Centre for Health & Population Research **RRC APPLICATION FORM**

RESEARCH PROTOCOL NUMBER:

FOR OFFICE USE ONLY		
RRC Approval:	☐Yes / ☐No	Date:
ERC Approval:	☐Yes / ☐No	Date:
AEEC Approval:	☐Yes / ☐No	Date:

Project Title: An analysis of social, behavioral and biomedical risk factors of adolescents and youth clients of female sex workers: Implications for STI/HIV interventions in Bangladesh

Short protocol title (in 50 characters including space): Adolescent clients of female sex workers

Theme: ***(Check all that apply)***

- ☐ Nutrition
- ☐ Emerging and Re-emerging Infectious Diseases
- ☐ Population Dynamics
- ☒ Reproductive Health
- ☐ Vaccine evaluation
- ☒ HIV/AIDS
- ☐ Environmental Health
- ☒ Health Services
- ☐ Child Health
- ☐ Clinical Case Management
- ☐ Social and Behavioural Sciences

Key words: STI/HIV/AIDS, Clients of sex workers adolescent and youth

Relevance of the protocol: Adolescents and youth (10-25 year) constitute one-third of the total population of Bangladesh (43/129.2 million) and many are sexually active. Anecdotal data indicates that many of the clients of sex workers are adolescent. There is no information on knowledge attitude and practice of clients of sex workers as well as STI diseases prevalence among clients of sex workers. This research project will generate knowledge of social, behavioral and biomedical risk factors and STI disease prevalence among adolescent and youth clients of sex workers which will help in to designing STI and HIV/AIDS prevention programs for adolescents in Bangladesh.

Centre's priority: (as per strategic plan) Reproductive Health. Code 8. Improve surveillance for, and prevention and management of sexually transmitted and reproductive tract infections and HIV-AID

Programmes

- ☐ Child Health Programme
- ☐ Nutrition Programme
- ☐ Programme on Infectious Diseases & Vaccine Science
- ☐ Poverty and Health Programme
- ☒ Health and Family Planning Systems Programme
- ☐ Population Programme
- ☒ Reproductive Health Programme
- ☒ HIV/AIDS Programme

Revised on: 6th January 2005

Principal Investigator: Dr Motiur Rahman (Male) **Division:** LSD **Phone:** 2432
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Co-Principal Investigator(s): Internal

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Co-Principal Investigator(s): External (Please provide full official address and Gender)

Co-Investigator(s): Internal

Co-Investigator(s): External (Please provide full official address and Gender)
Dr. Robert Kelly, Country Director, FHI Bangladesh, House # 5, Road # 35Gulshan Dhaka (Male)

Student Investigator/Intern:
External
(Please provide full address of educational institution and Gender)

Student Investigator/Intern:
Internal (Centre's staff)

Collaborating Institute(s):
Please provide full address

Country:	**Bangladesh**
Contact person:	Dr. Robert Kelly
Department: (including Division, Centre, Unit)	Country Director
Institution:	FHI Bangladesh
Directorate: (in case of GoB e.g., DGHS)	
Ministry (in case of GOB)	

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

Gender
- ☒ Male
- ☐ Females

Age
- ☐ 0 – 5 years
- ☐ 5 – 9 years
- ☒ 10 – 19 years
- ☒ 20 – 64 years
- ☐ 65 +

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

NOTE: It is the policy of the Centre to include men, women and children in all biomedical and behavioural research projects involving human subjects unless a clear and compelling rationale and justification (e.g. gender specific or inappropriate with respect to the purpose of the research) is there. Justification be provided in case inclusiveness of study participants is not proposed in the study.

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 Adolescent attending sex workers in Dhaka
- ☐ 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

NOTE: All clinical studies/trials should be registered in appropriate websites, preferably at www.clinicaltrials.gov. When the study is registered in website(s), the PI should provide website address, registration number, and date of registration to the Committee Coordination Secretariat for entering these information into the Centre's database of your research protocol.

