Attachment 1   Date: 12 May 2002

(FACE SHEET)	**ETHICAL REVIEW COMMITTEE, ICDDR,B.**

Principal Investigator: Peter Kim Streatfield

Application No. 2002-004

Title of Study: Plateauing of the Bangladesh
Fertility Decline.

Trainee Investigator (if any): _____

Supporting Agency (if Non-ICDDR,B) USAID

Project Status: _____

[✓] New Study

[ ] Continuation with change

[ ] No change (do not fill out rest of the form)

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

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1. Source of Population:
    (a) Ill subjects   Yes (No)
    (b) Non-ill subjects   (Yes) No
    (c) Minor or persons under guardianship   Yes (No)

2. Does the Study Involve:
    (a) Physical risk to the subjects   Yes (No)
    (b) Social risk   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   Yes (No)
         to subject or others

3. Does the Study Involve:
    (a) Use of records (hospital, medical,   (Yes) No
         death or other)
    (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 the study   (Yes) No
    (b) Procedures to be followed including   Yes No
         alternatives used
    (c) Physical risk   Yes (No) NA
    (d) Sensitive questions   Yes (No) NA
    (e) Benefits to be derived   (Yes) No
    (f) Right to refuse to participate or to   (Yes) No
         withdraw from study
    (g) Confidential handling of data   (Yes) No
    (h) Compensation &/or treatment where   (Yes) No
         there are risks or privacy is involved
         in any particular procedure

5. Will Signed Consent Form be Required:
    (a) From subjects   Yes No
    (b) From parents or guardian   Yes No
         (if subjects are minor)

6. Will precautions be taken to protect   (Yes) No
    anonymity of subjects

7. Check documents being submitted herewith to
    Committee:
    NA   Umbrella proposal - Initially submit an with
         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
    NA   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) Example 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 Committee 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.

P. K. Streatfield (signature)
_____   _____
Principal Investigator   Trainee

ABSTRACT SUMMARY FOR ETHICAL REVIEW COMMITTEE
"Plateauing of the Bangladesh Fertility Decline"

1. Requirements for study population: This study primarily uses secondary data for the main analysis. There will a small amount of additional data collected on parents' aspiration for their children's future, and their plans for future childbearing. The sample for gathering further in-depth information on aspirations and desired family size, etc., is 2,000 married couples across various sites: Matlab, Abhoynagar, and Mirsarai (approximately 400 in each site). In addition, samples of a similar size will be selected in the low fertility division, Rajshahi, and Chittagong. As the interview involve only married couples, there should be no obstacle to obtaining voluntary informed consent. No special groups such as children will be interviewed.

2 & 3. Potential risks, and procedures for protecting against them: It is not anticipated that any potential risks will occur to interviewees in the course of this study. The questions relate only to parental aspirations for the children's futures, in the context of schooling, employment, etc. It also relates to numbers of additional children desired. These are standard questions, some of which used to be asked in the routine HDSS until 1998.

4. Methods for safeguarding confidentiality / anonymity: The information collected will be subject to the standard protection that all HDSS data are subject to. This is that in HDSS areas, ID numbers are used to identify individuals, but names and addresses are not released to users of the data. In non-HDSS areas, names will be recorded only to identify the respondents from the household listing. This information will not be used for any other purpose. The HDSS databases are accessible only to authorized users from HDSS. Hard (paper) copies of questionnaires will be kept in a secure cabinet in the HDSU office.

5. Consent procedures: The study on desired family size will be explained to all potential participants, and a signed informed consent will be obtained from them. All participants are of reproductive age, and currently married, so no children with guardians will be included. For participants unable to read, the consent form will be read aloud and explained to them, and consent will be recorded by thumbprint on the consent form. The consent form includes an explanation of any risks and the use of the data, of the right of the respondent to decline to participate.

6. Interview and other procedures: The interviews will take place in the respondent's home, as does the routine HDSS data collection. The usual conditions of privacy for the HDSS data collection will be maintained. In the HDSS area, the interview will require only 15 minutes or so, as the HDSS staff are very familiar to the respondents and do not require lengthy introductions. In the non-HDSS areas, the

interviews may take 20-25 minutes as some introductions will be necessary, and some of the hypothetical concepts of desired number of children may need explanation.

7.   Benefits: The respondents in the Matlab HDSS area gain numerous benefits by participating in ICDDR,B studies. These include access to high quality preventive and curative health services and information at no cost. This study falls into the same category as routine data collection, in that there are no invasive tests being performed, and the data collected on plans for children, do not pose any risk to the respondents. The benefits to Bangladesh society are potentially great, if a better understanding of the future trends in the birth rate can be obtained from the study. Appropriate policies and interventions may result from this work, which could slow population growth, and contribute to equitable economic development. In non-HDSS areas, the respondents do not benefit directly by having access to ICDDR,B services, however they should receive any benefits that the society as a whole may receive by the improved understanding of Bangladesh fertility.

8.   Records, :No records of the conventional type will be used in this study. In the Matlab HDSS area, and the FHRP areas, some of the demographic background of residents will of course be used for the analysis that is the major part of the study, but no medical records, or any of the body tissues etc., of respondents will be collected or used.

The statement to the subject includes information specified in items 2, 3, 4, 5(c), and 7, as well as indicating the approximate time required for the interview.

[c:\mydocs\dfid\ercabstract – 20 May 2002]

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International Centre for Diarrhoeal Disease Research, Bangladesh
CENTRE FOR HEALTH AND POPULATION RESEARCH
Mail : ICDDR, B, GPO Box 128, Dhaka-1000, Bangladesh
Phone: 880-2-8811751-60, Telex : 642486 ICDD BJ
Fax : 880-2-8823116, 8812530, 8811568, 8826050, 9885657, 8811686, 8812529
Cable : Cholera Dhaka

Memorandum

8 May 2002

To : Dr. Peter Kim Streatfield
       Public Health Sciences Division

From: David A. Sack, M D
        Chairman, Research Review Committee (RRC)

Sub : __Approval of protocol # 2002-004__

Thank you for your memo of 6 May 2002 attaching the modified version of your **protocol # 2002-004** entitled "Plateauing of the Bangladesh fertility decline" incorporating the observations of the RRC made in its meeting held on 18th March 2002. The modified version of the protocol is hereby approved.

Thank you.

copy: Associate Director
         Public Health Sciences Division

International Centre for Diarrhoeal Disease Research, Bangladesh
CENTRE FOR HEALTH AND POPULATION RESEARCH

Memorandum

To: Dr. David Sack, Chairman, Research Review Committee

From: Dr. Peter Kim Streatfield, HDSU, PHSD

Date: 6 May 2002

Subject: Revised protocol # 2002-004
               "Plateauing of the Bangladesh Fertility Decline"

The above protocol has been further revised following the advice of the Research Review Committee. I have provided two versions of the revised protocol, one showing all changes, the other including the changes but without them being clearly highlighted.

The suggestions on further expanding the issue of whether or not there actually has been a fertility decline have been taken up on pages 4 and 5 under Background.

The matter of regional variation, by division and urban/rural, is discussed on page 5 under Background.

The question of whether FP demand was saturated by the beginning of the 1990s was a valid point and I have rephrased that as saturation of demand for FP services to lower overall fertility, a slightly different meaning. This is on page 3 under Hypotheses (1).

The question about measurement of gender preference is also taken up in the same Hypotheses section (2).

The question on how this study will examine indirect determinants of fertility, especially economic factors, differently from the work of Caldwell, Khuda and others, is discussed on pages 3 and 4 under Specific Aims.

The question on what policy approaches might be recommended to contain the potential impact of population momentum is discussed on page 4 under the last Specific Aim. This is discussed as far as possible considering the purpose of the study is to explore these issues, and therefore the findings cannot reasonably be expected in the proposal, as pointed out by one of the RRC members in the last Committee meeting.

Further detail has been added to the methodology under Analytical approaches on page 11.

Also this section has been expended on the measurement of tempo and quantum effects, through birth interval analysis, and other approaches. The measurement of desire for children, and its measurement, has also been expanded in the same Analytical section.

