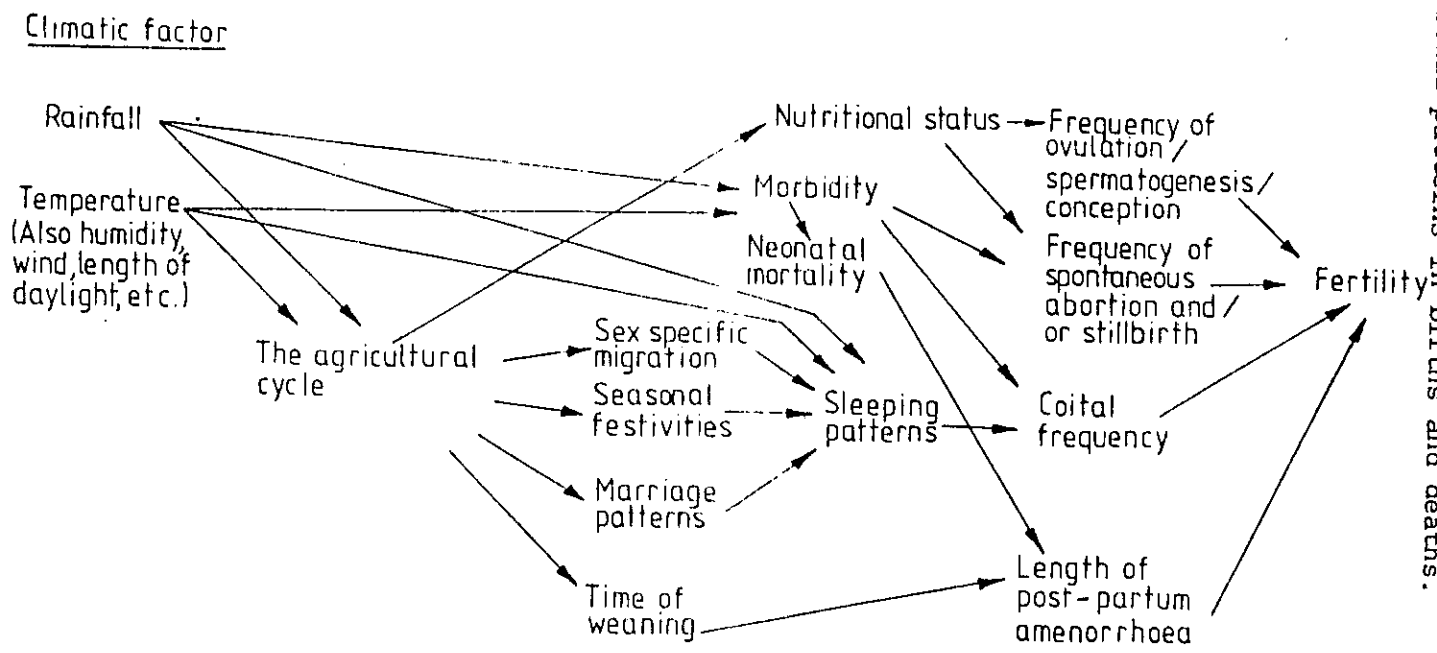


Figure 5-1 A simplified diagram of some of the main interrelationships likely to bring about a seasonal fluctuation in births.

Fig. 2: Fecundability and proportion having intercourse in last three days by calendar month