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: 960**~~ ~~Total sample size: 960~~ ☐

~~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 study participants can be identified from information provided directly or through identifiers linked to the subjects?

☒ ☐ Does the research deal with sensitive aspects of the study participants 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 study participants at risk of criminal or civil liability?

☒ ☐ b. damage the study participants financial standing, reputation or employability; social rejection, lead to stigma, divorce etc.

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

☒ greater than minimal 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: GFATM fund to Ministry of Health & Family planning, Govt. Bangladesh through Save the Children USA.

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 Executive Director.

Dates of Proposed Period of Support

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

Beginning date_____

End date_____

Cost Required for the Budget Period ($)

	Direct Cost	**Indirect Cost**	**Total Cost**
Year-1	----------	----------	----------
Year-2	----------	----------	----------
Year-3	----------	----------	----------
Year-4	----------	----------	----------
Year-5	----------	----------	----------
TOTAL:			

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.

_____ _____ _____

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

Date:

Name of Contact Person (if applicable)

Table of Contents

X 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: **Dr Motiur Rahman**

Project Name: An analysis of social, behavioral and biomedical risk factors of adolescents and youth clients of female sex workers: Implications for STI/HIV interventions in Bangladesh

Total Budget	Beginning Date	Ending Date
96095	**May 2005**	**Feb 2006**

Aim: The prevalence of Sexually Transmitted Infection (STI) among youth and adolescent clients of female sex worker (FSWs) is high and the knowledge and practice of safe sex is low.

Objectives:

1. To document the beliefs, attitudes and knowledge about STIs/HIV/AIDS and to interpret and understand the meanings of these beliefs and attitudes of adolescent and youth clients of sex workers.
2. To explore views and opinion of adolescents and youths regarding i) Reasons for visiting sex workers, ii) Availability and accessibility to sex workers, iii) Frequency of visits, iv) Selection criteria for FSWs and v) Push factors to visit FSWs
3. To explore and understand macro-level issues influencing adolescent and youths sexuality and sexual behaviors such as i) history of exposure to pornographic materials and mass media and their reported influences on their sexual life, ii) peer relations and influences in terms of sexual risk taking behaviors
4. To explore adolescent and youth clients' sexuality and sexual behaviors in terms of i) types of sex act they engage in, ii) preferences and meanings of various sexual acts, iii) types of sexual partnerships, iv) views about premarital and extramarital sex , iv) number of sex partners and reasons for changing sex partners and v) safer sex practices.
5. To study the prevalence of STIs among adolescent and youth clients of sex workers.
6. To document the care seeking behavior of adolescents and youth clients of sex workers in relation to availability, accessibility and affordability of services.
7. To know opinions and recommendations for designing effective and appropriate STIs/HIV and sexual health interventions for adolescents and youth.

Background: Adolescents and youth (10-25 year) constitute one-third of the total population of Bangladesh (43/129.2 million) and many are sexually active. They are most venerable to STI and HIV due to i) lack of knowledge or awareness about HIV & STIs, ii) risky sexual behaviors, iii) limited access to preventive measures including condoms, and iv) poor negotiation skills specially among women in a male dominated society. National behavioral survey covering a large proportion of youth and adult indicates that condom use is unacceptably low and risky sexual behavior such as unprotected vaginal sex, oral and anal sex is common [2]. Biomedical studies conducted among male and female youth with high-risk behavior showed a high prevalence of STIs, making them more vulnerable to acquisition and transmission of HIV & transmission of STIs to sexual partners [3]. There is limited data on social, behavioral and biomedical risk factors and STI disease prevalence among adolescent and youth clients of sex workers in Bangladesh. Information on risky sexual behavior, disease burden and care seeking behavior of adolescent and youth clients of sex workers are important for the design of successful HIV & STI intervention programs. The proposed study aims to address this knowledge gap and plans to generate comprehensive behavioral, social and biomedical information, which is directly applicable to designing HIV and STI intervention strategies.