The sources of data for the attempts to project prospects for future female education and employment have been discussed more in the Analytical section. It is true that the future economic situation in Bangladesh is difficult to predict. But the country has a surfeit of economists, some of whom, it is believed, will be able to contribute productively to the discussion. Also, it is not anticipated that fertility behaviour is linearly related to employment opportunities, the 'model' effect of young rural women becoming aware that there are roles other than early marriage and motherhood possible, may be more powerful than the reality.

I trust that these revisions satisfy the requirements of the RRC, and that the protocol can be forwarded to the ERC in the upcoming May round.

RESEARCH PROTOCOL

Protocol No. 2002-004

Project Title: Plateauing of the Bangladesh Fertility Decline.

Theme: *(Check all that apply)*

- ☐ Nutrition
- ☐ Emerging and Re-emerging Infectious Diseases
- ☒ Population Dynamics
- ☐ Reproductive Health
- ☐ Vaccine evaluation

- ☐ Environmental Health
- ☐ Health Services
- ☐ Child Health
- ☐ Clinical Case Management
- ☐ Social and Behavioural Sciences

Key words: Fertility, Plateau, Bangladesh

Relevance of the protocol: The GoB has identified rapid population growth as a major hindrance to economic development. In the National Population Policy it has produced a target to reduce fertility to replacement level by 2005. Progress during the 1980s has been impressive, with the fertility level halved, from almost seven children per woman to just over three in the early 1990s. However, that rapid decline has stalled at one child above replacement level. It is vital to understand the reasons for the stalling, and to attempt to predict if and when the declinewill resume. Even without the stalling, the population is expected to double, further delay in attaining replacement fertility adds to that final population size.

Principal Investigator: Peter Kim Streatfield   **Division:** PHSD   **Phone:** X-2212

Address: Health & Demographic Surveillance Unit **Email:** kims@icddrb.org
Public Health Sciences Division
ICDDR,B

Co-Principal Investigator(s): A. Rzaqque, K. Ahmed, Carel van Mels

Co-Investigator(s): R. Bairagi, K. Majumder, A. Bhuiya, A. Al-Sabir

Student Investigator/Intern:

Collaborating Institute(s): NIPORT

Population: Inclusion of special groups *(Check all that apply)*:

Gender
- ☒ Male
- ☐ Females

Age
- ☐ 0 – 5 years
- ☐ 5 – 9 years
- ☒ 10 – 19 years
- ☒ 20 +
- ☐ > 65

- ☐ Pregnant Women
- ☐ Fetuses
- ☐ Prisoners
- ☐ Destitutes
- ☐ Service providers
- ☐ Cognitively Impaired
- ☐ CSW
- ☐ Others (specify _____)
- ☐ Animal

Project / study Site (*Check all the apply*):
- ☐ Dhaka Hospital
- ☐ Matlab Hospital
- ☑ Matlab DSS area
- ☐ Matlab non-DSS area
- ☐ Mirzapur
- ☐ Dhaka Community
- ☐ Chakaria
- ☑ Abhoynagar

- ☑ Mirsarai
- ☐ Patyia
- ☐ Other areas in Bangladesh NATIONAL DHSDATA
- ☐ Outside Bangladesh
     name of country: _____
- ☐ Multi centre trial
     (Name other countries involved)
     _____

Type of Study (*Check all that apply*):
- ☐ Case Control study
- ☐ Community based trial / intervention
- ☐ Program Project (Umbrella)
- ☑ Secondary Data Analysis
- ☐ Clinical Trial (Hospital/Clinic)
- ☐ Family follow-up study

- ☑ Cross sectional survey
- ☐ Longitudinal Study (cohort or follow-up)
- ☐ Record Review
- ☐ Prophylactic trial
- ☐ Surveillance / monitoring
- ☐ Others

Targeted Population (*Check all that apply*):
- ☑ No ethnic selection (Bangladeshi)
- ☐ Bangalee
- ☐ Tribal groups

- ☐ Expatriates
- ☐ Immigrants
- ☐ Refugee

Consent Process (*Check all that apply*):
- ☐ Written
- ☑ Oral
- ☐ None

- ☑ Bengali language
- ☐ English language

Proposed Sample size:

Total sample size: __2000__ ☐

Sub-group _____ ☐

_____ ☐

_____ ☐

_____ ☐

Determination of Risk: Does the Research Involve (*Check all that apply*):

- ☐ Human exposure to radioactive agents?
- ☐ Fetal tissue or abortus?
- ☐ Investigational new device?
     (specify_____)
- ☑ Existing data available from Co-investigator

- ☐ Human exposure to infectious agents?
- ☐ Investigational new drug
- ☑ Existing data available via public archives/source
- ☐ Pathological or diagnostic clinical specimen only
- ☐ Observation of public behaviour
- ☐ New treatment regime

Yes/No

☑ ☐ Is the information recorded in such a manner that subjects can be identified from information provided directly or through identifiers linked to the subjects?

☐ ☑ Does the research deal with sensitive aspects of the subject's behaviour; sexual behaviour, alcohol use or illegal conduct such as drug use?

Could the information recorded about the individual if it became known outside of the research:

☐ ☑ a. place the subject at risk of criminal or civil liability?

☐ ☑ b. damage the subject's financial standing, reputation or employability; social rejection, lead to stigma, divorce etc.

Do you consider this research (*Check one*):

- ☐ greater than minimal risk
- ☑ no risk

- ☐ no more than minimal risk
- ☐ only part of the diagnostic test

Minimal Risk is "a risk where the probability and magnitude of harm or discomfort anticipated in the proposed research are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical, psychological examinations or tests. For example, the risk of drawing a small amount of blood from a healthy individual for research purposes is no greater than the risk of doing so as a part of routine physical examination".

Yes/No

☑ ☐ Is the proposal funded?

If yes, sponsor Name: ___USAID /DHAKA___

Yes/No

☐ ☐ Is the proposal being submitted for funding ?

If yes, name of funding agency: (1) _____

(2) _____

Do any of the participating investigators and/or their immediate families have an equity relationship (e.g. stockholder) with the sponsor of the project or manufacturer and/or owner of the test product or device to be studied or serve as a consultant to any of the above?

IF YES, submit a written statement of disclosure to the Director.

Dates of Proposed Period of Support

(Day, Month, Year - DD/MM/YY)

Beginning date __01-06-2002__

End date __30-11-2003__

Cost Required for the Budget Period ($)

	1st Year	*2nd Year*	*3rd Year*	*Other years*
a.	$109,084	$38,515		

b. Direct Cost : __$147,599__   Total Cost : __$185,975__

Approval of the Project by the Division Director of the Applicant

The above-mentioned project has been discussed and reviewed at the Division level as well by the external reviewers. The protocol has been revised according to the reviewer's comments and is approved.

ᄂ﹏	PERSSON	9/5 2002
Name of the Division Director	Signature	Date of Approval

Certification by the Principal Investigator

I certify that the statements herein are true, complete and accurate to the best of my knowledge. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. I agree to accept responsibility for the scientific conduct of the project and to provide the required progress reports if a grant is awarded as a result of this application.

Signature of PI _P. K. Streatfield_

Date: _8 May 2002_

Name of Contact Person (if applicable)

_____

Table of Contents

☐ Check here if appendix is included

PROJECT SUMMARY: Describe in concise terms, the hypothesis, objectives, and the relevant background of the project. Describe concisely the experimental design and research methods for achieving the objectives. This description will serve as a succinct and precise and accurate description of the proposed research is required. This summary must be understandable and interpretable when removed from the main application. (TYPE TEXT WITHIN THE SPACE PROVIDED).

Principal Investigator:	Peter Kim Streatfield	
Project Name:	Plateauing of the Bangladesh Fertility Decline	
Total Budget US$190,175	Beginning Date 15 February 2002	Ending Date: 15 August 2003

Historically Bangladesh couples have averaged 6 to 7 children, due to early universal marriage, and little contraceptive use. This pattern changed two decades ago, the level fell below 5 by late 80's, and below 4 in early 90's. During the 1990's the level has plateaued at 3.3 children per couple. This stagnation has enormous short and long-term implications for the future size of the population, and associated resource demands. It is vital and urgent to understand the factors underlying this stagnation, and to be able to predict if it will continue. It is possible that this is a temporary 'tempo of childbearing' artifact where couples are 'catching up' for childbirths delayed in the 1980s. In this case, the decline can be expected to continue within a couple of years. If not, then it maybe that couples actively choose to have 3 or more children, due to gender preference and concerns about child survival and old age security, among other things.

