tachment 1.

REVIEW BOARD ON THE USE OF HUMAN VOLUNTEERS
CRL

Principal Investigator Stan Barker Trainee investigator(if any) _____

Application No 79-005 Supporting Agency(if Non-CRL) _____

Title of study Earth Island Drama Project status:
( ) New Study
( ) Continuation with change
( ) No change (do not fill out rest of form)

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

1. Source of Population:
   a) Ill subjects Yes No
   b) Non-ill subjects (Yes) No
   c) Minors or persons under guardianship Yes No
2. Does the study involve:
   a) Physical risks to the subjects Yes (No)
   b) Social risks Yes No
   c) Psychological risks to subjects Yes No
   d) Discomfort to subjects Yes No
   e) Invasion of Privacy Yes No
   f) Disclosure of information possibly damaging to subject or others Yes No
3. Does the study involve:
   a) Use of records (hospital, medical, death, birth or other) Yes No
   b) Use of fetal tissue or abortus Yes No
   c) Use of organs or body fluids Yes No
4. Are subjects clearly informed about:
   a) Nature and purposes of study Yes No
   b) Procedures to be followed including alternatives used Yes No
   c) Physical risks Yes No
   d) Sensitive questions Yes No
   e) Benefits to be derived Yes No
   f) Right to refuse to participate or to withdraw from study Yes No
   g) Confidential handling of data Yes No
5. Will signed consent form be required:
   a) From subjects Yes (No) already
   b) From parent or guardian (if subjects are minors) Yes No
6. Will precautions be taken to protect anonymity of subjects: (Yes) No
7. Check documents being submitted herewith to Committee:
   ___ Umbrella proposal - Initially submit an overview(all other requirements will be submitted with individual studies).
   ___ Protocol (Required)
   ___ Abstract summary (Required)
   ___ Statement given or read to subjects on nature of study, risks, types of questions to be asked, and right to refuse to participate or withdraw (REQUIRED)
   ___ Informed consent form for subjects
   ___ Informed consent form for parent or guardian
   ___ Procedure for maintaining confidentiality
   ___ Questionnaire or interview schedule *

* If the final instrument is not completed prior to review, the following information should be included in the abstract summary:

1. A description of the areas to be covered in the questionnaire or interview which could be considered either sensitive or which would constitute an invasion of privacy.
2. Examples of the type of specific questions to be asked in the sensitive areas.
3. An indication as to when the questionnaire will be presented to the Board for review.

We 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 change.

Principal Investigator Trainee

Please return 2 copies of entire protocol to Chairman, Review Board on Use of Human Subjects.

recd 15/5/79

SECTION I - RESEARCH PROTOCOL

Title: Birth Interval Dynamics

Principal Investigator: Stan Becker

Starting Date: November 1978

Completion Date: December 1979

Total Direct Cost: US Dollars 38,433

Abstract Summary:

This protocol involves modification and extension of field work currently in progress under one part of protocol 73-08-04 (involving approximately 2000 women in 14 villages in Matlab) and includes detailed plans of data analysis. A major goal is to determine seasonal patterns of the subintervals of the birth intervals and how they fit together to produce the seasonal pattern of births. In addition the effect of the famine of 1974-75 on these subinterval patterns will be studied. Computer models will be utilized. A question on frequency of intercourse will be introduced. Selected simple medical services will be provided by the field workers.

Reviews: (leave blank)

a) Research Involving Human Subjects: _____

b) Research Committee: _____

c) Director: _____

d) BMRC: _____

e) Controller/Administrator: _____

RELATIONSHIP TO PROTOCOL 73-08-04

The determinants of natural fertility study is composed of three parts; 1) birth interval dynamics (BID); 2) determinants of post-partum amenorrhea; 3) onset of menarche. Parts 2) and 3) were under the direction of Sandra Huddman, the field work is completed and research results are now appearing. Field work for the BID section (under A. Chowdhury) is continuing. This protocol involves: 1) an extension of the present field work and addition of one question; 2) provision of some reproductive education and simple medical services for the women; 3) an elaboration of additional analyses and models of the seasonal patterns of the sub intervals.

SECTION II - RESEARCH PLAN

INTRODUCTION

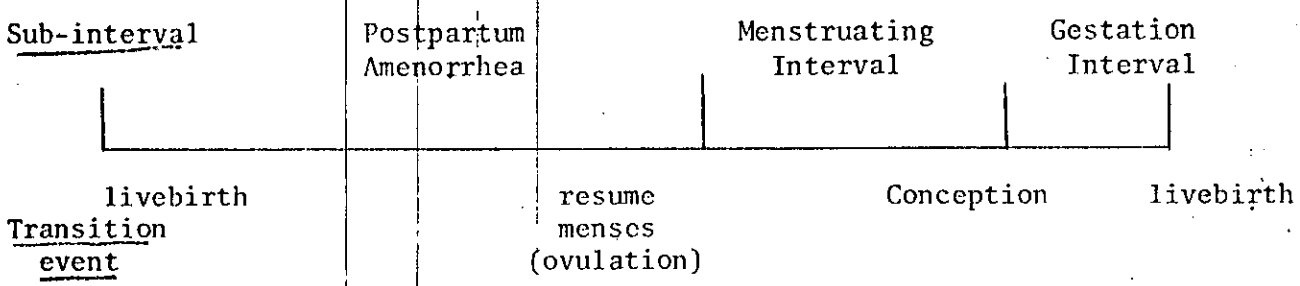
1. Objectives:

The objectives of this study are: 1) to document the usual patterns of the subintervals of the birth interval, specifically focusing on seasonal patterns; 2) to study the responses of the subinterval components to the 1974-75 famine and their recovery to a normal seasonal pattern afterwards; 3) to determine (as best possible with the data available), the reasons for the seasonal patterns; 4) to educate a subsample of the women in the study with respect to the timing of ovulation in the menstrual cycle; provide a simple calendar for the rhythm method to those desiring it, and evaluate the effect (on fertility) of the latter.

2. Background:

The distribution of births by month is known to exhibit a seasonal pattern in most, if not all populations (9, 8, 14). Birth rates and fertility rates reflect the same patterns. In Bangladesh the seasonal variability of the fertility rate is very pronounced with a peak in November and trough in July (17, 3, 6). Figure 1 shows monthly numbers of births for Matlab, from January 1971 to December 1977. Because the seasonal patterns persist in all parity and age groups of women (17) the seasonal pattern of marriage does not provide an explanation. The search for explanations leads to examination of the live birth interval and its components: the postpartum amenorrhea interval, the menstruating interval (or conception-wait interval) and the gestation interval as depicted in the figure below. It has been found useful to consider this

process in its simplest abstraction as a probability model containing three states (or sub-intervals) and risks (birth, resumption of menstruation postpartum, and conception) associated with transitions between these states (4, 10, 16). Since the



length of livebirth gestation is virtually constant, seasonal patterns in the risks of conception and/or resumption of menstruation or in the numbers of women in the post-partum amenorrhea or menstruating states must exist. Chen et al. ((5) in a study of 200 women in Matlab, found a seasonal pattern of the monthly conception rate. The pattern persisted after correcting for the numbers of days that husbands were absent in given months. In addition, the numbers of women resuming menstruation and the risk of resumption of menses postpartum have been shown to have a seasonal pattern with a peak in November (11). Finally, the conception and resumption of menstruation patterns are known to interact in at least one way: those who resume menstruation during the peak months also have, on average, a shorter menstruating interval (5).

