25-6-84

29

Application No.

Supporting Agency (if Non-ICDDR,B) USAID

Title of Study The Contraceptive Behavior, Fertility Dynamics, and Health Services Utilization Study, Matlab

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

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

1. Source of Population:
   (a) Ill subjects — Yes (No)
   (b) Non-ill subjects — (Yes) No
   (c) Minors or persons under guardianship — Yes (No)
2. Does the study involve:
   (a) Physical risks to the subjects — Yes (No)
   (b) Social Risks — Yes (No)
   (c) Psychological risks to subjects — Yes (No)
   (d) Discomfort to subjects — Yes (No)
   (e) Invasion of privacy — Yes (No)
   (f) Disclosure of information damaging to subject or others — Yes (No)
3. Does the study involve:
   (a) Use of records, (hospital, medical, death, birth or (other)) — (Yes) No
   (b) Use of fetal tissue or abortus — Yes (No)
   (c) Use of organs or body fluids — 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 (N A)
   (d) Sensitive questions — Yes No (NA)
   (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 (N.A)
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.

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

ABSTRACT SUMMARY - PARTICULAR ITEMS

1. The study is of women of reproductive age.

2. No potential risks.

3. Confidentiality of data will be ensured. No data are to be released which are traceable to individual respondents.

4. Names of individuals are computerized, although linkage of data to individuals requires special skills and access to secured files. Workfiles do not include names as names are used only to locate sample respondents.

5. Consent will be obtained prior to interviewing.

6. Women will be interviewed in their homes. On the basis of previous work, interviews average 28 minutes and typically do not exceed 40 minutes.

7. Society will benefit from the enhanced understanding of health and family planning behaviour which, in turn, should assist in policy and programme development.

8. DSS Census records will be accessed from computer files and handwritten registers in Matlab.

CONFIDENTIALITY STATEMENT

The study involves interviews of village women about health, family planning and demographic behaviour. Consent will be obtained prior to interviewing. It is necessary to code census numbers of individuals to link users characteristics and service use records. Staff with access to the identifying information are trained and aware of its confidential nature. Data will be published only in aggregate.

Access to data: James F. Phillips, Jalaluddin Akbar, Khorshed Alam Mozumder, Marjorie Koblinsky, J.Chakraborty, A.K.M.A.Alauddin Chowdhury, coders and personnel in the Computer Information Services Branch engaged in data entry.

SECTION I: RESEARCH PROTOCOL ADDENDUM

1. Title : The Contraceptive Behavior, Fertility Dynamics, and Health Services Utilization Study, Matlab

2. Principal Investigator : James F. Phillips

3. Co-investigator : Jalaluddin Akbar
Khorshed Alam Mozumder
Marjorie Koblinsky
Alauddin Chowdhury

4. Starting date : July, 1984

5. Completion date : December, 1985

6. Total externally funded cost : All costs are budgetted against existing protocols.

7. Scientific Program Head :

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

Signature of the Program Head: W.B.

Date: 17 June 1984

8. Abstract summary

This protocol proposes an analysis of contraceptive use and health utilization behaviour in the comparison area of the Community Health Services Project (CHSP) Research will update our knowledge about trends in contraceptive use and health practices in comparison areas since the most recent study in that area is 1981. Moreover it will permit comparative analysis of Matlab with the Munshigonj area. This comparative analysis will be addressed to questions that have been raised about the representativeness of Matlab as a site for health service research. Finally, the survey will address hypotheses about fertility determinants that are posited to explain the 1982-1983 increase in use prevalence from 32 to nearly 42 percent.

The study, in summary, researches several of the competing hypotheses that have been advanced to explain the dramatic decline in CHSP treatment areas in recent years and will address emerging hypotheses that arise from the published findings of the CHSP.

This protocol clarifies work originally proposed in the Matlab CHSP (Protocol 80) but not fully articulated in that document. Work is externally funded in the present grant document for USAID support for Matlab and Population Council support for Operations Research. Research instruments in the proposed documents are similar to instruments that have been reviewed by the RRC/ERC in the Extension Project Protocol.

Thus the present protocol is viewed as an addendum which clarifies previously proposed work.