The objectives of the study are: (1) a dissagregation of the many components of fertility, including marriage patterns, contraceptive use, abortion, infertility patterns, breastfeeding practices, etc., to determine their respective contribution to the earlier fertility decline, as well as their current status, along with prospects for the future. (2) Some additional information will be collected on parents' aspirations for their children, and related factors such as desired family size, additional children desired, etc. (3) To review what approaches have been used in other countries to reduce fertility below the current level in Bangladesh. (4) To explore the potential of non-family planning approaches to minimize the impact of population momentum on future population growth.

The research methodology will be primarily analysis of secondary data from the numerous sources (Demographic & Health Surveys, 1993/4, 1996/7 & 1999/2000) as well as earlier CPS and BFS surveys. These data provide repeated standardized measures of many of the factors which determine fertility. Additional historical longitudinal data are available from ICDDR,B field sites in Matlab, Abhoynagar, and Mirsarai, which can be used to throw light on the process. Additional information of parents' aspirations for children, etc., will be gathered through a limited sample survey across different parts of the country to determine the future level of childbearing if couples did not exceed their desired family size. This survey would be an extension of the KAP (knowledge-attitudes-practice) approach used widely in early stages of FP programs. There is indirect evidence that current fertility exceeds wanted fertility by almost one child, but the reasons for this (e.g., contraceptive failure) are not completely clear. This survey will contribute to clarifying this situation.

KEY PERSONNEL (List names of all investigators including PI and their respective specialties)

Name	Professional Discipline/ Specialty	Role in the Project
1. Peter Kim Streatfield	Head, Health & Demographic Surveillance Unit, PHSD	Principal Investigator
2. Abdur Razzaque	Manager, HDSS, Dhaka, PHSD	
3. Kapil Ahmed	Acting Manager, HDSS Matlab, PHSD	
4. R. Bairagi	Senior Scientist, HDSU, PHSD	
5. Carel van Mels	Advisor, HDSU, PHSD	
6. Abbas Bhuiya	Head, Social & Behavioural Sciences Unit, PHSD	
7. K. Majumder	Senior Demographer, FHRP, HSID	
8. Ahmed al-Sabir	Director (Research), NIPORT	

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9. John Cleland   Professor, Centre for Population Studies, LSHTM, London
10. Nitai Chakraborty   Associate Professor, Statistics Dept., Dhaka University

DESCRIPTION OF THE RESEARCH PROJECT

Hypothesis to be tested:

Concisely list in order, in the space provided, the hypothesis to be tested and the Specific Aims of the proposed study. Provide the scientific basis of the hypothesis, critically examining the observations leading to the formulation of the hypothesis.

The main hypotheses to be tested are:

(1)   The fertility decline of the 1980s was largely the result of increasing contraceptive use, and very little to do with changes in: marriage patterns, infertility, or breastfeeding. This was driven by a major expansion of FP service delivery at the doorstep across the country. The hypothesis would be that demand for FP services to lower overall fertility was saturated by late 1980s, and that rising contraceptive prevalence rates were contributing to spacing of the fewer number of births, but no longer reducing overall fertility. This issue will be explored through indicators of unmet need, desired family size, and actual childbearing behaviour.

(2)   The persistence of gender preference, and of concerns about long-term survival of children to provide old age security for parents, contributes to the desire for children remaining around three. A modest level of contraceptive failure contributes an additional fraction of a child to the actual number born. There are several approaches to measuring gender preference usually involving examining rates of progression to higher parity from a particular gender combination or mix of existing children. As gender preference disappears, the probability of couple having additional children no longer depends on the existing balance of boy and girl children.

(3)   The social changes that have been taking place in Bangladesh, such as the rapid increase in school enrolments for girls, and the expanding employment opportunities for young women, are having some measurable impact on delaying age at first marriage, but this is insufficient to produce a substantial increase in average age of childbearing. The consequence of this is that these social changes will have little impact on the enormous population momentum built up in the young age structure of the Bangladeshi population.

Specific Aims:

Describe the specific aims of the proposed study. State the specific parameters, biological functions/ rates/ processes that will be assessed by specific methods (TYPE WITHIN LIMITS).

- To review evidence on factors which have contributed to the fertility decline up to the beginning of the 1990s. This includes both indirect determinants (socioeconomic, cultural, etc.) and direct determinants (exposure to possibility of pregnancy, fertility control, and other factors). This review will consider earlier studies which have examined the impact of the profound social and economic changes which, it has been argued, have contributed to the fertility decline. For example, Caldwell et al., 1999; Khuda et al., 2001, have argued that such changes were more important than the strong family planning program in bringing about the decline. Others, such as Cleland et al., 1994, argue that socio-economic change can only bring about fertility decline through an effective family planning program. They say that in Bangladesh this was the necessary condition, in conjunction with latent demand to reduce fertility from its traditionally high level. While these studies examined the past, the present study needs to attempt to project future socio-economic change and its probably impact on future fertility levels.

- To project what future trends might be for those factors that are believed to have played important roles in determining fertility patterns in Bangladesh. Then, in the light of previous experience and expected trends in the important determinants of fertility, the study will project the probable future trend in fertility.

- To review what approaches have been utilized in other countries to support continued reduction of fertility levels below the current Bangladesh TFR of 3.

- To examine the implications of projected trends in these direct and indirect factors for minimizing the potential impact of momentum in future population growth (see below).

- To review whether suggested approaches to further reduce fertility are also the most appropriate approaches to also minimize the impact of population momentum. For example (as explained below), even eliminating all current 'unwanted fertility' will have only a small impact on future population growth, in contrast to the greater potential impact of delaying age at marriage, and raising the average age at childbearing. Previous studies in South Asia have suggested that the impact of population momentum can be greatly reduced by raising the average age of childbearing. This may apply to high fertility societies like Pakistan, but preliminary work in Bangladesh suggests that the potential impact is minimal, unless a very substantial change is brought about. It is vital that this issue be explored and understood to allow appropriate policies to be devised.

Background of the Project including Preliminary Observations

Describe the relevant background of the proposed study. Discuss the previous related works on the subject by citing specific references. Describe logically how the present hypothesis is supported by the relevant background observations including any preliminary results that may be available. Critically analyze available knowledge in the field of the proposed study and discuss the questions and gaps in the knowledge that need to be fulfilled to achieve the proposed goals. Provide scientific validity of the hypothesis on the basis of background information. If there is no sufficient information on the subject, indicate the need to develop new knowledge. Also include the **significance and rationale** of the proposed work by specifically discussing how these accomplishments will bring benefit to human health in relation to biomedical, social, and environmental perspectives. (DO NOT EXCEED 5 PAGES, USE CONTINUATION SHEETS).

For much of the 20th century the total fertility rate (TFR) in Bangladesh had hovered between 6 and 7 children per women. This comparatively high level was a consequence of universal and early marriage, and little or no contraceptive use. By the early 1980s fertility was starting to fall. By the late 1980s the TFR was below 5 (4.8 in 1986-88), and by the early 1990s below 4. According to the periodic DHS surveys in the 1990s, it remained steady at 3.4 (1991-93), 3.3 (1994-96) and 3.3 (1997-99)[1]. An alternative data source, the Health and Demographic Survey conducted in 2000 by the Bangladesh Bureau of Statistics, produces a slightly different pattern with a gradual fertility decline from 1994 to 2000. The TFR continued to decline annually at about 0.1 children per woman during that period. This can be compared to an annual decline of 0.28 children per woman between 1989 and 1994, suggesting that the rate of decline had slowed substantially in the mid 1990s. Some mention has been made of the continued decline during the 1990s of the average number of children ever born (CEB), suggesting that this reflects a persisting decline. This is not the case – the continued decline in average CEB reflects the impact of the major decline of the 1980s feeding into the cumulative lifetime fertility of women as they age.