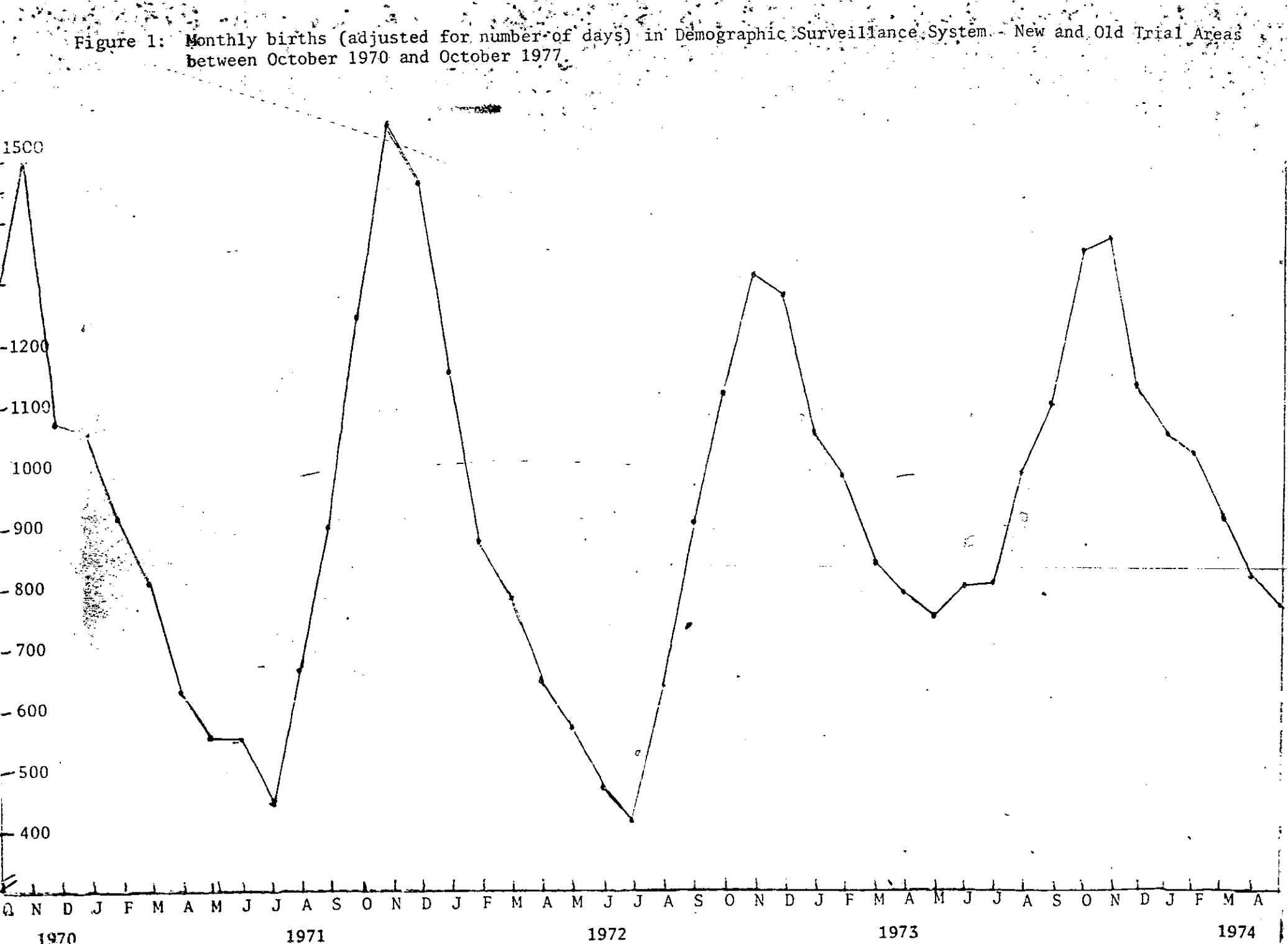
But it is necessary to reconcile these findings with the knowledge of patterns of whole birth intervals. For example, the mean of the previous birth interval of women giving birth in any

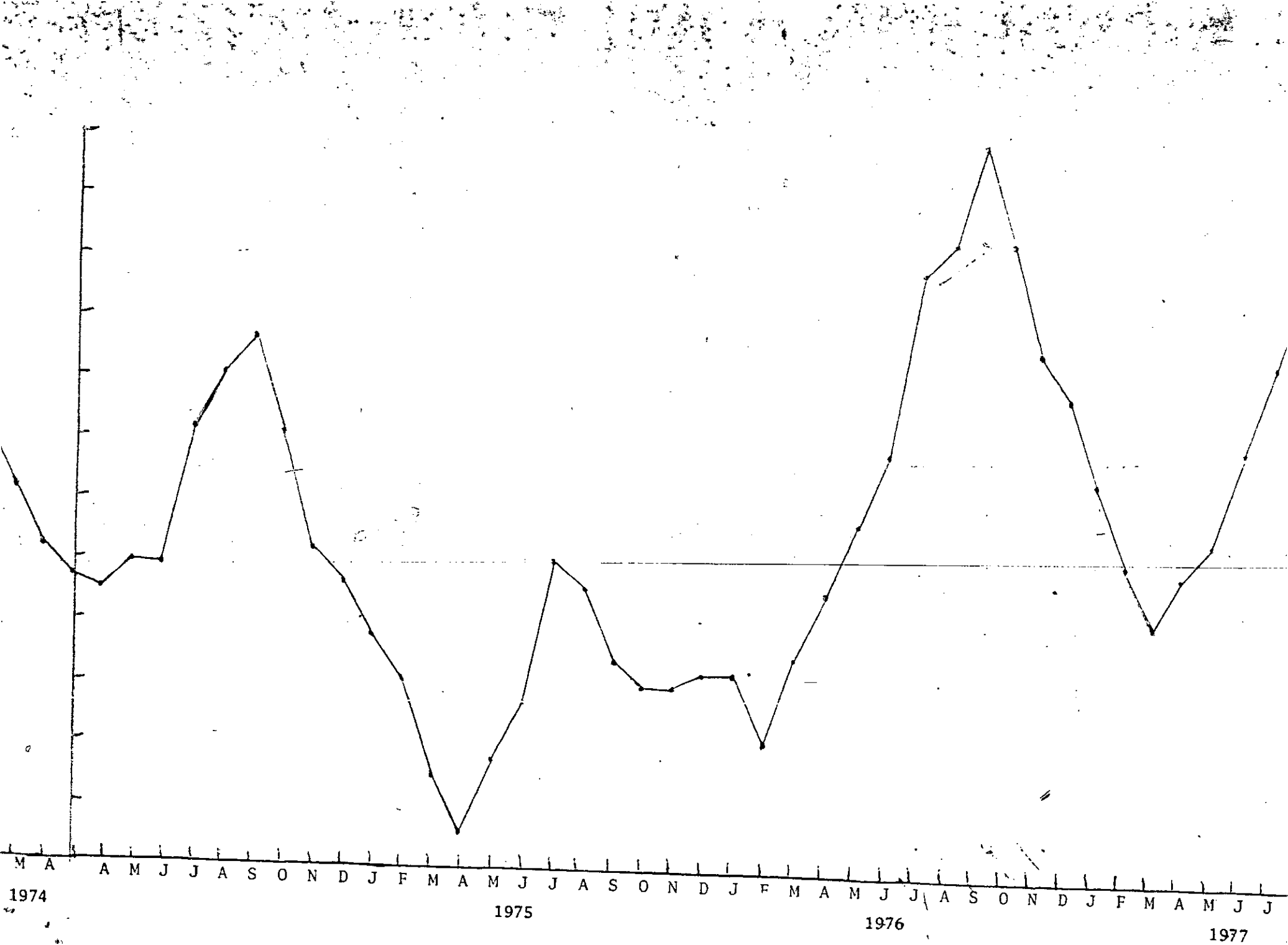
given month does not have a seasonal pattern (3). It has a value of approximately 33 months (1, 5). Tabulation of the length of births intervals and month of termination, for intervals starting in a given month has yet to be done.