9. Reviews

a) Ethical Review Committee: _____

b) Research Review Committee: _____

c) Director : _____

d) Controller: _____

BACKGROUND

The evaluation of the Family Planning Health Services Project (FPHSP) has shown that fertility declined rapidly in the first two program impact years relative to fertility in the comparison area. Authors presenting this finding conclude that there is thus evidence of a latent demand for contraception that can be fulfilled by rigorous contraceptive services (Bhatia, et al., 1980; Phillips et al., 1982). A multipurpose survey has been fielded in May 1984 that is addressed to two general sets of issues that emerge from the Matlab findings: a) the need to test competing hypotheses that detract from the utilization of FPHSP results for policy and b) the need to resolve unanswered questions that follow logically from published results. While field work and tabulation will be completed during the present grant period, secondary analysis of data relevant to test of these hypotheses cannot be conducted until 1985. We consider each set of hypotheses in turn.

a) Competing Hypotheses: It is often stated in public queries and commentary that Matlab is somehow atypical of rural Bangladesh. While it is generally acknowledged that no locality is representative of an entire country, this hypothesis of unrepresentativeness goes further than FPHSP investigators have acknowledged. According to this hypothesis, some 17 years of demographic surveillance in the area have not only measured demography, it has changed -- attitudes, beliefs, aspirations, openness to nonfamilial values, health practices, mortality, and other factors have been so profoundly affected by the continuing observation of the Matlab population that readiness to accept innovation has been altered. Thus the population is neither typically rural or Bangladeshi, but a social laboratory where factors being measured are in part an outcome of the measurement process.

While this view is often expressed informally, it is rarely documented and is not researched. An example of this view appears in the 1981 UNFPA Country Review Report:

> "Current efforts are based on the clear assumption that the existing level of demand for small families and, hence, contraceptive supplies and services is high but unmet. The focus of efforts is thus directed toward providing family planning supplies and associated technical services, as well as such support services as information, education, and motivation outreach activites. The assumption that there is high and unmet demand for contraceptive supplies and service receives some support from the ICDDR,B in Matlab thana, where contraceptive prevalence rates are at 30% which is nearly two times the national average of 17%. However, Matlab thana has enjoyed the status of a special demonstration project (wherein Cholera deaths have been reduced due to treatment interventions, although prevalence of the disease remain essentially unchanged), and an increased prevalence of contraceptive usage does not necessarily signify an equivalent reduction in fertility."

The report proceeds to dismiss the Matlab results as artificial owing to the special status of the research station as a long standing surveillance project. If the views expressed in this report are to be accepted, then treatment areas should have reproductive motives and attitudes toward family planning that are different from contiguous areas where Matlab research is absent. Data now available from Munshigonj afford a basis for this test.

A second competing hypothesis states that the FPHSP was successful because special services were added to a functioning government service system. According to this "layering hypothesis" active and functioning government services are known to villages and are utilized along with ICDDR,B services. While comparison area prevalence would initially lag behind ICDDR,B treatment areas, the continuous provision of Government services would gradually narrow the gap as increasing number of eligible couples are reached by the government program. According to this hypothesis, the fulfillment of a latent demand has been demonstrated by the FPHSP, but a less intense GOB program can achieve the same end if given time. While a gap will remain between areas, the gap is an artifact of the layering effect of unrealistically dense services and activities in Matlab treatment areas.

A third competing hypothesis concerns the quality of data. Proponents of this view note that FPHSP family planning data is collected by service workers whose performance is continuously observed by tabulation of performance reports. While Matlab researchers have incorporated multiple supervisory checks into the system, the lack of independence between service statistics and evaluation statistics is fundamentally troubling. By simply overreporting family planning performance and underreporting births, a spurious impact would emerge from the analysis. While such a problem is arguably remote and is not accepted among scientists close to the ICDDR,B DSS or the FPHSP, no experiment or study has ruled it out. Instead, since its inception, no independent sample validation of the FPHSP family planning data or DSS data has taken place. The obvious test to the data quality hypothesis is to sample households in treatment areas, interview respondents about current contraceptive use fertility and the match data obtained independently with existing records.