Methodology: The study will be cross sectional and will have quantitative and qualitative components. The study will be conducted among adolescent and youth clients of female sex workers in Dhaka, Bangladesh. Behavioral and biomedical data will be collected by quantitative method. Prestructured questionnaire will be used for behavioral information and blood and urine specimen will be collected for diagnosis of STIs, such as

gonorrhoeae, chlamydial and *T. vaginalis* syphilis and HSV2. Qualitative component will be conducted with a sub sample purposively drawn from the eligible subjects using a structured guideline. .

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

Name	Professional Discipline/ Specialty	Role in the Project
1. Dr Motiur Rahman	Lab. Scientist	PI
2. Dr. Sharful Islam Khan	Anthropologist & male sexuality specialist	Co-PI
2. Dr Rukhsana Gazi	Senior Operations Researcher	Co-PI
3. Fariha Haseen	Operation Researcher	Co PI
4. Robert Kelly	Country director FHI	Co investigator
5. Charles P. Larson	Epidemiologist	Co investigator

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 prevalence of Sexually Transmitted Infection among youth and adolescent clients of sex worker is high and the knowledge and practice of safe sex is low.

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).**

Objectives:

1. To document the beliefs, attitudes and knowledge about STIs/HIV/AIDS and to interpret and understand the meanings of these beliefs and attitudes of adolescent and youth clients of sex workers.

2. To explore views and opinion of adolescents and youths regarding i) Reasons for visiting sex workers, ii) Availability and accessibility to sex workers, iii) Frequency of visits, iv) Selection criteria for FSWs and v) Push factors to visit FSWs

3. To explore and understand macro-level issues influencing adolescent and youths sexuality and sexual behaviors such as i) history of exposure to pornographic materials and mass media and their reported influences on their sexual life, ii) peer relations and influences in terms of sexual risk taking behaviors

4. To explore adolescent and youth clients' sexuality and sexual behaviors in terms of i) types of sex act they engage in, ii) preferences and meanings of various sexual acts, iii) types of sexual partnerships, iv) views about premarital and extramarital sex, iv) number of sex partners and reasons for changing sex partners and v) safer sex practices.

5. To study the prevalence of STIs among adolescent and youth clients of sex workers.

6. To document the care seeking behavior of adolescents and youth clients of sex workers in relation to availability, accessibility and affordability of services.

7. To know opinions and recommendations for designing effective and appropriate STIs/HIV and sexual health interventions for adolescents and youth.

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).**

Background:

Sexually transmitted infections (STIs)/ reproductive tract infections (RTIs) represent a major public health problem in the developing countries including Bangladesh. The advent and increase of human immunodeficiency virus (HIV) infection during the last decade has highlighted the importance of infections spread by the sexual route (1). The burden of disease represented by STIs including HIV is not known; however, it is estimated that there are 333 million new cases (Trichomoniasis 170 million, Genital Chlamydia 89 million, Gonorrhea 62 million, and Syphilis 12 million) of STIs per annum and 10 to 15 million people are infected world wide with HIV every year (2). Bangladesh is among the poorest and most vulnerable countries in the world and can ill afford the social and economic impact of an HIV/AIDS epidemic within its borders (3). While national data currently indicates very low rates of HIV (0.3 - 0.5% in brothel based sex workers), national behavioral surveillance shows that the sexual risk taking behaviors that carry a risk of HIV infection exist in Bangladesh just as they do in most other countries (4). Globally, 75% of HIV infections are sexually transmitted, and as such sex workers and their clients represent one of the most vulnerable groups. This is particularly striking in Bangladesh where sex workers report an average of 18.8 clients per week – one of the highest rates of client turnover in Asia (5).