It has long been recognized that fertility levels are closely associated with levels of contraceptive use. Most countries have a fertility level within one child above or below the multi-country regression line of the contraceptive prevalence rate(CPR), and a 15 point increase in CPR produces a decrease of one child in fertility level (Ross et al., 1993:2). Bangladesh has always been close to the regression line, but in the 1990s fertility levels fell below expected levels based on CPR. In 1991 based on CPR, the expected TFR was 4.5, actual was 5.3. In 1993/94 the expected was 4.2, actual was 3.4, a substantial difference. In 1996/97, expected was 3.9, actual was 3.3, and in 1999/2000, expected was 3.5, actual was 3.3. So over the decade of the 1990s, the rise in CPR of 14points was associated with a decline in

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[1] If the fertility level of the early 1970s had persisted through to the present, Bangladesh would now have a population some 50 million larger than the present 130 million.

actual TFR of 1.0 children, exactly as predicted by the regression line, but some of the intermediate levels were lower than predicted, by up to 0.8 of a child. One possible explanation, apart from data quality, is high rates of abortion during that period. This will be explored in the study.

Within different regions of Bangladesh, the patterns of fertility and contraceptive use have varied considerably. This applies to low-fertility divisions (Rajshahi and Khulna) and high-fertility divisions (Sylhet and Chittagong), as well as urban versus rural areas. The study will need to examine these regional variations closely to fully understand the situation.

The observation that the steeply declining trend in fertility has plateaued over the decade of the 1990's is disturbing, and has serious implications for future population growth. The Government has declared a target of attaining replacement fertility (a TFR of about 2.2) by 2005. Even if this target is achieved, the population is still projected to double to around 260 million before finally stopping growing in the middle of the next century (World Bank, 1994). This is largely due to the momentum inherent in the 'young' population age structure. If fertility continues at the present TFR level of 3 for a substantial length of time, attaining replacement level will obviously be delayed[2].

It is notable however, that if fertility could be reduced to a little below replacement level in the near future, it would be possible to limit the final stationary population to just over 200 million by the middle of the present century. This is vastly preferable to the 260 million currently projected. So ideally, once the target of replacement fertility is attained, every effort should be made to continue reducing fertility to a TFR of about 1.8-1.9 (a Net Reproduction Rate of 0.8-0.9 daughters per mother), similar to that of Taiwan, Singapore, and some other Asian countries at present[3].

When considering the possible reasons for the stalling of the decline it should be noted that one consequence of rapid fertility declines is a decrease in average age at childbearing. This decrease results in a change in the 'tempo' of childbearing, generally due to a concentration of childbearing into a shorter period. Concurrent with the halving of the fertility level, the average age at childbearing has fallen by four years, from 29.8 in 1975 to 25.8 in 1996/97[4]. John Bongaarts of the Population Council has argued that such a fall can lead to an apparent stalling of fertility decline in cross-sectional (period) measures of fertility, although longitudinal (cohort) measures of fertility can show quite a different pattern of continuing decline[5].

The question then arises: "is the present plateau in fertility decline a temporary phenomenon, and the decline will resume in the near future, or could this mark a 'bottoming out' of the fertility decline?". If temporary, is it due to a childbearing 'tempo' effect, as seen in some other countries? If a long term or permanent plateau, is it due to FP supply factors, such as concerns about side effects of hormonal methods, and health risks of adopting long-acting clinical contraception services. Or could it be due to factors that limit FP demand, such as persisting gender preference in childbearing. Is there a childbearing 'insurance' effect due to continuing insecurity about child survival, where families want to ensure that at least one child of each sex survives to adulthood.

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[2] The population at any time, from the present through to becoming stationary, will be larger by some three percent for every five years delay in attaining replacement fertility level.

[3] To stop population growth within the present decade, the TFR would have to decline to 0.9 immediately. This is not realistic as there is no country with TFR lower than 1.2 (Italy, Spain).

[4] This effect is not because women are commencing childbearing at earlier ages, but because they are ceasing childbearing earlier. Two-thirds of the TFR decline by 3 children per woman occurred among older women, over 30 years of age, due to the decline in higher parity births.

[5] An illustration of changing 'tempo' of childbearing was the post WW2 'baby boom' where lifetime or cohort fertility of women did not change, but by concentrating postponed childbearing into the late 1940s, the cross-sectional (period) fertility rates increased, simply due to a childbirth timing effect.

Approach to Identifying Determinants of Bangladesh Fertility Decline

In order to make any predictions about future fertility in Bangladesh, the study will need to review which factors have played important roles in the fertility decline to this point. Many earlier studies of the important factors in fertility decline across countries have used an analytical framework such as that of Bongaarts (1978:105).

This framework facilitates understanding of how indirect determinants of fertility, such as socioeconomic, demographic, cultural and environmental variables, can influence fertility through direct or intermediate determinants. These intermediate determinants are categorized by Bongaarts as: (1) Exposure factors (proportions of women married); (2) Deliberate marital fertility control factors (contraception, induced abortion); and (3) Natural marital fertility control factors (lactational infecundability; frequency of intercourse; sterility; spontaneous intrauterine mortality; duration of the fertile period).

The challenge in understanding the Bangladesh fertility decline has been to examine changes and trends in the various indirect and direct determinants of fertility, and to elucidate their relative contributions to fertility decline. An important aspect of this framework is the concept that any changes in the indirect determinants, that is, changes due to development and other socioeconomic or cultural factors, can only influence fertility levels through the direct determinants. For example, the experience in many countries is that increasing female education leads to fertility reduction through delayed marriage and increased use of contraception.

Very briefly, the majority of the dramatic fertility decline to this point in Bangladesh has taken place through increased use of contraception, and to a lesser extent, abortion (the direct, deliberate fertility control factors). In regard to the 'exposure' factors, there has been a small but steady increase in age at marriage, which has had relatively little impact on fertility decline. In regard to the natural fertility control factors (the third group of direct determinants), there is little evidence that any of these factors have changed sufficiently to account significantly for the fertility decline. The observed small decline in postpartum amenorrhoea (lactational infecundability), stronger in urban areas, has been compensated for by increased contraceptive use.

It is important to understand what underlies this fertility plateauing, and based on this understanding to make some informed projections of future fertility levels. It is also appropriate to reconsider previous strategies for reducing fertility (primarily a strong FP effort). This is to determine whether further reductions to replacement levels and below, will be achieved through a continuation of those earlier family planning program strategies, or whether more effort must be put into non-family planning approaches.

Explanations of the Bangladesh Experience

Much of the focus of the Bangladesh approach to slowing population growth was to develop a strong family planning program effort. By most measures of political commitment, access to a variety of methods, widespread female fieldworker network, etc., the Bangladesh program ranked globally as a strong (though not necessarily efficient) FP program. Through the efforts of this program, contraceptive prevalence (CPR) increased from around 7% of couples in the early 1970s to more than half of couples today.

Family Planning

Contraceptive Method Mix: The Bangladesh family planning programme has made impressive progress, but there is continuing concern about the gradual decline in use of permanent contraceptive methods (male and female sterilization), and about stagnation in adoption of low cost, long acting, temporary clinical methods like the IUD. Although the use of injectables and oral pills continues to increase, the main method of choice remains the oral pill which is associated with an almost 50% discontinuation rate in the first year of use, partly due to a high failure rate (relative to IUD and injectables). So, while the rapid rise in CPR is very impressive, there is reason to doubt that the fertility reduction impact of the rising trend will continue if current trends in method mix persist.

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This pattern of declining permanent method users is likely to continue because of the large cohort of women who were sterilized in the major tubectomy 'push' of the early to mid 1980s (a million women in 1983-85). These sterilized women are now approaching the end of the reproductive years where the fertility limiting impact of FP use is minimal, and few younger couples are adopting these methods.

The study will look at trends in overall contraceptive use, method mix, and method specific failure and discontinuation rates. The potential for improvements in quality of care, and in consequent increased uptake of clinical methods (including injectables and Norplant), will be considered. Using the Bongaarts quantitative approach with estimates of method specific use-effectiveness, it is not difficult to generate various hypothetical method-mix distributions with varying overall CPR levels, which would result in replacement fertility if achieved in Bangladesh.

A strong motive for attempting to improve FP services is to satisfy the demand of potential users who wish to limit their fertility. In this regard it is useful to have some estimate of the number of couples who may utilize FP services if circumstances were different. One approach to estimating this number of couples is described as 'unmet need for FP'.