While the three competing hypotheses (Heisenberg, "layering, and data quality") are to be investigated in this study, at least one other competing hypothesis merits investigation but must await the data collection of the forthcoming SES study; namely, that social and economic changes have occurred in Matlab differentially across treatment and comparison areas with differential impact on reproductive motives and contraceptive behavior. While detailed examination of this hypothesis awaits

forthcoming data, certain simple tabulations can be conducted from survey data taken before the FPHSP and in this study in 1984 to ascertain differential social change. A direct test is possible, however, by comparing current data with 1977 baseline data. If change in SES has occurred, it should be apparent in the indicators collected over time. If motives have changed independent of changing SES, then one concludes that more has been affected by the FPHSP than fulfilling latent demand -- that people have changed as of continuous service and care.

The examination of these hypotheses has become more salient in recent months with the growing evidence that GOB family planning services are having a moderate impact (NIPORT, 1981) and that Matlab comparison area demographics are at least modestly different from current estimates of fertility and mortality in the country as a whole (c.f. National Academy of Science, 1981; Mosleh Uddin et al., 1981). Moreover, one careful empirical study has shown that demographic responses among rural women differ for Matlab women from women residing in contiguous areas (Becker and Mahmood, 1981) suggesting that the reproductive attitudes and behavior may also differ in the Matlab area from neighboring areas.

While examination of competing hypotheses is vitally important to interpreting results of the FPHSP, at least one potential contamination of the project could reduce its apparent effects. The first three years of the project were conducted with minimum attention to publicity and maximum attention to project implementation. In the past year, however, increasing attention has been given to exposure of the project to senior government officials and local health officials. This has the obvious effect of stimulating administrative change and activity in comparison areas, whether by diffusion of innovation or by direct administrative order from the government to its Matlab staff to improve performance. What could emerge is a situation where the comparison area loses its meaning as a control owing to special government services in the region. It is therefore appropriate to examine the government delivery system in Matlab and to compare it to the service system in neighboring areas in order to determine if government efforts in the area are providing unusually effective services.

Emerging Hypotheses: The hypothesis of latent demand has motivated the FPHSP design (Bhatia et al., 1980) and analyses of trends in reproductive attitudes and motives in Matlab suggest that until the end of 1979 no change in motives had taken place despite 3 years of rigorous household visitation in the Matlab are (A.I.Chowdhury et al., 1983). Contraceptive use prevalence remained constant with time over the 1979 to 1982 period (Phillips et al., 1982) but a marked increase in the use of contraception occurred in the post 1982 period: after three years of remaining constant at 32 percent of the eligible couples, use prevalence began to

rise gradually in the 1982-83 period and more dramatically by the middle of 1983. By early 1984 use prevalence exceed 41 percent and by mid-1984 reached 42. Why was the programme at a plateau until 1982 and subsequently why did prevalence begin to rise? Various hypotheses may explain this emerging trend in contraceptive prevalence:

The hypothesis of MCH impact: Over the 1982-83 period the quantity and diversity of MCH services were expanded in two blocks of the Matlab treatment area. One hypothesis, that is widely accepted in the literature but untested, is that the intensification of MCH has a positive impact on family planning motivation through improving worker credibility and enhancing motivation to plan births. This hypothesis has been tested with areal time series data from the existing record keeping system and was not supported (Phillips, et al., 1984). This test, however, could not utilize comparison area data or individual level data as such information is lacking at present. By linking individual level

panel data on changes in reproductive intensions with record keeping system (RKS) data on MCH services, a more powerful test of the MCH hypothesis would be possible. In particular, it is important to know the extent to which adoption of family planning is contingent upon the provision of health services, the promotion of health messages and the consequent perception that risks to mothers and children are mitigated by convenient and effective MCH services.

A widely cited theory, relevant to the nation that perceived risks affect reproductive behavior, is the "risk insurance hypothesis" that holds that children are a form of protection from calamities, epidemics, and economic adversity (see, Cain, 1981 and 1982). This argument, based on anthropological inquiry in one char village has been much debated (see, for example, Robinson, 1984) and is now a central issue in targetting national health and economic planning (see, for example, Cain and Lieberman, 1983). It is nevertheless untested with large scale quantitative data. This hypothesis is perhaps relevant to the emerging increase in contraceptive prevalence in Matlab: couples who perceive the impact of the Matlab program as insuring against adversity through MCH and care would presumably be more receptive to services than otherwise similar women. Give the maturity of the FPHSP in Matlab and the availability of the comparison area population, one can test the risk insurance hypothesis by examining current fertility as a function of post mortality histories of women and their current perception of risks to their family.