There is conclusive evidence that sexually transmitted infections (STI) are major cofactors in the sexual transmission of HIV (6-8). Prompt, effective treatment not only cures individual patients but also shortens the period of infectivity; thus preventing further spread of the infection and reduced transmission efficiency of HIV. A study conducted in Mwanza, Tanzania, showed that effective management of STI resulted in a 42% reduction in HIV transmission (8).

The proportion of new HIV infections attributable to STI cofactor effects – the population-attributable fraction – is larger in populations or sub-populations with HIV infection in a growth phase than in populations where the HIV epidemic is mature. According to WHO, Bangladesh is one of the pattern III countries for the HIV/AIDS epidemic, and as such is in an early phase of the epidemic. In this context, the reduced prevalence and incidence of STIs is an important step towards the reduction of HIV transmission.

Core groups such as sex workers and their clients (e.g. truck drivers and, in Bangladesh, rickshaw pullers), heavily influence the transmission dynamics of STI in a population. In these groups, a high prevalence of STI is maintained by high rates of susceptible partner change and for this reason

prevention and treatment interventions that focus on these core groups are an effective means of lowering STI rates (and HIV transmission) in the general population (9-12).

STI in female sex workers in Bangladesh

Several epidemiological studies have been conducted among females with high risk behavior (street based, brothel based and hotel based sex workers) during 1998 to 2004. The prevalence of *N. gonorrhoeae* and *C. trachomatis* was found to be 14-36% and 16–40% respectively (13-16). The prevalence of syphilis among street based and brothel based sex workers was 32 and 28% respectively. Data from National seroprevalence showed that the prevalence of syphilis among SWs in brothel, hotel and street in different part of the country is 3-11%, 4-5% and 2-11% respectively. Cumulative data from all these studies indicates that the prevalence of consistent condom use is low.

STI in male in Bangladesh: Data on the prevalence of STI among males from general population is scanty in Bangladesh. There is no population-based study among males. Several well-defined studies have been conducted among male truckers in Dhaka Bangladesh. The prevalence of *N. gonorrhoeae* and *C. trachomatis* was found 5.4 and 3.4%. The prevalence of syphilis among truckers was found to be 5.7%. (17-18).

Data on the prevalence of STI among MSM are also scanty in Bangladesh. The prevalence of *N. gonorrhoeae* and *C. trachomatis* was found to 7.7 and 3.1%. The prevalence of syphilis among MSM was found to be 6.7%. (Rahman et al unpublished data). National serosurveillance conducted among MSM during 2004 has shown that the prevalence of syphilis among MSM and or MSW is 6 -10%. The etiology of STI in males with urethral discharge was studied among males attending in Skin and VD dept. of tertiary care unit hospital. The prevalence of *N. gonorrhoeae* and *C. trachomatis* was found to 71% and 15% respectively. The prevalence of syphilis among male with urethral discharge was found to be 4.8%. (Rahman et al unpublished data).

STI and risky sexual behavior in adolescents and youths in Bangladesh: Adolescents and youth (10-25 year) constitute one-third of the total population of Bangladesh (43/129.2 million) and many are sexually active. Adolescents and youths are the future work force for the community. HIV prevention program among adolescent and youths are currently considered as national priority. They are most venerable to HIV due to i) lack of knowledge or awareness about HIV & STIs, ii) risky sexual behaviors, iii) limited access to preventive measures including condoms, and iv) poor negotiation skill. Studies conducted in recent past in Bangladesh indicates that around 88% and 38% of the unmarried urban and rural boys and 35% and 6% of the unmarried urban and rural girls, respectively, engage in sexual activity outside of marriage by the age of 18 years (19). National behavioral survey covering a large proportion youth and adult indicates that condom use is unacceptably low and risky sexual behavior such unprotected vaginal sex, oral and anal sex is common (20). Biomedical studies conducted among male and female youths with high-risk behavior showed a high prevalence of STIs, making them more vulnerable to acquisition and transmission of HIV & STIs (14-16).