Given the pronounced seasonal rhythm of births, there are several possibilities from the perspective of an individual woman. On one dimension there is the month of her present birth. On another dimension is the interval length to her next birth. Suppose her birth occurs during the peak months (September-January). Then there will be a certain tendency (probability) to also have the next birth in the peak months, i.e. with an interval in the vicinity of 24, 36 or 48 months. There will be a complementary probability corresponding to the tendency to have the next birth in the "off months" (February-August). Similarly for a woman with a birth in the "off months", there will be a probability of getting back in step with the next birth in the peak months and a probability of having the next birth also in the off months. These patterns interact with the distribution of birth interval lengths, and are caused, of course, by the combination of the several sub-interval patterns. The details of how the sub-interval patterns fit together are not known.

Figures 2 and 3 give some further insight. In these figures the distribution of birth interval lengths are plotted for births ending during two month intervals between May 1970 and April 1971. The distribution is thus plotted backwards in time starting 13 months prior to the birth and extending back 48 months (e.g. the first point for the curve of births of March-April (MA) 1970 is in February-March (FM) 1969, 13 months earlier). The tendency for women to consistently

Figure 1: Monthly births (adjusted for number of days) in Demographic Surveillance System - New and Old Trial Areas between October 1970 and October 1977.

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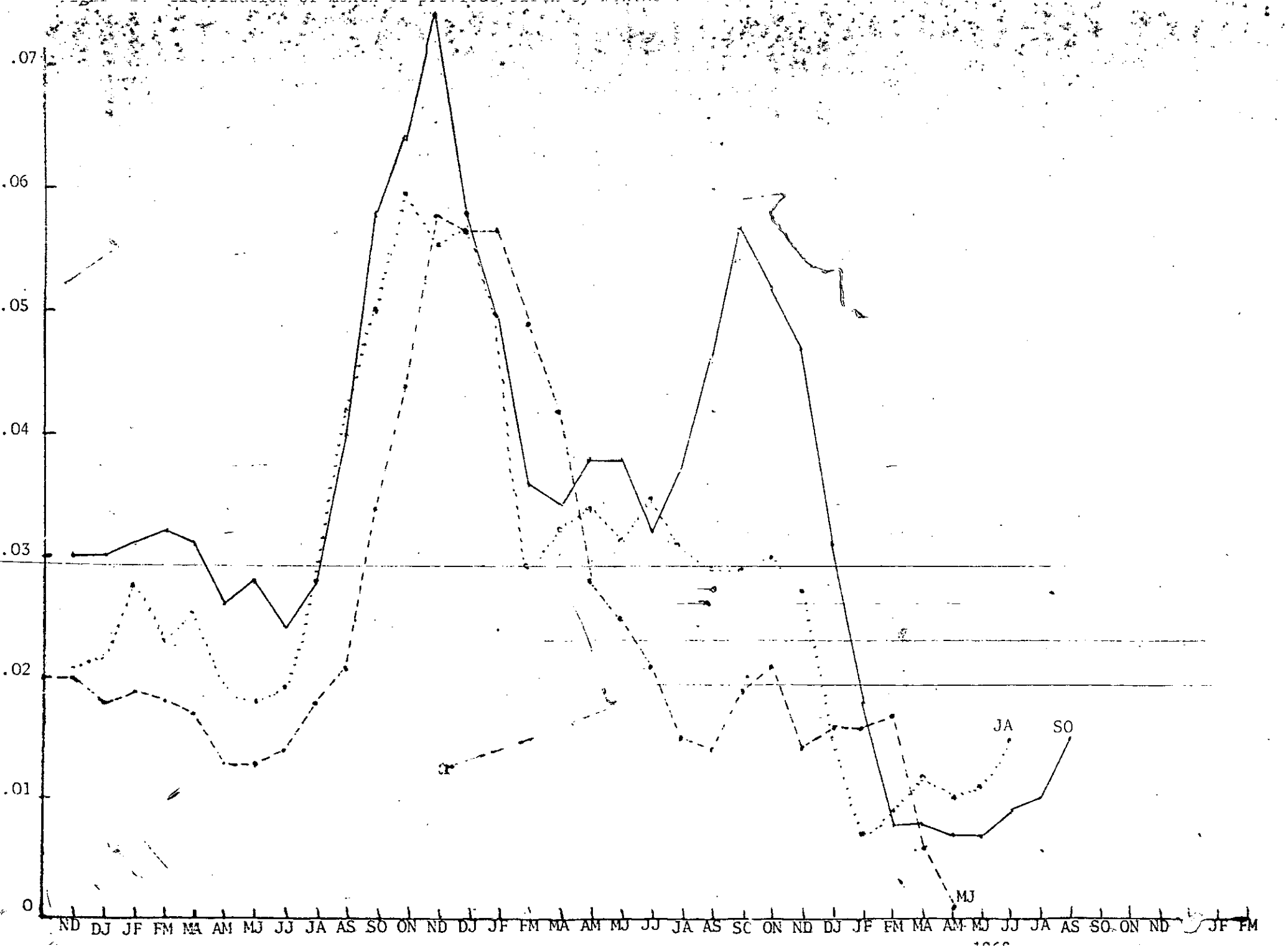
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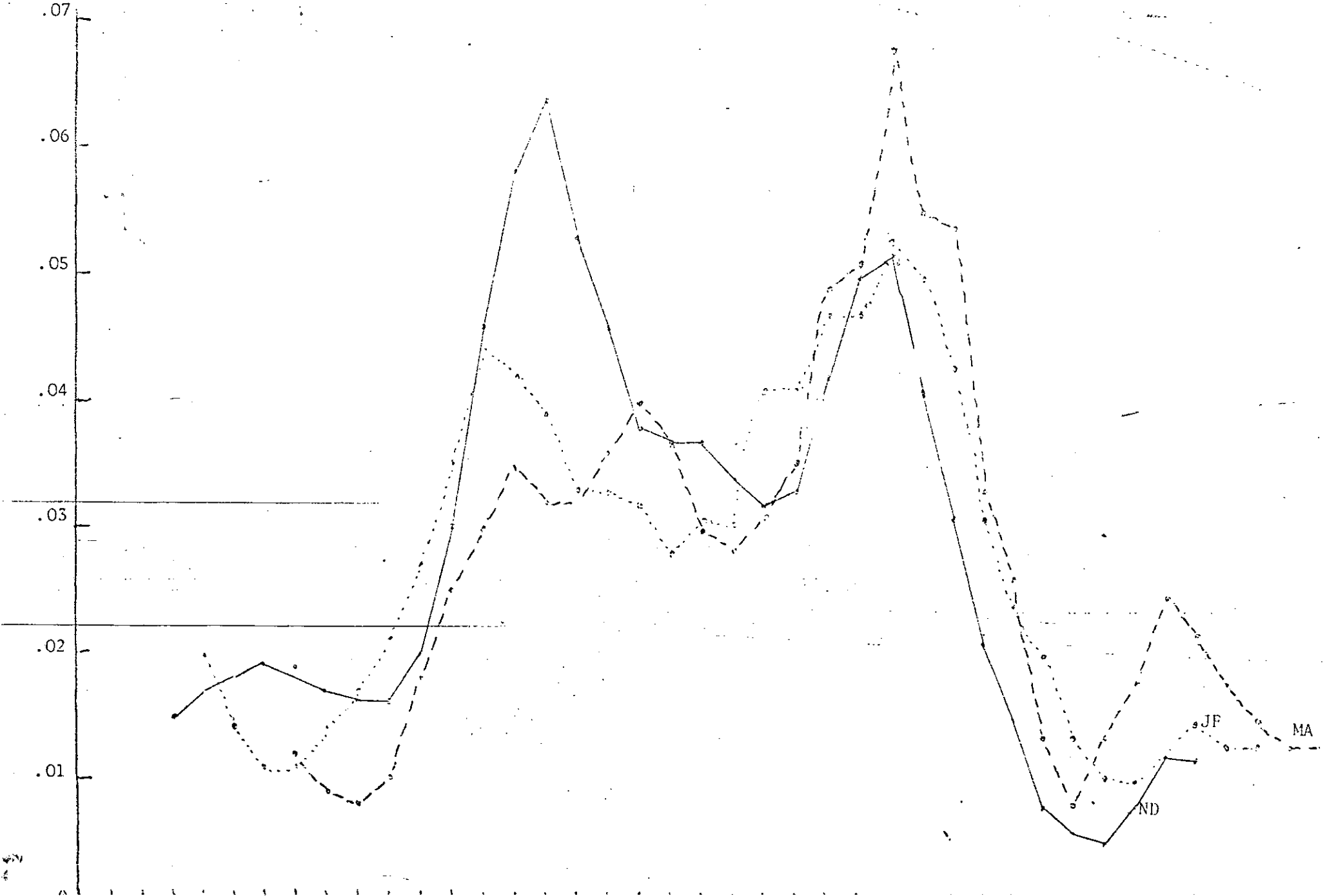
Figure 3: Distribution of month of previous birth by months of current birth 1970-71 (3 point moving average).



have births in the peak months is immediately apparent and the shift from births in the peak months to births in the off months is also seen. Comparing the peaks in the two figures, an intriguing finding emerges: for those with births in the off months in 1970 the peak months of the previous birth are centered around November, while for women with births in the peak months in 1970, the peak months of the previous birth are centered around late December. A quantatitive analysis of these patterns, and of the seasonal sub-interval patterns and how the latter produce the former, is needed. In addition if the women who have births in the peak months and those who do not are defined as two groups, it is unknown if these groups are also different in other respects (e.g. age).

Seasonality disrupted