Conceptions per
1000 women-month

Proportion
of women

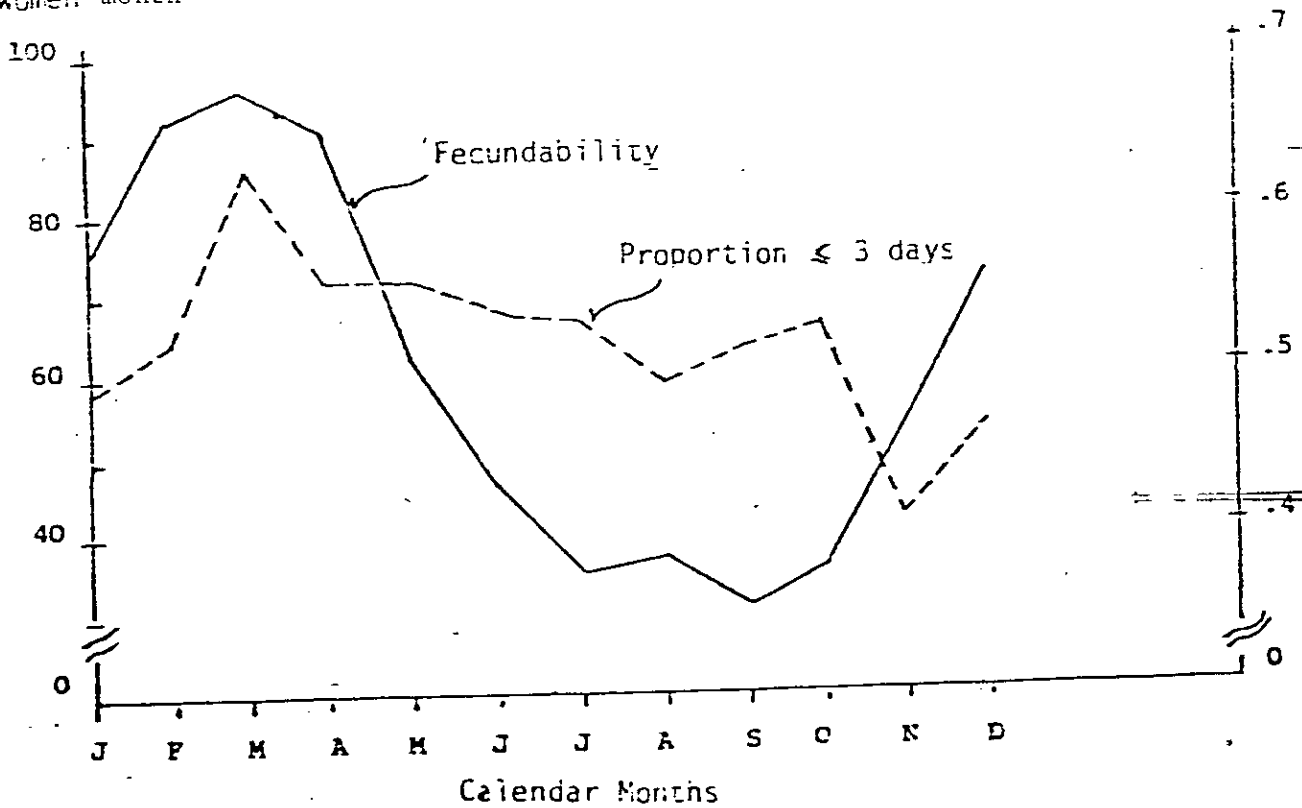
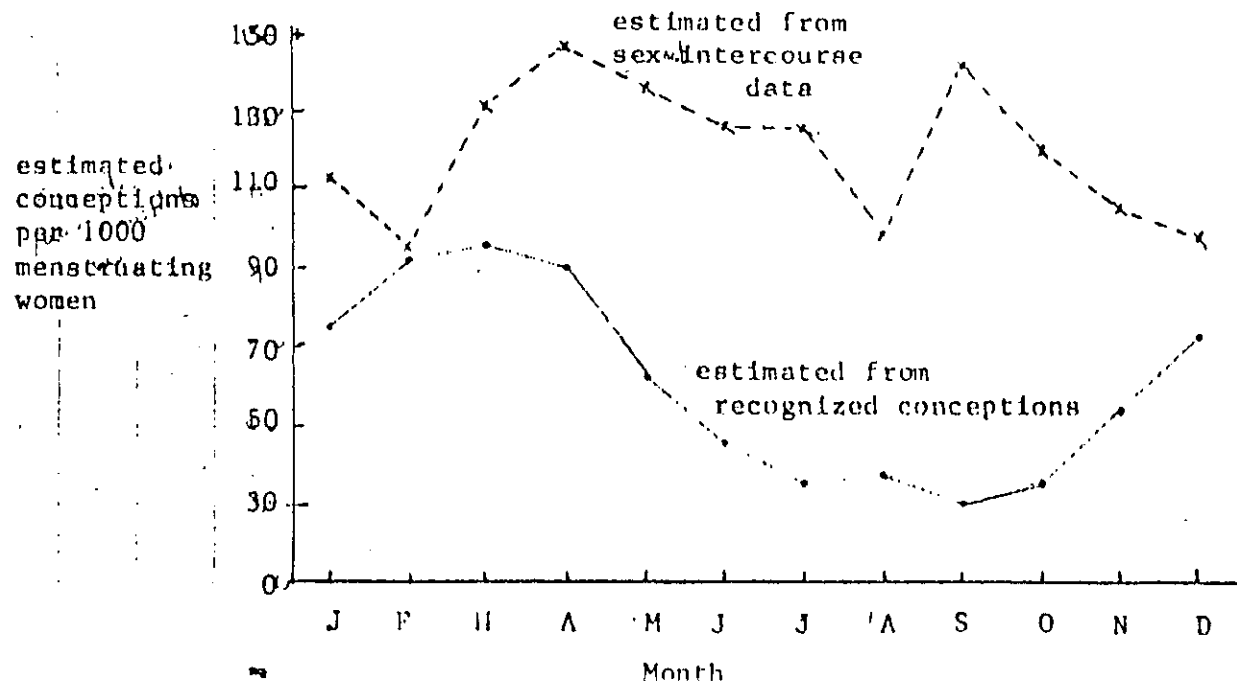


Figure 3: Fecundability estimated from recognized conceptions to menstruating women with husband present and from data on sexual intercourse, by month of the year:



to lower coital frequency. We do not know if excessive malnutrition and economic stress will have a similar effect. Neither do we know the effect of nutrition and economic stress on reproductive ability and the underlying feedback mechanisms. For a conceptual framework see figure 4.

A study testing for the above-mentioned factors will help to determine the relative contribution of nutrition towards seasonal changes in fecundability -- a highly desirable goal for two inter-related reasons:-

- (1) in light of the controversy that exists in the literature over the effect of nutrition on fertility.
- (2) the policy implications that follow from point (1).

Basically, the controversy is between those who say that malnutrition works to lower fecundity, and therefore, increased food intake by the malnourished will raise their fertility (12, 13, 14, 15); and those who say that reproductive capacity is impervious to nutrition and increased food intake will have no effect on fertility (16,17,18). The evidence for the former view comes from analyses of famines and from conclusive studies on nutrition affecting menarche (19,20,21). The evidence for the latter comes from studies on chronically-malnourished populations and on the components of the birth interval, demonstrating that nutritional status does not have a significant effect on the duration of postpartum amenorrhoea, frequency of fetal loss, stillbirth and on the menstrual interval (22,23, 24,25). In other words, they state, the net effect on fertility would be negligible. ~~Even~~ if fecundability is affected by nutritional status.