Unmet need for family planning services: The proportion of couples that want no more children, either during the next two years or ever, is defined as the 'unmet need' for contraception. According to the 1999/2000 DHS, some 15% of couples fall into this category, suggesting that the current CPR of 53.8% can theoretically be raised to almost 70% if all unmet need is satisfied. This is not the case in all divisions of the country, for example, Sylhet would reach only 56% CPR if all reported unmet need was satisfied, partly because desired family size is higher there. However, nationwide this level is believed to be sufficient to achieve replacement fertility.

This study will examine the reported unmet need in an attempt to decompose the various elements that comprise it. The questions that will guide this analysis include the following: why do couples that do not want to become pregnant not use FP? Are they couples who have had previous negative experience with FP? The DHS data and the data from Matlab and other field sites can throw light on previous experience with other contraceptive methods, and reasons for discontinuation, including possible reasons for method switching, or 'taking a break' from a method?

The above section has considered some aspects of the direct determinants of fertility. In the following section, selected indirect determinants will be considered.

Socioeconomic factors in the period up to the 1990s

At the end of the 1980s, there were several analyses that examined the role of various socioeconomic factors in the fertility decline that was becoming evident. These factors included school enrolments of girls, involvement of women in non-domestic employment, and several others.

The analyses concluded that there had been very little progress in any of these socio-economic factors during the 1980s. It is ironic then, that during the 1990s there has been substantial progress in many of these factors, changes that would suggest or predict that fertility would decline. Yet the opposite has occurred - the earlier fertility decline has stalled. As these theories did not explain the experience of the 1980s, the conclusion was that supply-side factors, meaning the widespread provision of FP information and services through both Government and NGO workers, made a major contribution to the fertility decline. Agreement remains more elusive however, on the role of other factors such as mortality decline.

Socioeconomic factors in the period since the early 1990s

Female Education: An impressive effort has been underway to increase the proportion of girls aged 11 to 16 years enrolled in secondary school[6]. This proportion increased from one in seven girls in 1991 to almost one in three by 1996, and was projected to almost 40% by end of the '90's decade.

Since the age at first marriage of women is strongly related to their education, a substantial impact of increased access to secondary schooling on age at marriage may be anticipated. According to DHS (1993/94), in the age group 20-24, women with secondary schooling married four and a half years later than uneducated women. The fertility level in the Matlab MCH-FP area is virtually at replacement level for women with some schooling (van Ginneken and Razzaque, 2000:7).

While Projects like FSSAP facilitate greater access to education, this alone does not necessarily ameliorate negative cultural norms, nor necessarily improve economic status in the short term. Nevertheless some changes in childbearing behaviour may reasonably be predicted. The study will gather information on trends and projections for future participation in education, and estimate what the impact might be on delaying marriage for these girls, and thus the potential impact on fertility and population momentum.

Non-Domestic Employment of Women: By the mid-1990s the number of women in the labour force had reached 8 million, a 250% increase over a decade. Many of these women were young – over half those in the important garment sector were under 20 years, and there were/are direct and indirect pressures on them to delay marriage[7]. While much of this formal sector employment for women is urban-based, there is growing evidence that as many of these women originate in rural areas, so there is a 'model effect' on rural siblings and others in the sending villages. The aspirations of these young rural girls and women are also expected to be changed by the growth in opportunities for employment.

The study will examine trends in female employment, and use available information to predict how the direct fertility determinant, age at marriage, is likely to be affected. It is possible to estimate reasonably accurately how delays in marriage (due, say, to greater employment opportunities) will reduce fertility[8].

The Role of Mortality Transition in the Fertility Decline

There has long been the view that couples have some idea of the number of children they want to survive to adulthood. As this is obviously affected by the proportion of births that survive the first two decades of life, so there is a link between fertility levels and child survival or mortality levels.

The impact on fertility of halving of the Crude Death Rate in the period 1945-1960 (from 40 to 20 per 1,000), and halving again between 1960 and the 1980s, has been somewhat overlooked in many fertility studies in Bangladesh. Subsequently, while the CDR has not declined substantially between the mid-1980s and the present, the under-5 mortality rate has halved, reflecting a major improvement in child survival.

The proposed study will pay close attention to trends in mortality, expressed in terms of rates of survival to adulthood rather than simply cross-sectional measures of infant and child mortality.

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[6] This effort is the Female Secondary School Assistance Project that provides a modest stipend to parents to retain their daughters in school. One condition of the Project is that the girls do not marry while in school or until they reach 18 years of age (legal minimum age). The Project expected to be supporting 1.2 million young women by 1999.

[7] One study found only one third of 15-19 year olds working in the garment sector were married compared to half of 15-19's nationally (Amin et al., 1997).

[8] For example, if proportions of women married among age groups 15-19 and 20-24 could be reduced by 10% each, the (singulate) mean age at marriage would increase by one year, and the TFR would decrease by 0.3 of a child, other things being equal.

Desired Family Size

One of the expected consequences of increased child survival is that the number of children a couple wants may decrease, because a larger proportion of births reach adulthood. In Bangladesh the average stated desired number of children is around 2.5, slightly higher than replacement level fertility. The DHS also calculates a different measure of 'wanted fertility' (actual TFR minus births reported as 'unwanted' – a controversial measure) of about 2.1 children in 1999/2000, i.e., below replacement.

One of the motivations behind couples wanting a certain number of children surviving to adulthood is the need for support in their old age. In low fertility developed countries this role or 'value' of children has largely been replaced by the state or private sector through social security or pension schemes. In Bangladesh this form of state supported old age security still does not exist on any scale. So the old age support function of children is assumed to persist, although the approaches couples take to maximizing the potential for their children to fulfill this may have changed. In many developing societies now it is assumed that parents prefer investing in the 'quality' of children (through education) rather than in 'quantity' of children, as was the case earlier. Due to female children leaving the parental home upon marriage, the burden of caring for old age parents (financially at least) tends to fall on male children. This can lead to a differential desire for male and female children.

Gender Preference

While opinions differ on the extent, and even the existence of such gender preference for male children, there is convincing evidence of a preference (past and present) in Bangladesh for children of both sexes, but with the balance favouring an additional boy.

In a context where rapid increases are occurring in opportunities for girls and young women to receive education and to enter the formal sector work force, it may be expected that such changes should reduce the traditional level of gender preference. Economic independence should increase the 'negotiating power' of young women with consequent reduction in early marriage, and delay in commencement of childbearing. If this pattern occurs, it has implications for reducing the potential negative impact of population momentum.

In the study available information on the trends in these various measures will be reviewed and interpreted in the context of projecting future trends in childbearing.

Rapid Urbanization

This particular socio-economic factor has played some (unquantified) role in fertility decline thus far, but is expected to play a more influential role in future. Within several decades the rural population will stop growing, a result as much from the large numbers migrating to the city as to declining fertility. So future growth will be concentrated largely in urban areas, particularly the slums.

While such a growth pattern has many negative implications for health and well being, it has a positive implication for population growth, as the urban areas were already below replacement level fertility by the mid 1990s (TFR of 2.1 in urban areas, DHS 1996/97). By 1999/2000 the TFR was 2.4 (slightly above replacement) though urban definitions had changed.

The study will examine the projections of urban versus rural population growth and estimate how this relocation of large numbers of couples might lead to reduced fertility.

Landlessness and Inheritance

Part of the motivation for men or couples to migrate from rural to urban areas is decreasing opportunities for livelihood in rural agricultural households. Within the rural areas, the examination of trends in gender preference must take into account the 'Malthusian' aspects of a large and steadily growing proportion of agricultural families becoming landless. There is already evidence that agricultural households show different childbearing behaviour

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according to the capacity of their landholdings to productively absorb the labour of the children. This trend towards increasing landlessness could be expected to undermine the traditional high (labour) utility of children. In a socio-religious context of inheritance patterns where family agricultural (and other) lands are divided equally among all sons, the formerly powerful incentive for producing multiple sons may be reduced or eliminated, as small packets of land are perceived as non-viable when further subdivided.

The study will examine the relationship in agricultural households between size of land holdings and childbearing patterns, including desired family size, considering sons and daughters separately. Both cross-sectional surveys and longitudinal data are available for this type of analysis.