The hypothesis of FP impact on MCH: A rationale for family planning programmes is that lower fertility produces greater intervals between births with the indirect effects that arise

from improving the quantity resources available for child care: health and nutrition and the direct effects that arise from greater spacing. Such effects are often posited in the literature (see, for example, Wray, 1971 and Cassel, 1971) but rarely tested. Yet, the Matlab data suggest that mortality has declined among children in the treatment area for causes of death possibly unrelated to MCH interventions (see, A.I.Chowdhury, et al., 1984 and Chen et al., 1983). Moreover, time series analysis of the contraceptive behavior of Matlab intervention area couples suggests that couples under the greatest demographic pressure were the first to adopt (Bhatia, 1983). Thus it appears that the program initially fulfilled the demand for contraception among those most motivated to adopt and reached a plateau when the pool of motivated users was exhausted. Our hypothesis is that among these adopters child survival and family health were improved. The current increase in contraceptive use arises from a diffusion of the perception of the benefits of family planning and consequent emergence of modern reproductive norms -- changes that are a direct consequence of perceived and real improvements in maternal and child health.

The hypothesis of changing reproductive motives: Since 1977 all married women of reproductive age have been visited fortnightly. These visits not only provide health and family planning services, they extend repeated motivational messages to women. Such continuous communication can not only inform individuals, it could also change their attitudes and beliefs. One might argue, moreover, that such changes directly arise from communication themes and are to some measure independent of the indirect effects of MCH mortality impact on reproductive motives. We hypothesize that five years of intensive services in Matlab has not only met the demand for contraception, it has changed it. But this view has limited acceptance in the policy literature. As Kingsley Davis has argued: "...the idea that declines are due mainly to family planning efforts mistakes a necessary for a sufficient cause. Family planning programs are produced by the desire to limit fertility, not vice versa. In most cases of declining fertility, the stage of development reached has been high enough to produce such declines regardless of official family planning programs, or else population policy has dealt with reproductive incentives rather than with instrumentalities such as contraceptive and sterilization." Testing the hypothesis of changing reproductive motives in Matlab thus addresses a key question in the policy field: Can service programmes initiate and sustain demographic transition? Evidence to resolve the question of whether programs not only meet unmet demand but can generate demand in the absence of concomitant social or economic change is perhaps the single most important unresolved issue in the population policy literature.

The FPHSP results have attracted global interest among population scientist but competing hypotheses detract from its message to Bangladeshi policy makers. Unless the context of the FPHSP "success" is more thoroughly understood than it is at present, its message to policy makers is underutilized.

Competing hypotheses in this protocol require comparative analysis of Matlab data with data from contiguous areas never covered by the DSS. Over the 1981-83 period the German Technical Assistance Agency funded a multiround survey focused on many of the issues for which such a comparative analysis is appropriate. Thus the requisite contiguous socio-demographic data exists, and are editted, processed, and analyzed. These data can be used in a secondary analysis for the issues discussed above. The matching data from Matlab will also be editted and compiled for treatment and comparison areas within 1984. Multivariate analysis software has been written and installed at the ICDDR,B.

In summary, it is possible to conduct a range of important policy relevant analyses of extant socio-demographic data. For these important issues to be explored, it is vital to maintain services and research systems in Matlab so that the careful service work that has been done there will be a continuing resource for future research.

SPECIFIC AIMS

1. To estimate contraceptive use prevalence in the comparison area of the CHSP.

2. To estimate contraceptive use prevalence in the treatment area in a system that is independent of the extant Matlab service statistics system and to use the data to study the accuracy and completeness of the routinely compiled RKS data.

3. To estimate the extent to which comparison area contraceptive attitudes, knowledge, and use patterns are atypical of neighbouring areas of Bangladesh.