The controversy continues because of a lack of conclusive evidence for or against either side of the argument. While there can be no doubt that fecundity is indeed lowered during famines (defined as situations of prolonged and severe starvation), Menken et al would argue that the lowered fecundity results from behavioural changes such as decreased frequency of intercourse, due to stress (26). Although Menken et al are reluctant to attribute malnutrition to lowered fecundity, it seems plausible to postulate that a nutritional threshold exists below which many body systems, including the reproductive, shut down. The mechanism can be either decreased sperm or ovum production, fewer successful implantations, increased fetal loss or some combination of the above. Furthermore, the synergistic effect of an economically stressful environment

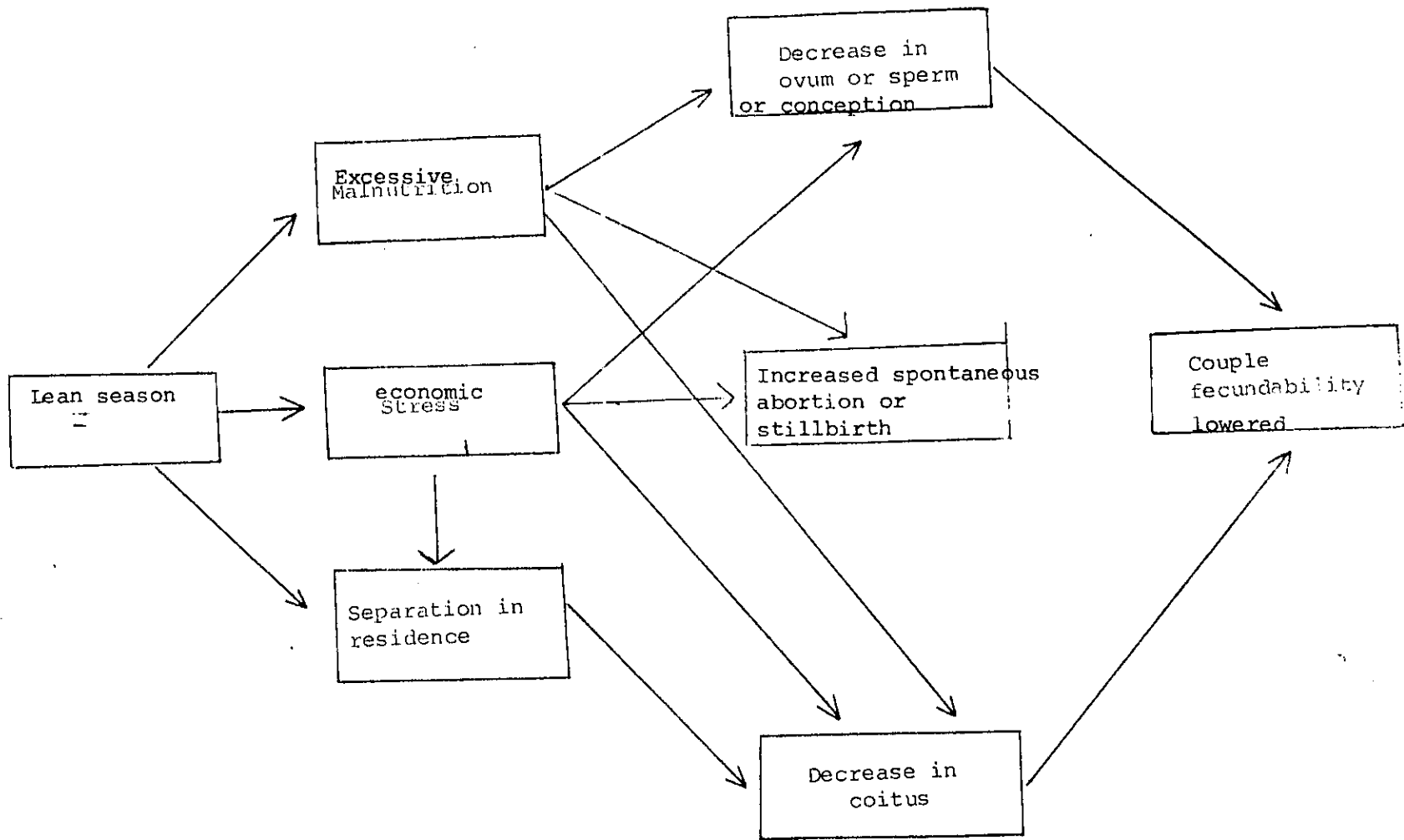


Figure 4: Analytic framework -epicting the relationship between lean season and fecundability.

... know that a threshold exists, but also the conditions under which such threshold can be crossed. Our hypothesis is that the synergistic effect of an economically-stressful environment combined with chronic-malnutrition may work to lower fecundity during any food scarce period.