However, in addition to the direct and indirect fertility control factors described above, there are quite different structural factors resulting from a large proportion of the population being concentrated in the young age groups that have yet to pass through the reproductive years. The implications of this large 'population momentum' are important. The approaches to minimizing the impact of such momentum may also differ from the approaches usually considered in simply lowering fertility. The study will need to consider how to approach the issue of population momentum in Bangladesh.

Research Design and Methods

Describe in detail the methods and procedures that will be used to accomplish the objectives and specific aims of the project. Discuss the alternative methods that are available and justify the use of the method proposed in the study. Justify the scientific validity of the methodological approach (biomedical, social, or environmental) as an investigation tool to achieve the specific aims. Discuss the limitations and difficulties of the proposed procedures and sufficiently justify the use of them. Discuss the ethical issues related to biomedical and social research for employing special procedures, such as invasive procedures in sick children, use of isotopes or any other hazardous materials, or social questionnaires relating to individual privacy. Point out safety procedures to be observed for protection of individuals during any situations or materials that may be injurious to human health. The methodology section should be sufficiently descriptive to allow the reviewers to make valid and unambiguous assessment of the project. (DO NOT EXCEED TEN PAGES, USE CONTINUATION SHEETS).

Data Sources

The study will utilize several existing data sources, the three Bangladesh DHS surveys (1993/94, 1996/97, 1999/2000), as well as referring to the series of earlier demographic studies (Contraceptive Prevalence Surveys of the 1980s; Bangladesh Fertility Survey 1989, etc.).

In regard to the important issue of changes in 'tempo' of childbearing causing an apparent stalling of the fertility decline, use will be made of the longitudinal data from several ICDDR,B field sites – Matlab, Abhoynagar and Mirsarai, and some urban sites. These surveillance systems contain vital information on the socioeconomic and other determinants of fertility. The Matlab Health and Socioeconomic Survey (MHSS, implemented by RAND Corporation in 1996), also contains very detailed economic data, also will be reviewed.

Additional direct information will need to be collected on parent's aspirations for their children, and on gender preference, rather than relying on indirect data implied through behaviour patterns. Approximately 300-400 households containing currently married women of reproductive age, will be interviewed in each field site. In the Abhoynagar, Mirsarai and Matlab sites, the existing surveillance household listings will be used to draw the sample. In Rajshahi, a household listing will have to be made before sample selection can be made.

These sources contain a variety of data on fertility levels (past and present), on desired family size (expressed in several different ways), on contraceptive use dynamics. All sources contain measures of economic status, as well as various social indicators. What none of the above sources contain are detailed data on parent's aspirations for their children's future. This area will require the collection of a limited amount of additional information to be linked to the existing data from the field sites.

For comparative studies, DHS reports and data sets from relevant countries will be examined and utilized. A range of countries where fertility levels have fallen below that currently in Bangladesh will be selected.

Analytical Approach to the Study

The first step in the analysis is to explore the data quality to evaluate whether or not the apparent plateau is real or an artifact of the survey methodology. This will be done by examining the levels of agreement between the historical fertility levels from recent surveys compared to current fertility levels from earlier surveys. This approach does not simply look at fertility levels, but at average birth intervals, parity progression ratios, P/F ratios (which compare cumulative cross-sectional fertility with cumulative cohort fertility to identify under reporting of births), etc. The fact that the surveillance data from Matlab and Abhoynagar, which is not subject to these biases, also shows plateauing, suggests that it is real.

The 'tempo' effects in fertility must be examined thoroughly to understand if the plateau is an artifact whereby births in the late 1980s and early 1990s were postponed (for whatever reason), then a catch-up phase began in the mid to late 1990s manifesting itself as rising tempo of childbearing an giving the appearance of a plateau. If so this is likely to be temporary, and the decline can be expected to continue in the near future. Bongaarts and Feeney have recently (1998)[9] argued that a small change in average age at childbearing can exert a major impact on the TFR, and there has been a very substantial decline in average age at childbearing in Bangladesh. Such tempo and quantum effects can be measured in various ways, including through measurement of average birth interval durations. The data are available to examine these issues.

The second step is to examine the direct or intermediate fertility determinants, which include proportions of women married (exposure factors); contraception and abortion use patterns (deliberate marital fertility control factors); and (where data are available) lactational infecundability (PPA), sterility, spontaneous intrauterine mortality, etc. (natural marital fertility factors)[10]. An extension of the above is to examine the differentials among the direct fertility determinants among the indirect determinants, that is, the socioeconomic, cultural and environmental variables that affect childbearing.

Having examined the links between direct and indirect determinants of fertility, the study will then review recent trends in the socioeconomic and other indirect fertility control factors as part of the process of attempting to predict patterns and levels of female education, female employment, etc., in the near future. This is more straightforward for education trends than for employment, because global economic forces and trade agreements (between Bangladesh and other countries such as China) may substantially alter such opportunities. But a body of experience is building up in regard to levels of female employment, and its consequences on marriage and childbearing. There are a variety of sources of female schooling enrolments and retention rates, as well as on employment patterns and levels. It will be necessary to hold discussions with knowledgeable persons on likely prospects for future growth of formal sector employment for young women.

Based on the conclusions about the future direction of the indirect factors, the study will focus on the probable future patterns of the direct fertility control factors, particularly marriage patterns and contraceptive use. By using a quantitative approach in addition to descriptive approach, various scenarios will be developed regarding overall levels and method specific patterns of contraceptive use necessary to achieve the country's demographic objectives.

The key issues that are not readily available from secondary sources are parental aspirations for numbers of children, for children's education and employment (or careers). One of the major contributions to demographic theory has

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[9] Bongaarts, J. and G. Feeney (1998), 'On the quantum and tempo of fertility', Population and Development Review 24(2):271-291, June.

[10] This is the terminology proposed by Bongaarts (1978), based on a simplification of the Davis and Blake framework first proposed in 1956.

been the 'value of children' hypothesis which proposed that as economic structures evolve and change, parents find that low cost labour, in the form of large numbers of children, become less advantageous, than having fewer children, but children with skills and capacity to be productive in a modern economy. As the 'costs' (especially education) of having rises, and the value of a large unskilled labour force declines, parents choose lower fertility and invest in education of their children. Such trends have been observed almost universally, and measures of parental desire to have more children than they already have reflect those trends. The methodology of exploring this issue has been discussed in the background section.

Even gender preference is currently measured indirectly by examining what proportions of parents' progress to have an additional child depending on the sex ratio of their existing children. There are ways of gathering first hand information on parent's views on desired gender balance of their children.

The proposed survey, which will gather semi-quantitative and qualitative information on parent's aspirations for their children, is not attempting to be nationally representative, but rather selecting contrasting sites (i.e., high and low fertility, and differing family planning usage). A total of 2,000 households will be interviewed in Rajshahi, Chittagong, and Jessore, including the Abhoynagar FHRP field site, and finally the Matlab field site in Chandpur. The study is very focused and will not attempt to collect information on a wide range of variables, rather only on parent's long-term views on desired levels of childbearing, on 'value' of and 'costs' of children, on the roles of children in care of their elderly parents, on 'investment' in quality rather than quantity of children, etc. Naturally some information on numbers of children will be required, as well as on family planning matters. While broader level data is available on social trends, the views of couples on social issues such as changing roles of women, land inheritance, etc., will be sort.

These objectives include the achievement of fertility levels, initially at replacement then below replacement. They also include the development of approaches to minimize the impact of population momentum. This is expected to require a focus on social change, a somewhat different approach from the strong family planning program relied on in the past.

The study is expected to provide a guide to the appropriate balance of approaches that will contribute to Bangladesh achieving its demographic objectives.

Facilities Available

Describe the availability of physical facilities at the place where the study will be carried out. For clinical and laboratory-based studies, indicate the provision of hospital and other types of patient's care facilities and adequate laboratory support. Point out the laboratory facilities and major equipments that will be required for the study. For field studies, describe the field area including its size, population, and means of communications. (TYPE WITHIN THE PROVIDED SPACE).

All investigators have access to computer hardware and software sufficient to conduct the planned analysis. The majority of the investigators are located in the Health & Demographic Surveillance Unit (HDSU) of PHSD, while several others are in the Family Health Research Program of HSID, and one collaborator is at Dhaka University Dept. of Statistics.