From Figure 1 it is seen that the pattern of births was disrupted by the famine conditions of 1974-1975 with a recovery (and some make-up) to the usual seasonal pattern in 1976-77. (A simple regression analysis shows that 87 percent of the deficit of births was "recovered" by excess births in 1976-77). The response of the sub-interval components is of interest. Several things are known. First, infant mortality increased drastically in early 1975 (18 p.17). Thus a larger than normal number of women would pass from postpartum amenorrhea to menstruating interval in those months with the cessation of breastfeeding due to child loss. Second, the reduction in fertility was parity-independent (18 p.21-23) i.e. it occurred to the same extent for women of all age and parity groups. It appears that in early 1975 the numbers of women in the menstruating interval increased and those in the menstruating

interval exited at a much lower rate. If true, these effects and the dynamics of the return to the seasonal pattern in 1976-77 need to be quantified.

Causes of seasonality

At one level, it is essential to document the seasonal patterns, their interactions and their response to the famine, etc. On another level, the reasons for these patterns must be found. As noted above the seasonal pattern of conception risks remains after husband's absence is controlled. It is hypothesized that frequency of intercourse may therefore be the most important variable in this regard. Anecdotes regarding the best season for sex in Bangladesh abound. To pursue this matter informally, each of the four field workers in the DNF villages asked a score of village women why births peaked in November-December (conceptions in February-March). The responses are attached (appendix 1). Questions on frequency of intercourse have been asked in a cross-sectional survey in Matlab (work done under the Contraceptive Distribution Project protocol) with no difficulty. However, for explanations of seasonal patterns the questions must be asked in a longitudinal study. The best format for this question and a method to determine the validity and reliability of the responses must be developed. In addition, varying patterns of sexual intercourse may be partially explained by the seasonal pattern of illness prevalence.

With regard to the peak of resumption of menstruation in November, the cessation of breastfeeding may be the most important explanatory variable. Information on breastfeeding practice is available though the behavioural reasons behind the patterns which

may emerge are not (e.g. termination of breastfeeding in November because of competing demands on female time in assisting with the aman harvest or greater availability of supplementary foods). (see discussion in 12).