To test the above hypotheses we propose a study of the fecundability of a chronically-malnourished population through a seasonal cycle, controlling for nutrition, frequency of coitus, husband's absence and/or migration and economic stress. A seasonal cycle will provide us with situations of both normal food availability and food scarcity. We know from the evidence available so far that periods of food scarcity (lean periods) emulate famine conditions for a certain proportion of the population. Our purpose would be to test whether fecundability is affected by nutrition or economic stress (Menken et al's 'behavioural change'), or a combination of the two. If it is a combination of both the factors, our aim would be to try and assess the relative contribution of each factor towards explaining the changes in fecundability. Finally, the possibility of other factors is not ruled out.

A related, and equally important, aim of our study concerns methodology-testing because of the kinds of data needed to test our hypotheses. We need to obtain data on the following four variables:- nutritional status, spouse separation, coital frequency and economic stress. While reliable data on nutritional status and spouse separation can be obtained with relative ease, obtaining data on a similar level for coital frequency and economic stress will pose a serious challenge. Both are culturally-sensitive topics and prone to response bias. While the latter can be observed and verified to a certain degree, the former cannot. Consequently, data on coital frequency necessitates a reliance on recall. Therefore, our aim is to obtain data on coital frequency using both structured questionnaires and anthropological techniques, concurrently. We will then check for consistency between the data-sets obtained via the two methods. This, we are confident, will enable us to obtain more precise information on coital frequency, an area singularly lacking in reliable data.

We are also going to utilize the same methods for data on economic stress. But in this case we will have the additional backings of the anthropometric test for nutritional status and the Health Opinion Survey (HOS) for stress. In this case also we will check for consistency

Among information obtained by the differing methods. In short, data at each level (for each of the methods) should back-up data at the other levels. Consistency of data-sets will be checked on a regular basis as soon as the monthly information from the field becomes available for analysis.

An useful by-product, rather than a specific aim, of the study will be the generation of a data-base on the following topics:-

1. Women's work, income and fecundity.
2. Causes, timings and effects of male out-migration.
3. The mechanisms and causes of rural poverty.
4. Informal rural-credit systems.

The population of Bangladesh is characterized by chronic-malnutrition and faces a continuous marginal deficit of food with intermittent natural calamities, such as floods and droughts, which destroy standing food crops. In addition to which the population also faces a seasonal scarcity of food (the lean period) just before the main (aman) harvest, which leads to a situation of acute or prolonged semi-starvation (see crop calendar in appendix 2). Such food scarce situations tend to affect certain socio-economic groups, such as the landless and near-landless, differentially, leading to famine-like conditions. Given these circumstances a study carried out in Bangladesh can provide data to relate the role of season-ability to changes in fecundability.

Chandpur, a two-year old extension project of ICDDR-B, modelled on and neighbouring Matlab, has been set up for the purpose of testing the rice-based ORS. A vital registration system for births and deaths already exists. Given Chandpur's facilities and Matlab's overstretched resources, we are inclined towards Chandpur as a more suitable field site. We recognize the bias introduced by choosing Chandpur (which may be atypical) but the choice is a trade-off given the rapport that already exists between the fieldworkers and local population; a rapport, much-needed, given the nature of the data we are seeking.

B, SPECIFIC AIMS

1. To test the hypothesis that the main factor leading to a lowering of fecundability during the lean season is a prolongation of the menstrual interval rather than changes in any other component of the birth interval.

2. To determine whether the observed prolongation of the menstrual interval is principally brought about by:-

- a. excessive malnutrition
- b. economic stress
- c. frequency of coitus
- d. separation of spouses
- e. a combination of the above.

C. METHODS AND PROCEDURES

Schedule

Since it is our intention to study the factors responsible for changes in fecundability during lean seasons, we have to control for the effects of good seasons. Therefore, we propose a 14 month long study which will enable us to cover one lean season and almost two good seasons. If we begin in the April of 1985, we can cover a good season till the end of May, and a lean season from June to November of the year. From November to May 1986 we can cover another good season

Data-collection

Data is to be collected on 1250 currently-married and menstruating women from 6 villages in the Chandpur project. After an initial interview of all the currently-married women of the project area, women falling into the above-mentioned category will be chosen and interviewed monthly till they conceive or till the end of the study period is reached (see interview forms in appendix 3 and 3a). Life-table analysis will be done to estimate fecundability.

Data -collection will focus on the following 4 items:-

1. Nutritional status: arm circumference measurements will be taken monthly as an indicator of nutritional status. It is an established method and needs little elaboration here.
2. Spouse absence and/or migration: refers specifically to the absence of the husband on either a temporary (weekly or seasonally) or semi-permanent (migration with periodic home visits) basis for the purpose of earning an income.
3. Frequency of coitus: two questions on the frequency of coitus will be asked (see appendix 3a). As the forms will be administered monthly, we want to aim for maximum accuracy. Therefore, both questions will focus on coitus withing recent memory.

Previous studies have shown that information on frequency of stressors is often unreliable (30, 31). We will attempt to test the reliability of such data using anthropological techniques.

4. Economic stress: as stress is a biological manifestation, the most definitive evidence of its presence is derived from blood tests for certain hormones. Such testing is beyond the scope of this study. However, stress has its social correlate as well which is manifested in behaviour, and can therefore, be observed or elicited and recorded (32).

In humans there is a great variety in the definition of what is, or is not, stressful. As a result it is only possible to measure the 'extent' of psychophysiological stress via devised tests (such as the HOS in appendix 4) but not possible to identify the reasons why an individual perceives herself to be under stress -- unless the reasons are obvious (such as famine, death in the family, loss of livelihood, etc.). Given our knowledge of the effects of seasonality, and evidence from elsewhere on the sub-continent (33), it is reasonable to assume that economic factors will constitute bulk of the stress faced by the population. It should be understood that 'economic stress' does not indicate a distinct type of stress but refers to a distinct category of stressors (or stress-inducers). (See appendix 3b). All questions on coping strategies will be pretested and modified as necessary.