The data sets for the three relevant Demographic and Health Surveys (1993/94; 1996/97; & 1999/2000) have already been obtained, including necessary permissions from ORC Macro. The data from the health and demographic and surveillance system (HDSS) in Matlab is under the management of the principal and co- investigators. The data set from the Matlab Health and Socioeconomic Survey (MHSS-1996) is also in the possession of the investigators.

There will not be any clinical or laboratory based components in this study.

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The small additional data collection in Matlab to seek further up-to-date information on desired family size, and aspirations of couples for the education, employment, and general future of their children will be conducted in the HDSS area of Matlab.

Data Analysis

Describe plans for data analysis. Indicate whether data will be analyzed by the investigators themselves or by other professionals. Specify what statistical softwares packages will be used and if the study is blinded, when the code will be opened. For clinical trials, indicate if interim data analysis will be required to monitor further progress of the study. (TYPE WITHIN THE PROVIDED SPACE).

The major data analysis will be carried out on secondary data from a variety of sources (listed in the section on Research Design and Methods) on the intermediate determinants of fertility. These include the three Bangladesh DHS surveys, the earlier CPS and BFS surveys, the MHSS 1996, and the field site data from Matlab HDSS, and the Abhoynagar and Mirsarai sites.

The data analysis will be conducted by the investigators themselves, with additional inputs by a consultant from Dhaka University. Some inputs on overall direction of research questions and data analysis will be provided by the consultant from LSHTM, who has worked for many years (decades) on fertility in Bangladesh.

The data analysis will be analysed primarily using SPSS for Windows, with possibilities of some researchers using Stata or SAS, depending on personal preference.

The study is not blinded, as the methodology is different. This is not a clinical trial.

Ethical Assurance for Protection of Human Rights

Describe in the space provided the justifications for conducting this research in human subjects. If the study needs observations on sick individuals, provide sufficient reasons for using them. Indicate how subject's rights are protected and if there is any benefit or risk to each subject of the study.

The majority of the analysis will be carried out on secondary data, either from the HDSS field site in Matlab or the FHRP (former ORP) sites, or the national data sets from DHS, CPS, BFS, or MHSS. In each of these cases, informed consent was taken from the respondents before interview. Thus no further informed consent is necessary.

The use of DHS data sets required a request to ORC Macro with an attached brief description of what analysis is planned. This was provided and the data sets were downloaded from the ORC Macro website. The analysis of CPS and BFS will be taken from the published reports.

The additional data to be collected on a sub sample of respondents in the Matlab HDSS area. Informed consent will be taken from the respondents before interview. The interview will be conducted by field interviewers experienced in the Matlab area. Couples may refuse to be interviewed or to provide information at any time, and this will not affect their access to and use of routine ICDDR,B or government services.

Use of Animals

Describe in the space provided the type and species of animal that will be used in the study. Justify with reasons the use of particular animal species in the experiment and the compliance of the animal ethical guidelines for conducting the proposed procedures.

No animals will be used in this study.

Literature Cited

Identify all cited references to published literature in the text by number in parentheses. List all cited references sequentially as they appear in the text. For unpublished references, provide complete information in the text and do not include them in the list of Literature Cited. There is no page limit for this section, however exercise judgment in assessing the "standard" length.

Bongaarts, J. (1978) 'A Framework for Analyzing the Proximate Determinants of Fertility', Population and Development Review, 4(1): 105-132.

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Rahman, M. and J. DaVanzo (1993) 'Gender Preference and Birth Spacing in Matlab', Demography Vol.30, (3): 315-333.

Dissemination and Use of Findings

Describe explicitly the plans for disseminating the accomplished results. Describe what type of publication is anticipated: working papers, internal (institutional) publication, international publications, international conferences and agencies, workshops etc. Mention if the project is linked to the Government of Bangladesh through a training programme.

Early findings will be disseminated through short reports and working papers. Important conclusions will be disseminated through presentations to policy makers in the Ministry of Health and Family Welfare, and to donor agencies focusing on family planning, population growth and related issues.

A comprehensive final report will be published following the final dissemination workshop, incorporating the comments and refinements deriving from that meeting.

Collaborative Arrangements

Describe briefly if this study involves any scientific, administrative, fiscal, or programmatic arrangements with other national or international organizations or individuals. Indicate the nature and extent of collaboration and include a letter of agreement between the applicant or his/her organization and the collaborating organization. (DO NOT EXCEED ONE PAGE)

The ICDDR,B will collaborate with Centre for Population Studies, London School of Hygiene and Tropical Medicine, London University, and with Dhaka University, Dept. of Statistics. Collaboration with the Government of Bangladesh is through the Director of Research at NIPORT (National Institute for Population Research and Training).

Within ICDDR,B, the lead investigators from Public Health Sciences Division will collaborate with fellow researchers from the Family Health Research Project in the Health Services and Infectious Diseases Division.

Biography of the Investigators

Give biographical data in the following table for key personnel including the Principal Investigator. Use a photocopy of this page for each investigator.

Name	Position	Date of Birth

Academic Qualifications (Begin with baccalaureate or other initial professional education)

Institution and Location	Degree	Year	Field of Study

Research and Professional Experience

Concluding with the present position, list, in chronological order, previous positions held, experience, and honours. Indicate current membership on any professional societies or public committees. List, in, chronological order, the titles, all authors, and complete references to all publications during the past three years and to representative earlier publications pertinent to this application. (DO NOT EXCEED TWO PAGES, USE CONTINUATION SHEETS).

Bibliography

Detailed Budget for New Proposal

Project Title: Plateauing of the Bangladesh Fertility Decline

Name of PI: Peter Kim Streatfield

Protocol Number: Name of Division: PHSD

Funding Source: USAID   Amount Funded (direct): $147,599   Total: $185,975   Overhead (%) 26%

Starting Date: May 15, 2002   Closing Date: November 15, 2003

Strategic Plan Priority Code(s):

Sl. No	Account Description	Salary Support			US $ Amount Requested		
	Personnel	Position	Effort%	Salary Month	1st Yr	2nd Yr	3rd Yr
	Peter Kim Streatfield	Head, HDSU	20%	12037	28889	14444	
	Abdur Razzaque	Manager, HDSU	20%	1053	2527	1264	
	Kapil Ahmed	Act. Manager	15%	891	1604	802	
	R. Bairagi	Senior Scientist	25%	2643	7929	3965	
	K. Majumder	Demographer	15%	2133	3839	1920	
	Carel van Mels	Advisor, HDSU	15%	–	–	–	
	Abbas Bhuiya	Head, SBSU	10%	9333	11200	5600	
	A. Al-Sabir	Collaborator	5%	–	–	–	
	Data Programmer (2x12)	GS4/7	50%	336	4032	0	
	Data Entry Staff (2x3)	GS3/7	100%	280	1680	0	
	Qualitat. Data Staff (5x4)	GS5/7	100%	440	8800	0	
	Quantit. Data Staff (15x3)	GS3/7	100%	280	12600	0	
	Sub Total				**83,099**	**27994**	
	Consultants	J. Cleland		694	4164	2776	
		N. Chakraborty		100	2000	1000	
	Local Travel				16350	0	
	International Travel				1250	1250	
	Sub Total				**23764**	**5026**	
	Supplies and Materials (Description of Items)						
	Stationaries				1000		
	Consumable supplies				500		
	Computers				3200		
	Printer				700		
	UPS				300		
	Sub Totals				**5700**	**0**	

	Other Contractual Services			
	Repair and Maintenance	0	0	
	Rent, Communications, Utilities	0	0	
	Training Workshop, Seminars	0	3500	
	Printing and Publication		1500	
	Staff Development			
	Sub Total	0	5000	

	Interdepartmental Services	1st Yr	2nd Yr	3rd Yr
	Computer Charges			
	Pathological Tests			
	Microbiological tests			
	Biochemistry Tests			
	X-Rays			
	Patients Study			
	Research Animals			
	Biochemistry and Nutrition			
	Transport			
	Xerox, Mimeographs etc.			
	Sub Totals			
	Other Operating Costs			
	Capital Expenditure	4200	0	
	TOTAL DIRECT COST	109084	38515	0

Budget Justifications

Please provide one page statement justifying the budgeted amount for each major item. Justify use of man power, major equipment, and laboratory services.