Although there is some information on risky sexual behavior of adult male, data on the sexual behavior of adolescents and youths in Bangladesh is scanty. Preliminary data from an ongoing nationwide behavioral survey among adolescents and youth in Bangladesh indicates that as much as 25% of the adolescents and youths were engaged in premarital sex (C. Larson and Rahman M, personal communication). They are more vulnerable due to i) lack of awareness about STIs and HIV, ii) lack of

family influence, ii) economic freedom, iii) lack of entertainment facilities, and iv) easy access to sex workers and pornography.

Information on the i) social and environmental factors which encourage risky sexual behavior in youth population, ii) the consequence of such risky sexual behavior in terms of acquisition of STIs, and iii) associated risk factors, which makes them vulnerable to HIV and STIs is essential for designing successful intervention program.

Ministry of Health and Family Welfare, Govt. of Bangladesh and National AIDS and STI Program (NASP) in collaboration Save the Children and national and International NGO's has undertaken a major effort in prevention of HIV and STI in adolescents and youths in Bangladesh. The activity includes increasing knowledge and awareness on HIV and STI among adolescents and youths, increasing accessibility to condom, STI services, development of youth friendly health services and incorporation of HIV and STI prevention knowledge in school curriculum, and sensitization of gate keepers, teachers and policy makers. The first phase of the activities are currently ongoing and the second phase will begin in 2006.

In depth information on knowledge and awareness, risk behavior, access to information and preventive measures, prevalence of sexually transmitted infections (STIs), barriers to behavior change and risk factors are essential for designing successful HIV and STI intervention program. Such information among adolescents and youth clients of female sex workers is important for the design of successful HIV & STI intervention programs for adolescents and youths. The proposed study aims to address this knowledge gap and plans to generate comprehensive behavioral, social and biomedical information, which is directly applicable to designing HIV and STI intervention strategies for adolescents and youths in Bangladesh.

Rationale of integrating quantitative and qualitative methods:

A clear paucity of information exists in Bangladesh regarding clients of female sex workers (FSWs), which is mostly true for adolescents and youth clients. Information is acutely missing particularly when it relates to hotel based sex trade. To our knowledge, no studies have ever been conducted with clients (particularly adolescent and youth clients) of hotel based female sex workers (HFSWs) in Bangladesh. Preliminary data of the ongoing survey reveal adolescents and youth males are frequent visitors of HFSWs. BSS data and our informal observations suggest that HFSWs receive a huge number of clients per day (21,22). Therefore, it is crucial to know clients' profiles, their sexual behaviors and other contextual issues to assess their vulnerability.

We will integrate biomedical, social and behavioral perspectives to answer various objectives of the study. Social and behavioral components will be addressed by quantitative and qualitative methods. Through quantitative survey with clients, we will identify the socio-demographic profiles and other relevant factors. In addition, clients' beliefs, attitudes, knowledge, sexual practices, partnership patterns and safer sex acts will be measured by quantitative questions. However, we are aware that issues related to human sexuality and sexual behaviors are complex and often difficult to quantify (23). Moreover, only quantification will limit comprehensive understanding of young clients' sexual behaviors and the context of risk taking practices. This inadequate understanding often leads to inappropriate HIV interventions. Therefore, we have put a set of objectives in a way, which clearly justify qualitative approaches for broader and holistic understanding and also to describe the findings of quantitative part.

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).**

Methodology:

Source & study Population: The study will be conducted among adolescent and youth clients of hotel based sex workers in Dhaka Bangladesh. Family Health International (FHI) has an intervention project among female sex workers working in Hotels in Dhaka. There are approximately 70 hotels under the intervention project. These hotels are located in central, south and northern part of Dhaka city. The hotel management and staffs of the hotel are involved in the project activity. The study will be conducted in randomly selected hotels under intervention program. On an average there 200 to 400 client visits each hotel per day for buying sex. The interview and specimen collection of the respondent will be done in a separate room in the hotel.