Our choice of stressors is justified on the grounds of extreme poverty that characterized the majority of the population of Bangladesh. While food procurement is a primary objective, a secondary objective is to maintain or transcend the subsistence-level lifestyle. Rather, efforts are concentrated towards not falling below the level one is at. (See appendix 5). Having identified the stressors we are interested in the behavioural responses of the population to the stressors. We are labelling the behavioural responses as "coping strategies" -- social strategies of survival resorted to in order to overcome the demands of maintaining a lifestyle, in general, and food scarcity, in particular. Strategies may be carried out by both individuals and households. Some common strategies documented in Bangladesh have been:

- a. seeking outside employment when income from one's own farm is inadequate.
- b. resorting to outmigration.
- c. females seeking off-bari employment (34).

The above are general strategies of survival. Particular strategies may range from taking up hithertofore forbidden occupations, to eating socially unacceptable foods, to selling-off means of livelihood, to abandoning families, to activating dormant support systems, to strengthening kin ties, to begging for food. Strategies will of course vary among individuals and households,

Given their differential socio-economic status. The nature of the strategy resorted to (e.g. begging versus borrowing) will be taken as indicative of the level of economic stress.

Our study will collect current information on these coping strategies. Analysis of the data will involve grouping population on the basis of:-

1. coping strategies unnecessary
2. coping strategies successful
3. coping strategies unsuccessful.

Apart from the collection of monthly data using a structure questionnaire and anthropometric testing for nutritional status, the study will also include an anthropological investigation and the HOS stress test in any one of the 6 villages. Approximately 208 households are expected to be represented from each village (actual numbers will depend on the initial screening) and attempts will be made to cover all. In case of inability to do so, a sample will be chosen from the 208 or so households.

An anthropological study will have two primary uses:-

1. Because of its reliance on participant-observation, unstructured questioning and greater intimacy with interviewees, it can provide information on coping strategies in greater detail and with more reliability. Therefore, it can also help to identify other variables affecting fecundity which remain unknown at present and are unlikely to be elicited by structured questioning.
2. It can serve as an useful check on the macro (questionnaire) data; serving as a back-up, validating tool and a feedback mechanism.

4. SIGNIFICANCE

1. The long-running debate in the literature on the Nutrition-Fertility Link has reached an impasse as much of the data needed to substantiate hypotheses have been difficult to obtain. Some believe that chronic malnourishment has only a superficial effect on fecundity and their challengers say that starvation has a direct effect on current fecundity. The lowered fecundity, the latter say, results from a reduced capacity of the couples to reproduce and is not simply the result of changed behaviour. Our study is intended to provide data to substantiate or reject either side of the argument. In either case the policy implications will be of importance, especially for Bangladesh, which is heavily dependent on food aid. In recent years there has been a tendency on the part of the government to move away from food aid and towards more 'general' aid. Some believe that this is a mistake and that the government should continue to provide food aid.

2. Paucity of reliable data on coital frequency has made it impossible to assess its possible role in explaining the variations in the fertility levels of groups and sub-groups not using modern contraceptives. In this study we are not only attempting to obtain information on coital frequency but also testing for the reliability of such information using a combination of methods. Should such a methodology prove useful, it can be used elsewhere not only for data on coital frequency, but also for data on other equally culturally-sensitive areas (such as economic stress, also being tested by us).

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In summary, the tropical wet-dry scenario, as it applies to poor rural people in an agricultural economy, can be described as follows.

A dry season is followed by a wet season. Towards the end of the dry season, food becomes scarcer, draught animals weaker, and more energy and time are required to obtain water. Little work is available and wages are low. Some poor people migrate in search of work. When the rains come, cultivation makes high energy demands on weak draught animals and on people. During the rains and before the first harvest, many adverse factors interact. Food is scarce, food prices high, and household cash reserves of poor families low or non-existent. Hard work is involved in agricultural activities, some of which, like weeding, can be critical for crop production. The incidence and prevalence of monsoon-related diseases is high, including variously malaria, Dengue fever, guinea worm disease, diarrhoeas, skin infections and snake bite. Impaired immune response heightens vulnerability to these illnesses. Much sickness goes untreated but poor families may also incur their heaviest health expenditures of the year (Rao 1974). Food is of less variety, is less well prepared, and after cooking is more often left standing in moist, warm conditions in which contamination through bacterial and fungal overgrowth is rapid (Schofield 1974; Barrel and Rowland 1979). Huts leak and collapse from the rains and conditions are crowded as families move in together (Gulati 1981:29). Wet and sometimes cold are experienced. Body weights decline. Poor people are concurrently liable to sickness and to debt. They borrow on adverse terms, mortgage and or sell assets in order to obtain food and to be able to work. At this time of year, before the harvest, many rural people are most vulnerable to becoming poorer.