3. Rationale and Significance:

General

Seasonal changes are one of the most important elements of life in rural Bangladesh. Births, deaths, marriage and morbidity all have their season as do the rains, floods, and temperature, the rice crops, jute, vegetables and fruits, etc. etc. Ultimately these effects are experienced and perceived by individuals, yet it is critical to learn how these cummulate to produce demographic consequences. With this knowledge in hand we are more capable of interpreting and predicting deviations such as the fall and recovery of fertility in 1975-77.

Today in Bangladesh as in many developing countries, there are increased efforts to reduce levels of fertility. Yet the greatest variability in fertility in the country is still a natural variability--that which occurs with the season. If we can gain insight into this variability, it could provide a key to understanding effective ways of reducing fertility. For example, if frequency of sexual intercourse has a pronounced seasonal pattern, perhaps family planning education effo... should follow a similar pattern (ideally shifted slightly ahead of the frequency of intercourse curve).

Education

Women in the study villages are to a large extent, not aware of the relationship between day of the menstrual cycle and risk of conception (personal communications from Shushum Bhatia and M.R. Khan). At the same time there is at least some interest in family limitation exemplified by the fact that eleven women of the villages obtained contraceptive sterilizations between January and Sept. 1978. Since women are asked the exact time of menstruation each month and some have indicated that a higher frequency of intercourse explains the high conception rate in February-March (see appendix 1) there may already be at least some thinking relating conception chances to intercourse frequency during the cycle.

Subintervals

Earlier works have considered seasonality of the separate sub-intervals or of births, but no comprehensive work has been done to see how the sub-interval patterns fit together to produce the observed pattern of births. Most of the evidence we have comes from the pioneering work of Chen et al. which is based on data for less than 200 women, and from the studies of Huffman on postpartum amenorrhea (11, 12, 13). The latter data can hardly be taken as representative of usual patterns since: 1) the sampling frame was women who had births in a given period which means that the data are automatically biased toward shorter intervals (than if a random sample of women were selected); 2) the sample did not include women with births in November-January which is the peak season--the largest and most representative group; 3) some of the postpartum amenorrhea intervals were probably quite affected by the famine conditions of 1974-75 (e.g. infant mortality (implying cessation of breastfeeding and earlier return of menstruation) was

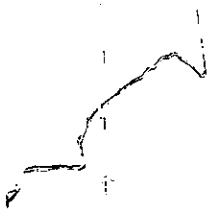
much higher in this period.

Specific Arguments for Extension of field work until Jan. 1980

1. From Figure 1 it may be reasonable to postulate that women entering a reproductive sub-interval after Janaury 1976 would experience the normal seasonal patterns. Then to study seasonality of the sub-interval components we examine the prospective intervals for entrants to each sub-interval (e.g. those having a livebirth) over the period of a year (i.e. to January 1977). To study the intervals of these women the minimum time required would be that given by the median from the birth interval life table. This is 36.0 months (Table 68 of 7). Thus for those entering a sub-interval in January 1977, 50 percent would not have entered the same sub-interval again until January 1980. In the case of entry to postpartum amenorrhea (with a birth) the date could be anticipated 5-6 months with detection of pregnancy. However, for study of the menstruating interval, this cannot be done.

It might be argued that it is only necessary to study the seasonality of the sub-intervals separately and then combine these results to examine the seasonality of the whole birth interval since this could be done without extending the field work (i.e. the large majority of women commencing a sub-interval between January 1976 and December 1 will have completed that sub-interval by October 1978.

However this is inadequate because: 1) from an earlier study (15) it is known that, without consideration of seasonality, there is a sizable positive correlation between the lengths of menstruating interval and postpartum amenorrhea interval for women (particularly related to increases in both with age); 2) in the presence of seasonality there is quite possibly a negative correlation between the lengths of the postpartum amenorrhea and menstruating intervals due to the changes in the risk functions with calender month. These important factors could not be taken into account if sub-intervals were analyzed separately.



2. One possible seasonal phenomenon of fertility is the so-called "latching" effect[1]. This could operate in two possible ways: First since there are months with high frequencies of reproductive events, women may tend to have a reproductive event in such months regardless of the month of the previous reproductive event of that type. Second, women who have reproductive events in "off" months may have a tendency to continue to have these events in the off months, or alternately the time of the next event may appear independent of the season. These phenomenon were discussed above with respect to livebirths.

To study these possibilities for the sub-intervals under conditions of normal seasonality, it is again essential to have at least 36 months of observation after January 1977.

B. SPECIFIC AIMS

A. Document the usual patterns of the sub-intervlas of the birth interval, specifically focusing on seasonal patterns.

1. Determine means and variances of sub-interval components and the risk functions associated with transitions from these sub-intervals, without regard to seasonality.

2. Document differences in the lengths of menstruating interval or postpartum amenorrhea interval by month of entry into respective sub-interval. Also document seasonal patterns of risk functions associated with these sub-intervals. Using

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[1] phrase coined in this context by Brian Seaton

other data sets this work is partially done (12, Table 2, 5, Table 3).

3. Determine if the respective seasonal patterns of the sub-intervals fit together to produce the seasonal pattern of births.

Empirical work

a. Is there a "latch" effect so, for example, if a woman does not conceive in a given period this year, then the chances are good that she will remain in the menstruating interval until the same time the next year.

OR

b. Do the postpartum amenorrhea and menstruating interval patterns fit perfectly to produce the observed pattern.

Computer modelling

a) What simple time-dependent model gives a good fit to the observed phenomenon?

1) How is calendar month important? (a) with respect to conditional risks of exit from the state (sub-interval) (b) with respect to the month of entry into the state; (c) a combination of the effects of (a) and (b).

2) Is the model compatible with the observed fertility histories as well as period measures of the proportions in each sub-interval?

B. Study the responses of the sub-interval components to the 1974-75 famine and their recovery to the normal seasonal pattern afterwards.

Analysis

1. Did the famine result in prolonged menstruating interval and postpartum amenorrhea or only prolonged menstruating interval and postpartum amenorrhea was shortened for many women because of infant deaths?

2. How did the risk of conception change over the period (in contrast to the usual seasonal pattern). Also how did the risk of resumption of menstruation change?

3. Were the effects of the famine on the sub-intervals uniform for all age groups of women?

4. Were there any socio-economic groups of women whose reproductive patterns were not affected by the famine?

Computer modelling

Can the models replicate what happened during 1974-75? What other scenarios might have happened? Is the model useful for prediction?

C. Determine reasons for seasonal patterns. (also refer to page 7 of original protocol).

1. Determine to what extent the seasonal resumption of menstruation postpartum can be explained by seasonal changes in breastfeeding and supplementation practices.

2. Determine to what extent the seasonal pattern of fecundability is explained by a) seasonal patterns of absences; b) the seasonal change in frequency of intercourse.

D. Education of a subsample of the women with respect the timing of ovulation.

1. Develop a simple (probably circular) calendar-like device which can be used by village women to know the unsafe period each month. Note that only pictures are permissable.