Enrollment criteria

1. Age between 15 to 24
2. Visited the hotel for buying sex
3. Give informed consent (verbal)

Exclusion criteria:

1. Visited the hotel for other reason
2. Not willing to participate the study

Study design: The study will be cross sectional and will have quantitative and qualitative components. Behavioral and biomedical data will be collected by quantitative method. The quantitative component of the study will be started first and the data collected for the first two month will be analysed for finalizing the guidelines for qualitative part of the study. Among the 70 hotels we will randomly select 6 hotels (2 each from central, south and northern part of Dhaka city). The Qualitative component will be conducted with a sub sample purposively drawn from the respondents of quantitative survey and other key respondents.

Quantitative component:

All subjects who fulfill enrollment criteria will be approached for participation in the study. Those who agree will be informed about each and every steps of the study and informed verbal consent will be obtained. Trained interviewer will interview the enrolled subjects. Information will be collected on following area using pre-selected questionnaire. For quantitative analysis information regarding i) socio-demographic information ii) Knowledge Attitude and Practice, iii) risk behavior (pre and extramarital sex, frequency and no of partner, condom use and barriers to condom use, frequency of anal, vaginal

and oral sex, money exchange of sexual activity, use of drug and alcohol, type, frequency of using), iv) access to information, v) peer pressure and working environment (no. of friends, drug/alcohol/sexual exposure of friend, peer pressure for drug/alcohol/sexual exposure, degree of that pressure, condom use status among peers, experience of sexual abuse, by whom, reasons for sexual abuse, nature of sexual abuse, and protection from sexual abuse), vii) health care seeking behavior (occurrence of STIs, consequences of STIs, availability of service, affordable service, reasons for not using service, reasons for not using condom) will be collected.

After interview each respondent will be requested to provide a 10 ml urine sample and a trained paramedics will collect sample and 5 cc of venous blood from each respondent. Blood and urine specimen will stored at 4 C and will be transported to ICDDR, B using cold chain. All respondent will be asked about symptoms of STI and RTI and respondents with symptoms suggestive of RTI/STI will be treated according to National syndromic management guideline.

Laboratory diagnosis:

Diagnosis of ***N. gonorrhoeae*** **and** ***C. trachomatis*****:** *N. gonorrhoeae* will be diagnosed from urine specimen. 5 ml of urine specimen will be centrifuged at 13000xg for 10 minutes and the supernatant will be discarded. The pallet will be dissolved 100 ml of PBS. Bacterial DNA will be extracted from the pallet and will be used for diagnosis of *N. gonorrhoeae* and *C. trachomatis* by PCR (21-24).

Diagnosis of *T. vaginalis*: Diagnosis of *T. vaginalis* will be done by PCR using DNA extracted from urine as described earlier.

Diagnosis of *T. pallidum*: Serum samples will be analysed for antibodies to reagin by RPR (Becton-Dickinson, Cockeysville, MD) and Treponema pallidum haemagglutination test (TPHA) (Fujirrbio, Tokyo, Japan). A patient was considered to have syphilis if both RPR and TPHA were found to be positive. Subjects with TPHA positive and RPR titer ≥1:8 was considered to have active syphilis.

Diagnosis of HSV2: Diagnosis of HSV2 will be done from serum by commercially available ELISA test (Diasorin) as instructed by manufacturer.

STI treatment and counseling: All respondent will be asked about symptoms of STI and RTI and respondents with symptoms suggestive of RTI/STI will be treated according to National syndromic management guideline (25). All respondents will be counseled for safe sex practice. The results for STI test will be provided to each respondent by linked anonymous strategy. The results for STI test will be provided from three sites (1. VCT centre Jagori at ICDDR,B, 2. RTI/STI project site at Motijheel, and 3. RTI/STI project site at Mohakhali) and the respondent will be requested to mention the collection site suitable for them. After specimen collection a ID number will be provided to the respondent and will be requested to mention the clinic from where he wants to get his test results. Respondents will be requested to contact result collection site after four weeks for the results and additional treatment if necessary.