4. To ascertain sources of contraceptive services in the comparison area thereby assessing the extent to which treatment area services contaminate comparison area villages.

5. To provide information on knowledge and attitudes about contraception in treatment and comparison areas thereby permitting analysis of changes in knowledge and attitude over time.

6. To provide background information on women eligible who use contraception which is comparable to the Munshigonj MCH-FP survey.

7. To compare the service systems of treatment, comparison, and Munshigonj to determine if health services in Matlab are atypical of neighbouring areas.

8. To estimate the extent of implementation of government services in Matlab in order to determine the extent to which the government programme complicates analysis of the FPHSP or is atypical of rural Bangladesh.

The following specific aims relate to fertility determinant hypothesis that emerge from the findings from the FPHSP:

9. To measure unmet demand for contraception in treatment and comparison areas and the extent to which demand in treatment areas has changed with time.

10. To test, on an individual level, the association between exposure to health to health services and adoption of family planning.

11. To test, on an individual level, the relationships between birth planning and child survivorship by examining whether "unwanted fertility" exists or has been reduced and whether elimination of unwanted fertility improves child survival.

12. To examine the "risk insurance" hypothesis by acertaining whether children are perceived as a means of protecting from adversity and whether such perceptions correlate with current fertility.

METHODS AND PROCEDURES

Since the aims of this study calls for comparative analysis with Munshigonj, the methods of this survey will be designed on the Munshigonj model to afford maximum comparability of data. Owing to the existence of the DSS in Matlab, however, major simplifications of data collection and sampling are possible. Although the Munshigonj documentation is extensive, modification of the design is substantial enough to warrant separate documentation here.

Analysis will involve a team of investigators. The PI will address questions related to fertility analysis. Jalaluddin Akbar will focus on the Munshigonj comparison and questions concerning changes in reproductive motives. Dr.Marjorie Koblinsky will examine questions related to health service and comparisons with the extension baseline data. Mr.Khorshed Alam Mozumder will research the risk insurance hypothesis in collaboration with the PI.

1. Sampling

The most recent available estimate of contraceptive prevalence in Bangladesh in the 1979 Contraceptive Prevalence Survey (CPS) published by NIPORT (NIPORT, 1981). Modern effective contraceptive use was 8 percent in that study. An illustrative sample size calculation appears in Table 1. Assuming simple random sampling and comparison area rates precision of .01. Calculations are given by:

$$n = \frac{Z^2 pq}{d^2}$$

where n is the required sample, Z = 1.96, q = .08, and d = 0.01.

Table 1: Estimated sample size for a stratified 2 stage cluster sample

Strata	Number of Villages	Eligible women	Number of sample size	Approximate sample size
A	11	3527	6	712
C	22	3789	11	765
B	17	3452	9	697
D	21	3276	11	661
C(N)	34	4628	17	934
C(S)	46	9377	23	1893
	151			5662

Two villages fall into separate strata owing to existing treatment designs. Village V19 is split into Blocks "B" and "D". Village A is split into comparison North and South.

Since prevalence is low (8 percent in the most recent assessment) then a 21 percent error (±1.75 percent) requires about 4000 interviews, an 18 percent error about 5000 interviews. Therefore, plan for 5000 interviews will stratify by block to reduce sampling error.

Sampling is greatly facilitated by the fact that eligible women in Matlab have been completely enumerated by village, bari, and household. We will stratify by block within the treatment areas and by North versus South for the two comparison areas.

A relatively dispersed sample encompassing a large fraction of the village (perhaps as much as a third) will be adequate. Our first stage will sample 50 percent of the villages and the second a fraction that ensures an equal probability of selection for all sample respondents.

2. Questionnaire design

Two modules of questions will be asked, one of eligible women in treatment and comparison area, a second of all available husbands for the treatment areas. Both modules appear in Annex A.

Fertility and mortality questions in the Munshigonj study have been replaced with transcription of data. Probes are incorporated to identify any missing DSS events. Similarly, contraceptive use data in treatment areas is asked, and coded from CHW fieldbooks to permit assessment of treatment area data quality. Questions on background characteristics replicate Munshigonj data except for questions on landholding which were deemed unreliable and eliminated. Use prevalence and knowledge of contraception are questions from the CPS and Munshigonj surveys. Questionnaires also match baseline Extension Project instruments to permit comparative analysis across areas.