2. Train the field workers about the rhythm method and the use of the calendar.

3. Provide simple education over one or two months to women who desire it in 2 or 3 of the villages.

C. METHODS OF PROCEDURE

Field Work

1. Villages: V1, V2, V3, V4, V5, V6, V14, A, J, F, G, U, V.
These are all adjacent to Matlab.

2. Survey Method.
In 3/4 of the villages the interviews will be switched to bimonthly intervals. It is not felt that this will seriously affect the accuracy of the results. However a new questionnaire is required. The current and new questionnaires are given in Appendix 2. The format of the questions of absence is changed.

In ¼ of the villages (one field worker) the monthly interviews will be retained.

The supervisor has been doing random checking of the area of each worker. A report of the results to date is attached - Appendix C. Some forms of field checking will be continued. In addition the supervisor checks

all the interview forms in the office for consistency with the previous interviews of the women.

3. Additional question: Frequency of intercourse.

All women may be asked the following question in each round from November 1978 through October 1979:

How many days has it been since you last had sexual intercourse?

Pretesting has shown that this is indeed a very sensitive question so it is essential to establish rapport with the women.

Since the major reason for asking the question is to determine if the seasonal peak of conceptions is directly related to the frequency of intercourse, an alternative study design is to only ask this question of women who are in the menstruating interval. The practics of this design are currently being considered.

4. Education.

Design and produce 500-1000 calendars.

Provide training of field workers.

Determine whether instruction of women individually or as a group is more appropriate.

Offer calendar and education to women who want it in up to 3 of the villages.

5. Eligibility for inclusion/exclusion of respondents. The sampling frame includes all married women 15-44 years in the study villages excluding: 1) those who do not wish to participate; 2) women who are menopausal; 3) women who have had a sterilization; 4) women who have very long absences. Entrants to the study come through in-migration and marriage.

6. Medical services provided for women (in addition to access to treatment of diarrheal disease at the Matlab hospital).

The following services will be initiated:

a) Training of the female field workers (by Dr. Yunus) for recognition and simple treatment of common female illnesses.

b) Other services (innoculations for tetanus, measles, etc.) as determined by the CRL sub-committee working on this matter.

Data Processing

Coding:

The coding of all data for the first 29 rounds (from October 1975 to March 1978) is nearly complete. The coding form is attached. (Appendix 2) The format was planned so information from round 30 and later could be added easily.

In addition, coding of the vital registration and limited census information for these women, from 1966 will be done.

Checking and editing:

Independent checking of the field work is being done by the field supervisor as described above. In a similar fashion the coding work has been checked. (The three coders independently have coded the data for three women and these results were compared). This method has been used several times at various stages of the coding work.

Editing of punched cards will involve range checks, checks of intervals, etc.

Data analysis:

A. Simple period analysis.

Find proportions of women in each sub-interval by month from October 1975 to the ending date.

Find number of women changing states by month.

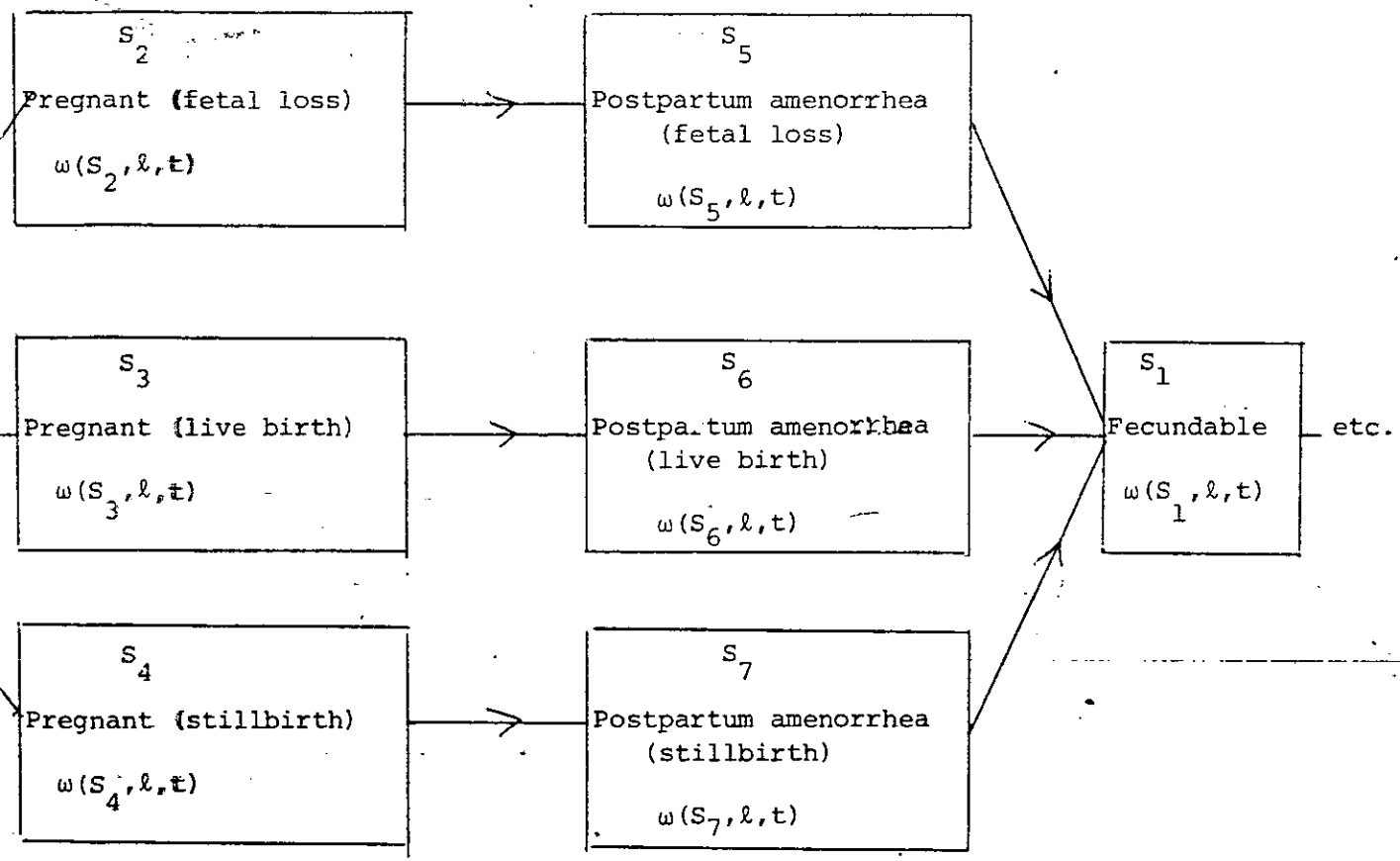
B. Detailed analysis of seasonality of sub-intervals.

1. From A determine a reasonable date where it can be assumed that sub-intervals commencing after that date follow the normal seasonal pattern.