B) Qualitative component:

Qualitative methods have been successfully used in addressing sensitive topics (Butcher and Kievelitz, 1997). In-depth interviews are conducted to get people's inner perspectives, to know about their feelings, thoughts, and intentions. The purpose of in-depth interviewing is thus to allow us to enter into

the other person's perspective on sensitive matters. The qualitative component of the study is intended to explore perceptions of the vulnerable adolescents/youth on sexuality, sexual practice, knowledge on sex related diseases and safe sex. It will also explore influences of peer pressure, family environment, and exposure to pornography/adult movies to their risk taking behavior.

In-depth interview will be conducted with a sub-sample of targeted vulnerable group (adolescent/youth who are the clients of hotel based female sex workers) from the main survey. They will be selected purposively on the basis of certain criteria; married/unmarried, earning /non-earning, age group less than 20 years and above 20 years. We expect some diversification particularly in terms of perceptions and sexual practices among members of these sub groups. Sample size would be dependent on research redundancy. However we expect to interview at least 10 from each of the six categories, thus minimum 60 in depth interviews will be done with the vulnerable group members. However, if other subgroups with enough diversifications are identified during the period of data collection those would be included. A flexible guideline will be used for in-depth interviews (Appendix) that consist of a set of questions, which will simply guide the interviewer to make sure that all relevant topics are covered but these are not standardized questions. The interviewer is thus required to adopt both the wording and style to specific respondents in the context of the actual interview. There are flexibility for probing and adding detailed and subset of questions. Advantage of using a guideline is to get common information obtained from each of the persons interviewed.

Key informants: A preliminary plan is to conduct interview with about 8 – 12 key informants following the principles:

- Informants' experience regarding the vulnerable groups qualifies them
- Using exploratory, flexible guideline
- Never to guide with right or wrong answers
- Sharing experience without disclosing any strong personal view
- Comparing answers of different informants, looking for contraindications and points of consistency with other informants

The primary key informants will be selected clients of the female sex workers in the hotel (who may act also as pimps), other key informants will be hotel managers, hotel boys, security guard/watchmen. However if it possible to identify during the fieldwork some other individuals who qualify themselves as possible key informants (like small shopkeepers around the hotel), would be included as well.

The intention conducting key informant interview is to build rapport, understand the power structure involved with hotel based sex trade, and to collect information particularly on extent of involvements of the adolescent/youth with this trade.

Content analysis will be done manually on in-depth interview transcripts (identifying, coding, and categorizing the patterns in the data). The transcripts will be read thoroughly several times and coding notes will be compared with the transcripts and files indexed. Different passages can present different patterns or themes so cutting and pasting may be required to sort appropriate pieces before identifying the relevant passages. To describe linkages between patterns, themes, experiences, content, or actual activities, a data matrix can be developed reflecting any linkages/relationships identified by the participants (28-29).

Sample size: Information on safe sex practice among adolescents and youths visiting female sex workers is scanty. However, a recent ongoing survey among adolescents and youth in Bangladesh indicates that 25% of adolescents and youths used condom in premarital and extramarital sex (C. larson and Rahman M personal communication). Based on the data the sample size is calculated according to following formula

$$N = \frac{p(1-p)z^2}{e^2}$$

n= required sample size
p=prevalence of safe sex practice (25%)
e= admissible error (0.03)
z= z value with 95% confidence=1.96

Using a 25% prevalence safe sex practice among adolescents and youths (95% confidence and 3% precision), the required sample size will be 800 where the size of the population from where the sample to be drawn was unknown. Following a 20% non-response rate the final sample size will be 960.

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 equipment 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).**

The study will be conducted at ICDDR,B (LSD, PHSD and HSID) in collaboration with FHI, Bangladesh. ICDDR,B has technical experts and physical infrastructure for management of behavioral survey, qualitative component and laboratory facilities for biomedical analysis. ICDDR,B has expert group of interviewers for quantitative and qualitative data collection and efficient people for collection of specimen. FHI has STI and HIV prevention program among hotel based sex workers in Dhaka city.