The hard work of harvest and of post-harvest processing comes as a climax. Especially for landless labourers, to be able to work at this time is critical because wages are high, but body reserves of energy are low. Mortality is high among older people (Becker 1981a:275). Food is abundant and food prices drop. Small farmers have to repay debts at this time, and also raise cash for the marriages and ceremonies which follow. This forces them to sell their crops when prices are at their ~~highest~~ lowest. But in the post-harvest dry season, body weights rise, and this is the healthiest and happiest time of year, and the time when conceptions are most common (Dyson and Crook 1981a and b). Then the cycle is repeated.

Women and children are especially badly affected by the adverse combinations of the wet season (Schofield 1974; Palmer 1981). Women who work in agriculture tend to terminate lactation with the onset of the rains, anticipating the hard work in the fields which is to come. Children thus become entirely dependent on a non-milk diet at precisely the time when it is least varied., least nutritious, least in quantity, and most likely to be contaminated. Where lactation continues, breast-milk output falls. The pressure of other demands on women's time and energy reduces the time devoted to housework and child care. Infants' ~~and~~ growth falters and weights even decline. Women are especially liable to be in late pregnancy at this time, reflecting a peak in conceptions in the healthy and well-fed period after harvest, and pregnant women in the last trimester of pregnancy can actually lose weight (Whitehead et al 1978). Births peak around harvest time, but birthweights are low and neonatal mortality rates high. During the post-harvest dry season, adults and children's weights recover.

To this scenario, several qualifications must immediately be made. While evidence can, to the best of my knowledge, be adduced for every statement, it is not likely

that all of them will apply in every environment.

The worst time of year varies for different socio-economic groups: for small farmers who provide their own labour it may be just before and at harvest; for landless labourers it may be then or at other times when there is no work.

The Seasonal cycle in Matlab Thana, comilla, Bangladesh.

APPENDIX 2

JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	
monsoons	monsoons	monsoons	monsoons	monsoons	monsoons	coolwinter	cool winter	cool winter	cool	hot dry	hot dry	hot dry
							Aman plowing	----->				
								Aman planting	----->			
								Aman growing	----->			
						Aman harvesting	----->					
						Aman post-harvesting	----->					
							Aus plowing	----->				
								Aus planting	----->			
								Aus weeding	----->			
										Aus harvestin		
										Aus post harve		
							Boro plowing	----->				
								Boro planting	----->			
								Boro weeding	----->			
									Boro harvesting	----->		
									Boro post harvesting	----->		
										fecundability fall		

Village _____ Bari _____

Husband's Name _____ Respondent's Name _____

ID Number _____

Age on October 1984
Estimated From /Census/ /MIG-In/ /Others/

Husband's Education
Husband's Occupation
Respondent's Education
Respondent's Occupation

IN
OUT

Total floor space
Cultivable land: Single crop
Double crop
Religion

Family structure
Number of Living Children (a) Male
(b) Female
Number of children born alive now dead
Number of children born dead
(a) miscarriage
(b) stillbirth

Total Pregnancies _____

Date of last pregnancy termination
Result /Live Birth/ /Stillbirth/ /I. Abortion/ /S.Abortion/

(For Never Pregnant Woman) Date of Marriage _____

Present Fecundity Status

1. Menses in last month 2. No menses in last month

If no, is it because of (a) Post-partum
or Lactational amenorrhoea (b) Pregnancy (c) irregularity
of menses (d) Other kinds of amenorrhoea (e) Menopause
(f) Others (not classified above) _____

Name of Field Worker _____

VILLAGE _____ BARI _____
 NAME _____ CENSUS NO. _____
 PERIOD COVERED, FROM _____ TO _____

Event during the period Covered	Other details if Yes	Code
1. Menstruation? No <input type="checkbox"/> DK <input type="checkbox"/> Yes <input type="checkbox"/>	_____ (Date, Days)	
2. Pregnant? No <input type="checkbox"/> DK <input type="checkbox"/> Yes <input type="checkbox"/>	_____ (Date, Days)	
3. Preg. Termi? No <input type="checkbox"/> DK <input type="checkbox"/> Yes <input type="checkbox"/>	_____ (LB,SB,MIS, Sex, Date)	
4. Breast feeding? No <input type="checkbox"/> Yes <input type="checkbox"/>	_____	
5. Supplementation? No <input type="checkbox"/> Yes <input type="checkbox"/>	_____ (Days, Date, Type of food)	
6. Husband away? No <input type="checkbox"/> Yes <input type="checkbox"/>	_____ (Days, Date)	
7. Practicing F.P.? No <input type="checkbox"/> NR <input type="checkbox"/> Yes <input type="checkbox"/>	_____ (Days, Date, Method)	
8. Illness? No <input type="checkbox"/> Yes <input type="checkbox"/>	_____ (Days, Symptoms)/No/Yes/NR/	
9. Break-through Bleeding? No <input type="checkbox"/> Yes <input type="checkbox"/>	_____ (Days, Date)	
10. Husband illness? No <input type="checkbox"/> Yes <input type="checkbox"/>	_____ (/No/Yes/NR/	
11. Child Death? No <input type="checkbox"/> Yes <input type="checkbox"/>	_____ (Sex, Date, Age)	
12. Absent herself? No <input type="checkbox"/> Yes <input type="checkbox"/>	_____ (With or without husband, Date)	
13. Changed M. status? No <input type="checkbox"/> Yes <input type="checkbox"/>	_____ (Kind, Date)	
14. Arm Circumference _____	Date _____	
15. Did you have coitus within the last 3 days? <u>If no,</u>	_____	
16. How many days ago did you last have coitus?	_____	
Name of the worker _____	Date _____	