2. One model for seasonal effects.

Figure 4 shows a simple model which is helpful in structuring the data analysis. The pathway $S_1 \rightarrow S_3 \rightarrow S_6 \rightarrow S_1$ is of major interest. $\omega(S_i, \ell, t)$ represents the conditional risk at calendar time t, of exist from state i after an elapsed time ℓ in the state. The Θ_i i = 2, 3, 4 identify probabilities that a conception will result in a fetal loss, livebirth and stillbirth respectively.

In this context there are two obvious approaches to the data. The first approach involves life table methodology and is prospective with respect to the reproductive event. In each segment (one, two or three months long) between January 1976 and January 1977 all women who commence a sub-interval will constitute the radix of a life table. Thus (assuming two-month segments) there will be 3 sub-intervals X 6 segments = 18 life tables [illegible]. The decrement from the postpartum amenorrhea life tables is resumption of menstruation; the decrement from the menstruating interval life tables is conception. The gestation interval life tables could include only livebirth conceptions or alternatively they could be multiple decrement with inclusion of the risks of fetal loss, stillbirth and livebirth. An additional decrement of "lost-to-follow-up" will be included if necessary. The results from this analysis will be used to obtain estimates of $\omega(S_i, \ell, t)$.


S_2
Pregnant (fetal loss)
$\omega(S_2, \ell, t)$
S_5
Postpartum amenorrhea (fetal loss)
$\omega(S_5, \ell, t)$
S_3
Pregnant (live birth)
$\omega(S_3, \ell, t)$
S_6
Postpartum amenorrhea (live birth)
$\omega(S_6, \ell, t)$
S_1
Fecundable
$\omega(S_1, \ell, t)$
etc.
S_4
Pregnant (stillbirth)
$\omega(S_4, \ell, t)$
S_7
Postpartum amenorrhea (stillbirth)
$\omega(S_7, \ell, t)$

The second approach is similar to the first but is retrospective with respect to the month of the reproductive event. For each of the three sub-intervlas a table of the following form (assuming two-month segments) will be constructed: From these tables estimates of $\omega(S_i, \ell, t)$ are easily obtained. This method has an advantage over the first method since estimates can be calculated for several calenda- years.

Calendar Segment	Duration of Stay in Sub-interval at Beg. of Segment.				
	All durations	0-1mo.	2-3 mo.	4-5 mo.	6-7 mo.	etc.
Oct-Nov 1975						
No. in sub-interval at beginning of segment						
No. decrementing						

After these analyses it will be useful to consider cumulative distribution functions and parametric curve-fitting of these or the risk functions. Trigonometric functions with a period of one year may be suitable.

3. Study of the "latching effect" in the sub-interval data. Examine sequences of sub-intervals and look for patterns of entry and exit dates.

4. Obtain fertility histories of these women from the D.S.S. data and analyze for the "latching effect" in the timing of livebirths. (Here the whole livebirth interval is the unit of analysis).

5. Develop a statistical procedure for determining to what extent the seasonal patterns of the sub-interval risk functions are explained by seasonal patterns of supplementation practices, seasonal absences, etc., and apply the technique.

C. Analysis of response of the sub-interval components to 1974-75 famine and the recovery.

1. Using life table approaches similar to those described in B, but utilizing the retrospective sub-interval information collected in October 1975, calculate the risks associated with the sub-intervals for the time period 1974-75.

2. Compare risks of exit by duration of stay in the sub-interval for the months of 74-75 with the comparable risks for the later period.

3. Do 1) and 2) for age groups and socio-economic groups. Note that due to sample size limitations, grouping of months and/or parametric estimation will be required.

4. Develop a method to determine the effect of the increased infant mortality on the sub-intervals.

D. Model of seasonality

1. Develop computer programs for the seasonal birth interval model. Input = estimates of $\omega(S_i, \ell, t)$ or the corresponding distribution functions. Output = estimated seasonal pattern of births.

2. Compare the estimated seasonal pattern of births with that observed.

3. Determine appropriate changes in the parameters (from C above) to simulate the effect of the famine. Compare output with observed pattern. Experiment with other plausible changes.

(e.g. those which may occur with acceptance of family planning).

E. Correlation analysis of sub-intervals

If sufficient numbers of women have completed postpartum amenorrhea and menstruating intervals, perform correlation analysis of these. Also relate these results with the fertility histories of the same women from the D.S.S. data.

F. COLLABORATIVE ARRANGEMENTS

Alauddin Chowdhury and Stan Becker are working jointly, though in separate locations, on BID data. To divide the work analyses involving nutritional information collected in the earlier rounds will be done by Alauddin, while questions of seasonality patterns will be explored by Stan Becker. The first investigator will be working at the Johns Hopkins University, Department of Population Dynamics. The raw data from the first 30 rounds will be sent on tape when punching is completed. A major portion of the work on seasonality will be done at CRL though there is a possibility that it may only be completed later when the second investigator plans, if possible, to go to the Institut National d'etudes demographiques. In addition Jane Menken of Princeton University and Henri Leridon of the Institut National, have an active interest in reproductive models and seasonal patterns of the sub-interval components. Finally, Sandra Huffman of Johns Hopkins is involved fully with the other sections of the DNF protocol.

B. FACILITIES REQUIRED

Office Space

For this study office space for the field workers (3) and supervisor (1) is needed in Matlab. There is a considerable amount of filing and office checking required in the project. In addition office space in Dacca is required for some coding work. The last phase of coding may be best done in the Matlab office space.

Logistical support

Daily transportation by boat is required for the field workers. A country boat should be allocated according to the distance of the village. (Almost all villages are within a short travelling distance of Matlab by country boat). Speedboat services are required for the field checking of the supervisor, and for the trips to Dacca. Also speedboat services for the investigator Dacca-Matlab-Dacca are needed.

Medicines

The following are needed for the one year period

Illness	Medicine	Quantity
Bloody dysentery		
amoeba	Flagyl	3000
shigella	ampicillin or tetracycline	2500
Scabies	oil	240 bottles
General pain	aspirin	12,000 tablets
anemia	folte-tab	45,000 tablets
Vitamin deficiency	Vitamin	12,000 tablets

BUDGET

PERSONNEL

Name	% of annual salary needed	Salary	time required	Project Requirements TAKA	DOLLARS
A.K.M. A. Chowdhury	training budget	-	-	-	-
S. Becker	40%	$ 12,000	1 yr.	-	4,800
Physician	1%	56,420	3 days	564	
Field Supervisor	15%	37,500	1 yr.	5,620	
Female Supervisor	50-60%	15,030	1 yr.	7,700	
Female workers (3)	100%	12,000	1 yr.	36,000	
Programmer (1)	8%	26,020	1 mo.	2,082	
Key Punch Operator (4)	8%	14,020	1 mo.	4,500	
Coding Assistant (4)	33%	12,000	4 mo.	16,000	
				72,466	4,800