There is considerable urgency on the part of the donor (USAID) for the researchers to complete this study. For this reason, a larger than usual number of researchers will be engaged in the work, over a short period of time. Several investigators or collaborators are participating at no cost to the study, for example, Dr. Sabir from NIPORT, who will ensure effective dissemination of the findings to the relevant Ministry of Health & Family Welfare officials.

As the data from FHRP (former ORP) field sites will be analyzed, one of the demographers from that Project will be included.

As consultants, Professor John Cleland from Centre for Population Studies, LSHTM, London University, has long experience with demographic issues in Bangladesh, having designed the study, and co-authored the analytical and descriptive reports from the 1989 Bangladesh Fertility Survey. He was also the lead author of the World Bank publication on reproductive change in Bangladesh (see literature cited section).

Mr. Nitai Chakraborty is a long term consultant to the Demographic and Health Surveys in Bangladesh. With his great familiarity with BDHS datasets, he will bring invaluable experience to the data analysis activities.

Dr. R. Bairagi is a staff member of the HDSU but will be retiring this year. He has long experience in the study of fertility levels in Bangladesh and their determinants. It is expected that he will continue to contribute to the study as a part-time consultant.

The field activities will be restricted to existing ICDDR,B surveillance sites, plus a sample from the north of the country (Rajshahi) to bring some geographic balance. The estimates here for field staff, and data entry and data management staff are consistent with the experience of the HDSU with this kind of activitity.

The requirements for computer hardware are considered minimal as the investigators have access to existing equipment. However, one machine (laptop) is needed in the field, and one dedicated desktop is needed for the analytical group as other demands are placed on existing machines.

Other Support

Describe sources, amount, duration, and grant number of all other research funding currently granted to PI or under consideration.
(DO NOT EXCEED ONE PAGE FOR EACH INVESTIGATOR)

APPENDIX
International Centre for Diarrhoeal Disease Research, Bangladesh
Vounatry Consent Form

Title of the Research Project: Plateauing of the Bangladesh Fertility Decline

Name of Principal Investigator: Dr. Peter Kim Streatfield

Assalam-Alaikum. I work for ICDDR,B in Matlab, and we are presently conducting a study on future childbearing here. As you may know, families in Matlab are now bearing about three children on average, compared to six or seven children in our grandparents' time. We need to try to predict how many children families will bear in future, to better understand the future size of the population in Bangladesh. This will help the Government plan use of resources, like schools, etc., for the future.

For this, we shall spend about 20 minutes with you, and this process involves no physical or mental adverse risks for you. We will only ask you questions on your plans and wishes/desires for future childbearing, and your hopes for the futures of your children. Your participation is important to understanding the probable future of the country.

All individual information that you provide us will be kept strictly confidential and used only for research/study purposes. You have the option to accept or refuse participation in the study. If you agree, please sign your name or give thumb impression on this form. Thank you.

_____   _____

Signature/thumb print of   Signature of the Interviewer
Subject/Guardian

Date: _____   Date: _____

Project title: Plateauing of the Bangladesh Fertility Decline.
PI: Dr. Peter Kim Streatfield

সন্মতি পত্র

আসসালামু আলাইকুম।

আমি/আমরা মতলব আইসিডিডিআর,বি-এর কর্মী, বর্তমানে আমরা মতলবে মায়েদের ভবিষ্যত সন্তান ধারণের উপর একটি সমীক্ষা পরিচালনা করছি। আপনি হয়তো জানেন যে, মতলবে বর্তমানে গড়ে প্রতি মা তিনজন সন্তান ধারন করে থাকেন, যেখানে দাদাদাদির আমলে ছয়/সাত জন ছিল। আমরা ভবিষ্যতে মতলবে পরিবার প্রতি সন্তান সংখ্যা কি হবে তা' অনুমান করার চেষ্টা চালাচ্ছি, যা' ভবিষ্যতে বাংলাদেশের জনসংখ্যার আকৃতি জানার সহায়ক হবে। ইহা ভবিষ্যতে সরকারকে সম্পদ, যেমন স্কুল ব্যবহারে পরিকল্পনা করতে সাহায্য করবে।

এই ব্যাপারে কথা বলার জন্য আমি আপনার ২০ মিনিট সময় নেব, যা' কোনক্রমেই আপনার শারিরীক বা মানসিক ভাবে মন্দ প্রভাব ফেলবে না। আমি/আমরা ভবিষ্যতে আপনার সন্তান নেওয়ার পরিকল্পনা ও ইচ্ছা এবং সন্তানের ব্যাপারে আপনার ভবিষ্যত আশা সংক্রান্ত আপনাকে কিছু প্রশ্ন করবো। দেশের সম্ভাব্য ভবিষ্যত জানার জন্য আপনার অংশ গ্রহন খুবই গুরুত্বপূর্ণ।

আপনার দেওয়া প্রত্যেকটি তথ্য অতীব গোপনীয় ভাবে শুধু মাত্র আমাদের গবেষনার কাজে ব্যাবহৃত হবে। আপনি ইচ্ছা করলে আমাদের সাথে এই সাক্ষাৎকার পর্বে অংশগ্রহন করতে পারেন অথবা না-ও করতে পারেন। আপনি সাক্ষাৎকার দিতে রাজি থাকলে দয়াকরে নিচে আপনার স্বাক্ষর বা টিপসহি দিন।

_____   _____
সাক্ষাৎকার দাতার স্বাক্ষর   সাক্ষাৎকার গ্রহনকারীর স্বাক্ষর

তারিখঃ ------------------   তারিখ ঃ----------------------


Check List

After completing the protocol, please check that the following selected items have been included.

---

1. **Face Sheet Included** ☐

2. **Approval of the Division Director on Face Sheet** ☐

3. **Certification and Signature of PI on Face Sheet, #9 and #10** ☐

4. **Table on Contents** ☐

5. **Project Summary** ☐

6. **Literature Cited** ☐

7. **Biography of Investigators** ☐

8. **Ethical Assurance** ☐

9. **Consent Forms** ☐

10. **Detailed Budget** ☐
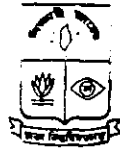
Department of Psychology
University of Dhaka
Dhaka-1000, Bangladesh
Phone : 9661900-59/4590
FAX   : 880-2-8615583
E-mail : psycho@du.bangla.net
web site : www.du.bangla.net/psycho

Protocol # 2002-004   : PLATEAUING OF THE BANGLADESH FERTILITY DECLINE
PI : Dr. Peter Kim Streatfield

Comments:

The primary purpose of this study is to reveal the factors associated with plateauing of fertility decline in different periods (the level plateaued at 3.3 in the 1990s). Specifically the objectives are:

1. disaggregation of different components of fertility like marriage patterns, contraceptive use, abortion, infertility patterns, breast feeding practices etc. to determine their respective contribution to the fertility decline;
2. to observe parents' aspirations regarding having children, desired family size etc.;
3. to review approaches adopted by other countries to reduce below the current level in Bangladesh; and
4. to explore the potential of non-family planning approaches to minimize the impact of population momentum on future population growth.

This is essentially an analytical study. So the primary sources of data for this study are secondary sources including DHS surveys, CPS and BFS surveys and other documents and literature. However, in order to focus on the objective 2, primary data are proposed to be collected from some 300-400 households of Abhoynagar, Mirsarai, and Matlab sites as well as from Rajshahi through interview.

The consent form to be used for the purpose of collecting data from respondents has been attached to this proposal. It is fairly simple to make the respondents understand the purpose of the study. However, the phrase 'in Matlab'/'মাতলাবে' needs to be deleted because data are intended to be collected from some other areas as well.

The interview schedule or the questionnaire has not been attached to this proposal. So, it is not possible to say anything about the soundness of the instrument from ethical point of view. I would request the PI to submit it for evaluation.

Another point, though minor, needs to be mentioned. This is about the Face Sheet. Item number 5 and item 4b are unmarked. These should be marked appropriately. Item number 2 b and c may be marked Yes (Please note, I need to have a look at the questionnaire/schedule).

Until checking the questionnaire/schedule, the protocol appears to be a good one and does not raise any objection from the ethical point of view.

Hamida Akhtar Begum
Member, ERC