QUESTIONNAIRE ON COPING STRATEGIES
IN THE FAMINE ENVIRONMENT

1. Do you work more now than you used to do in last month? NA No Yes Types of work/hours
2. a) Did any member of your family leave the house during last one month? NA No Yes who/why
- b) Did they leave permanently? NA No Yes
3. Did you stop buying necessities other than food during last month? NA No Yes Reason for not buying
4. Did any of your family stop going to school? NA No Yes why
5. Did you postpone your daughter's marriage?
(ask this question if the family have 15 + yrs unmarried daughter) NA No Yes why
6. Did you sell any possessions last month? NA No Yes Name of things/reason
7. Did you borrow food items from neighbourer/relatives during last month? NA No Yes type
8. Did you ask food from neighbours? NA No Yes reason/from whom
9. Did you take less food now than last month? NA No Yes kind
10. Did you change food behaviour from rice or wheat to alu, kawn, arams, etc last month? NA No Yes type of food
11. How many meals ^{did} you take yesterday? NA No Yes number of meal
12. Was there any member of your family ^{who} did not take food during 1 or 2 days? NA No Yes number of days

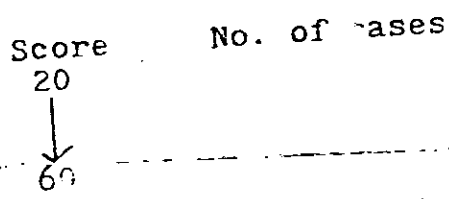
13. Was any one sick due to starvation last month? NA No Yes type of sickness
14. Did any one die last month? NA No Yes relation/why/date
15. Was there any break-up or crisis in the family last month? NA No Yes type/relation
16. Did you ^{receive} any remittance from outside last month? NA No Yes kind/amount/relation
17. Did you borrow any money from friends or neighbours or relatives in the last month? NA No Yes From whom? amount?
18. Have you taken any sort of employment outside of your own bari ~~anytime~~ ⁱⁿ the last one month? NA No Yes Where? in another bari? or off-bari?

THE HEALTH OPINION SURVEY

1. Do you have any physical or health problems at the present?
3. Yes ___ 1. No ___
2. Do your hands tremble enough to bother you?
3. Often ___ 2. Sometimes ___ 1. Never ___
3. Are you troubled by your hands or feet sweating so that they feel damp and clammy?
3. Often ___ 2. Sometimes ___ 1. Never ___
4. Are you bothered by your heart beating hard?
3. Often ___ 2. Sometimes ___ 1. Never ___
5. Do you tend to feel tired in the morning?
3. Often ___ 2. Sometimes ___ 1. Never ___
6. Do you have any trouble getting to sleep or staying asleep?
3. Often ___ 2. Sometimes ___ 1. Never ___
7. How often are you bothered by having an upset stomach?
3. Often ___ 2. Sometimes ___ 1. Never ___
8. Are you bothered by nightmares (dreams that frighten or upset you)?
3. Often ___ 2. Sometimes ___ 1. Never ___
9. Are you troubled by "cold sweats"?
3. Often ___ 2. Sometimes ___ 1. Never ___
10. Do you feel that you are bothered by all sorts (different kinds) of ailments in different parts of your body?
3. Often ___ 2. Sometimes ___ 1. Never ___
11. Do you smoke?
3. Often ___ 2. Sometimes ___ 1. Never ___
12. Do you have loss of appetite?
3. Often ___ 2. Sometimes ___ 1. Never ___
13. ~~Does ill-health affect the amount of work (or housework) that you do?~~
3. Often ___ 2. Sometimes ___ 1. Never ___
14. Do you feel weak all over?
3. Often ___ 2. Sometimes ___ 1. Never ___
15. Do you have spells of dizziness?
3. Often ___ 2. Sometimes ___ 1. Never ___
16. Do you tend to lose weight when you worry?
3. Often ___ 2. Sometimes ___ 1. Never ___

17. Are you bothered by shortness of breath when you are exerting yourself?
 3. Often ___ 2. Sometimes ___ 1. Never ___
18. Do you feel healthy enough to carry out the things that you would like to do?
 1. Often ___ 2. Sometimes ___ 3. Never ___
19. Do you feel in good spirits?
 1. Often ___ 2. Sometimes ___ 3. Never ___
20. Do you sometimes wonder if anything is worthwhile any more?
 3. Often ___ 2. Sometimes ___ 3. Never ___

When all the tests have been administered, the scores may be grouped thus:



Scores of 20 to 29 are considered within the normal limits; 30 to 34 show a borderline stress level; 35+ is considered "too much stress". One should not, however, take these as absolute limits. A person with a score of 35 is not significantly more disturbed than someone with a 34, nor is a person with a high score necessarily "sick".

However, what emerges from this distribution of scores is a preliminary picture of what is associated with stress in the community under study. We can now identify those people showing different levels of stress and study their characteristics. It is at this point that we can begin to analyze the results and try to explain the distribution. The researcher can thus select any social factors that she suspects might be implicated in the creation of stress in this group, on the basis of her knowledge of the community. If the group is heterogeneous with regard to religion, occupation, educational level, and so forth, each of these categories can be tested against the level of stress. For example, we may expect to find that there would be an association between women's occupation and their stress level — women who work outside the 'bari' may be expected to have a higher stress level than women who work within the 'bari'. A simple χ^2 (chi-square) test may be useful in determining the significance of these correlations.