SUPPLIES AND MATERIALS

	Quantity		
General office supplies	-	3,000	
IBM Cards	25,000 ($ 10.13 per 1000)		250
Computer tape	1		15
Medicine			
Flagyl	3000	1,912	
Oil	240 bottles	1,500	
Folfe tab.	45,000 tablets	3,150	
Aspirin	12,000 tablets	876	
Ampicillin			150
Tetracycline			45
Rhythm calendars	1,000	5,000	
		15,438	460

CRL TRANSPORT

Dacca/Matlab/Dacca for investigators 1 per month	4,900
Matlab/Dacca/Matlab for field supervisor 1 per month	4,900
6 other misc. trips as above	2,450
(Assume that 50% of the above costs would b shared with other projects coordinating transportation)	
Speedboat runs for the project 6 runs per month. 2 hrs per run 105 taka per hour	15,150
Country boats used for the project 3 x day x 5 days 15 per week x 11.50 per day	8,650
	36,060

	Project Requirements TAKA	DOLLARS
TRAVEL AND TRANSPORTATION OF PERSONS		
Local		
Food and accommodation of investigators in Matlab 12 trips per year x 90 takas per day (say 15 days)	1,350	
Food and accommodation of field supervisor in Dacca 12 per year x 120 takas per day	1,440	
Food and accommodation of additional 6 trips 6 per year	700	
International		
Ticket for presentation of study findings Dacca/USA/Dacca (maximum cost would be if presented in U.S.A.)		2,250
Ticket for one consultant USA/Dacca/USA $ 2,250 or Paris/Dacca/Paris $ 1,700 mean = $ 1,975		1,975
Per diem for both (5 days = $200 USA, $300 Dacca)		500
	3,490	4,725
TRANSPORTATION OF THINGS		
Local		
Transportation of documents to and from Matlab	800	
International		
Shipping of computer tape	700	
Shipping of reports	700	
	2,200	
RENT, COMMUNICATION, UTILITIES		
Communication		
. Cables, letters, phone	2,500	

	Project Requirements TAKA	DOLLARS
PRINTING AND REPRODUCTION		
Printing of forms mimeograph: 1000 forms per mo. plus duplicate copy x 14 months x 50 paisa per form	14,000	
Xeroxing (50 paisa per page)	1,000	
Printing report	10,000	
	25,000	
CONTRACTUAL SERVICES		
Computer time 600 per hr. x 100 hrs.	60,000	
Other (ferry, wages-labourers, etc.)	80,000	
	140,000	

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APPENDIX 1

Responses of a Sample of Women in BI[illegible] illages to Question Regarding Seasonality of births (conceptions).

Question: It is found from the records that the birth rate is higher in the months of Novembe[illegible]-December and lower in June-July in the villages. Why the birth rate is higher in November-December? What do you think about it? The number of pregnancies is higher in the month of February-March. Why? (translated back from Bengali).

Responses:

1. Due to cold in February-March husband and wife feel comfort to live together? Or what is loted can't be broughted.
2. It depends on God, who knows everything.
3. This is the season of fertility.
4. During the month of September-October dogs are used to have their sexual desire and this reflects the similarity that the human beings may also have more sexual power to produce children in the month of February-March.
5. God knows. Nothing happens without His wishes.
6. Due to cold in February, husband and wife feel comfort to live together in this season.
7. Men used to have more sexual desire in the month of February-March.
8. Birth rate is higher in the month of February-March due to weather.
9. All animals have their specific time to give maximum births, i.e. dogs in the month of September-October and human beings have their time in February-March.
10. Due to maximum intercourse.
11. It depends on husbands and on God of course.
12. If God desires.
13. Husband's willingness, can't say.
14. Due to menstruation ..... God wishes.
15. Result of intercourse...as husband is staying abroad.
16. God wishes.

APPENDIX 2

D R A F T

Report of independent checking of Birth Interval Dynamics field work in Matlab, Bangladesh

Suraiya Begum

September 1978

A sample of 14 villages of approximately 2500 currently married women aged upto 49 was selected from the Matlab Bazaar Thana.

After selection of the sample village each currently married woman is interviewed (Form BID-1 attached) for information about socio-eocnomic status, pregnancy history and whether they are able to give birth or not. Women who are not fecund, moved out, widow and menopausal are excluded.

The birth interval dynamics prospective study is done by four female field workers who ask thirteen questions to the 2500 respondents each month. These questions (see attached BID-2 form) are: whether the respondent is in postpartum amonerrhea, menstruating, pregnant, termination of pregnancy, breastfeeding, supplementation, husband away, practicing family planning, illness, breakthrough bleeding, husband illness, child death, absent and changed marital status.

It is of interest to look at the biases which occur in the data collection, if any, and the variation of these between workers.

From April '78, I independently reinterviewed four women selected randomly from the list of the worker for her previous day's work. One day in each week 9 interviews are done for each worker from April to July, I interviewed 40 respondents of each worker.

I go to the village when the worker is in another village and ask the randomly selected women the same questions. Then I check the consistency with the worker's form later in office. I compare the forms with those of the worker for the same women from the previous day and tabulate which responses are the same and which are different and what the differences are.

The discrepancies are in the questions, husband away, husband illness, respondent absent, and illness. Sometimes responses are different due to the respondent. They tell different things on different days. They can't say the exact date, which date or days the husband was absent or she was absent, and he/she was ill. Sometimes menstruation dates are also reported differently on different days.

There were some respondents absent among the 40 respondents. Sometimes I found the respondents were absent but the workers found them present. Soemtimes both found the respondent absent. Sometimes I found them but the worker did not find them.

Results

WORKER NO. - 1

There are 12% difference in the total response of 33 for the question of husband's absence. The percentage for the question of respondents absence is less than that for husband's absence. There is 6% difference. A little difference was found in the answers to the questions of supplementation and illness. The percentage is the same for both. It is 3%.

WORKER NO. 2

There are 11.4% difference for the questions of husband away, and espondent absent. Illness, breakthrough bleeding and husband illness - hese questions had 2.9% difference. There were no differences in the ther questions.

WORKER NO. 3

There are 6.7% difference in the response of 30 for the questions f husband away and respondent absent. Supplementation, illness and usband illness had 3.3% difference. There were no differences in other uestions.

WORKER NO. 4

There are 8.8% difference in the response of 34 for the questions f illness and respondents absent. Supplementation and husband away ad 5.9% difference. Illness is 2.9% difference. There is no ifference in the other questions.

For all workers the main questions with discrepancies were husband way and respondent absence. These had the highest percent difference. he least discrepancies were supplementation, husband and respondent lness.

I think, most discrepancies are due to answers of the respondents . ecause they can't say exactly, which date or day he/she departed from ome or arrived at home. They always state on idea. Sometimes they rget whether he/she was ill in the period covered (a month). Thus she

uld not give us an accurate reply. Sometimes a woman tells us
fferent things on different days. This is due to illiteracy and
norance. They don't use a calendar like we do.