3. Analysis plans

Each specific aim of this project has a corresponding analysis plan. For the most part we propose simple tabular analysis. In the specifications below we specify data sets as C for CHW records, D for DSS and M for Matlab (M_c for comparison and M_t for treatment) with N designating the neighbouring area of Munshigonj. Furthermore, we specify the type of analysis, whether descriptive or hypothesis testing. For multivariate analyses, tentative models and hypotheses are noted.

a. The analysis of contraceptive use prevalence, treatment area and comparison

Data Sets	Analysis	Dependent Variables	Independent*
M_t and M_c	Descriptive correlates of use in treatment	1. Currently married women not using contraception vs. using.	1. Age
			2. Parity
			3. Educational attainment
		2. Married women at risk using vs. not using.	4. Husband's education
		3. Women knowing about methods using vs. not knowing.	5. Economic status: land ownership occupation
		4. Reason for not using (among non-users)	6. Sons
			7. Want more children

*Each dependent will be tabulated against each independant variable. That is, no multivariate analysis is proposed.

b. The analysis of data quality, treatment area.

Data Sets	Analysis	Dependent variables
M_t, B	H_o: No difference between rates (Z test)	Current use M_t vs. B
		Method used M_t vs. B (among users)
		Control variable: Block (service area)

c. Analysis of representativeness of comparison area knowledge attitude and practice

Data Sets	Hypotheses	Dependent variables	Control
M_c, N	H_o: M_c = N Z tests	Knowledge of FP Probed knowledge, FP Ever use FP Current use FP Consultation: access to service Visitation, Govt. worker (FP and Health) Visit frequency ORS access, ORS knowledge Child mortality Vaccination Diarrhoeal episodes Desired family size Son preference	None, except possibly to standardize for age or to control for other contaminating factors: -land holding -education -parity

d. The analysis of sources of Health Services.

Data Sets	Hypotheses	Dependent variable	Control
N, M_c	N = M_c	Child sick in past year? Who consulted? Place of consultation? Visitation? Time last visited? Topic of home visit? Themes of visit? Learn from visits? Visit frequency? ORS availability?	Proximity to Thana headquarters

e. The analysis of service support

Data Sets	Hypotheses	Dependent variable	Control
M_c, N (Worker interviews)	$N = M_c$	Worker knowledge attitude practice .. for fp and health Integration	Duration of service

f. Layering hypothesis

Data Sets	Analysis	Dependent variable	Control
M_t	Descriptive	Contact with GOB worker Contact with ICDDR,B worker	Proximity to Thana headquarters

SIGNIFICANCE

The apparent successful impact of the FPHSP raises as many questions as it answers. Some of the questions challenge the validity of conclusions drawn. Clearly, there must be extensive comparative analysis of the social and demographic context of this study to augment the demographic analysis already completed.

FACILITIES REQUIRED

Office/Laboratory space	-None
Hospital/Animal resources	-None
Logistic support	-One speedboat 2 hrs. per working day.
Personnel	-Four male and eight female health assistants, data entry technician, computer programmer, statistical & secretarial facilities.
Data management	-Computer facilities.
Supplies	-Stationeries.

COLLABORATIVE ARRANGEMENT

This protocol addendum will provide data to be used by several scientist:

Alauddin Chowdhury and James F. Phillips

Dr.Chowdhury has written a separate limited study protocol with deaths in the study period as the unit of analysis. The cohort data in the present study on child mortality will be used for a collaborative study by Chowdhury and Phillips to augment the period data from the separate, but related, protocol on period data.

Khorshed Alam Mozumder

Mr.Mozumder will be responsible for the risk insurance analysis.

Dr.Koblinsky and Jalaluddin Akbar

Dr.Koblinsky and Mr.Akbar will undertake work in collaboration with other scientists on service contacts, service quantity, and other operational research issues.

James F. Phillips and Jalaluddin Akbar

Dr.Phillips and Mr.Akbar will undertake work on fertility motives and family planning and the comparative fertility analysis.

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