		STRESS		
		High (35+)	Medium (30-34)	Low (20-29)
Women's occupation	within bari			
	outside bari			
	combined (within & outside)			

It is likely that in any one community only a few factors will show a statistically significant correlation with the level of stress. On the basis of one's field experience in this community, one should be able to suggest reasons why this (these) factor(s) seem to be so important in this particular setting.

The Health Opinion Survey (HOS) can be used in other ways to refine hypotheses (such as relation between spouse separation and stress). For example, questions 2, 3, 4, 8, 9, and 17 can be scored separately to get a measure of feelings of ANXIETY, while numbers 5, 13, 16, 18, 19, and 20 measure feelings of DEPRESSION. Anxiety and depression are, of course, two common components of the overall stress syndrome. These subscores can be tallied separately and correlated independently with the social variables one has chosen in order to determine whether a particular type of symptom is more highly correlated with certain social factors than with others. One should explain the sociocultural reasons for whatever correlations seem to make good sense, whether or not they are statistically significant.

Reference:

Crane, J.G. and M.V. Angrosine. Field projects in anthropology. General Learning Press, New Jersey. 1974.

APPENDIX-5.

From Amartya Sen's Poverty and Famines: An Essay on Entitlement and Deprivation.
Clarendon Press, Oxford. 1981. Page 150-51.

Bangladesh remains a traditional rural economy in many significant respects. Nearly three-quarters of its population live on agriculture and about 90% per cent live in rural areas. Yet the economic organization is not one of market-independent peasant agriculture. About a quarter of the rural population survive by exchanging labour at market wages and commanding food with what they earn. For them a variation of the exchange relationships can spell ruin. There is, in fact, some evidence that in recent years in Bangladesh the wage system itself has moved more towards money wages, away from payments in kind -- chiefly food. More modern, perhaps; more vulnerable, certainly.

The process of sale of land by small peasants cuts down not only the peasant's normal income, but also the stability of his earnings -- making him more vulnerable to exchange rate shifts. [I]t also increase[s] the ease with which members of the class c[an] sink into starvation even in a year of relative plenty as a result of shifts of rice-entitlement of labour power.

Other occupation groups also depend on being able to command food by exchanging things that they reproduce and sell.

A. DETAILED BUDGET

1. Personnel Services

<u>Name</u>	<u>% effort</u>	<u>Annual salary & fringe benefits</u> US \$50,000	<u>Project requirement in US \$</u> 10,000
A.K.M. Alauddin Chowdhury	20	-	-
Tania Zaman	80	-	-
Medical Officer	5	5,165	260
Statistical Officer	10	3,659	366
6 Female Field Workers	25	13,670	3,418
2 Coding Assistants	100	2,278	4,556
Computer Programmer	20	5,165	1,035
1 Data Entry Technician	50	2,739	1,369
			<u>\$21,004</u>

1,200*

2. Supplies and Materials

3. Equipment - None

4. Patient Hospitalization - None

5. Out-patient Care - None

6. ICDDR,B Transport - None

7. Travel & Transportation of Persons

Travel to Chandpur via Matlab, 26 trips

1,000*

8. Transportation of Things - None

9. Rent, Communication & Utilities - None

10. Information Services - None

11. Printing and Reproduction

1,040*

12. Other Contractual Services

Computer time

960

13. Construction, Renovation, Alterations - None

* Incremental cost

B. SUMMARY BUDGET

	<u>Project Requirement in US dollar</u>
1. Personnel Services	21,004
2. Supplies and Materials	1,200
3. Equipment	-
4. Patient Hospitalization	-
5. Outpatient Care	-
6. ICDDR,B Transport	-
7. Travel and Transportation of Persons	1,000
8. Transportation of Things	-
9. Rent, Communications & Utilities	-
10. Information Services	-
11. Printing & Reproduction	1,040
12. Other Contractual Services	960
13. Construction, Renovation, Alterations	-
TOTAL	<u>US \$25,204</u>

Procedure to Maintain Confidentiality

All the respondents will be identified by numeric codes which will ~~be used at all except during home visits when personal names will be used~~ for convenience of conversation and interview. The supervisor and investigators of the protocol will carefully handle the completed questionnaires. All the workers who will be involved with the data will be trained, made responsible and made aware of the confidentiality of information.

সম্মতি

আমি জানি সাবিনা ভূমি, আল্লাহর ইচ্ছায়
 জেদ্দায় ফেরে হাজরাতের দর আহিল/ পূর্ব হাজরাতের
 ও হুজুর আমলকরু স্বকীয় পরিচয় দায় হাজরাতের
 করিতছেন। আমি আবেদন জানি সাবিনা ভূমি হুজুর
 পরিচয় প্রকল্পের উত্তর দেওয়া বা না দেওয়ার
 পূর্ব আবেদন আমার করিয়াছে।

আমি যে আমলকরু উক্ত প্রদান করিত হাজরাত
 অফসুর্ন হাজরাতের দ্বারা হুজুরে বনিয়া ও আমলকরু
 আমলকরু দেওয়া হুজুরে। আমি সব কিছু জানিয়া
 এই ক্ষমতা সম্মতি প্রদান করিতাম।

দক্ষিণ/বক শাহর ইকরুলিলিহ টিমসাহি

জাফর