Data Analysis

Describe plans for data analysis. Indicate whether data will be analyzed by the investigators themselves or by other professionals. Specify what statistical software 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 investigator and supervisors will supervise data collection and will review data forms for accuracy and consistency completeness. Whenever possible attempts will be made to clarify inconsistencies and missing data. After editing, data will be entered in database and necessary range and consistency will be in-built. Data will be entered and cleaned on Fox Pro soft ware and will be analyzed using SPSS-PC software.

The general characteristics of the adolescent and youth clients will identified by frequency distribution of age, sex, education, occupation and socioeconomic status. The knowledge, attitude and practice, and sexual behavior of adolescent and youth clients of sex workers will be analyzed by frequency of respondents who know about HIV & STIs, condom use in general and in last sex and knowledge about preventing STIs & HIV. Social and environmental factors (exposure to media and information, availability and accessibility to sex workers/partners) associated with high-risk sexual behavior will be analyzed by studying the exposure to media and pornography, and availability and accessibility to sex worker.

The prevalence of different STI among different population group will be calculated from data. Risk factor for acquisition of STI (age, sex, education, occupation, socioeconomic status and care seeking behavior) will be analyzed using appropriate tests.

Care seeking behavior in relation to availability, accessibility and affordability of services will be analyzed by analyzing the pattern of past STI care seeking behavior and expenditure related to it.

Qualitative data:

Ezzy (2002) and Strauss and Corbin (1990) suggest that ongoing data analysis with data collection is an appropriate way to deal with qualitative data (33, 34. However, constraints during fieldwork often do not allow researchers to approach data analysis as an ongoing process. In many cases, data analysis begins at the end of data collection, which may result "in missing many valuable opportunities that can be taken only at the same time as they are collecting their data" (33). Therefore, we are careful about this issue and plan to begin data analysis with data collection.

Along with data collection, we will listen to the tape-recorded interviews of participants, key informants and focus group discussions to identify issues discussed, new issues emerging, the strength and weakness of interview techniques and any missed opportunities for further exploration. This step is essential to improve the quality of interviews and to perform ongoing analysis. We will begin transcribing the recorded interviews in their original form. Since transcription takes a long time, therefore, beside interviewers, two other persons will be involved in transcription process.

Since each in-depth interview contained voluminous information, we will organize data through a repeated and systematic review of the transcript linked to the research questions and emerging issues. We can use note-cards to identify prominent themes, logical connections, clarifications or relevant comments that would match or help in explaining similar statements made by other participants. During this process, we will point out each theme and began coding to identify those themes and sub-themes as well. Thus, the categorization process includes identification of salient themes and sub-themes, recurring ideas and local meanings. We will identify the common patterns that emerged through all interviews and also to note atypical patterns, in order to accommodate the diversity of meaning and to generate new insights and typologies for the further exploration of data.

Participatory analysis and peer-debriefing: Conventionally study-subjects are not offered any role in the research process especially after the data collection is over. We are aware that participants may have the potential to interpret their own information. We will identify and select few cooperative participants and two key informants who will willingly assist us in interpreting data. In addition, we plan to discuss complex findings with other professionals and colleagues working in similar fields. This technique is known as peer debriefing (33, 35).

Researchers' field-diaries: Many qualitative researchers suggest keeping field memos (36, 37). Therefore, all interviewers will maintain diaries and to write day-to-day details, including field experiences, personal feelings and any remarkable incidents during the fieldwork. The field diaries contained subjective interpretations of the objective data collection and observations. Thus, the field diary will become a rich source of *emic* and *etic* information and will provide additional support during data analysis and interpretations.

Regular feedback session with the research team: We will conduct regular feedback meetings with the research-team to discuss issues relating to the research, progress in the fieldwork, barriers to and opportunities for fieldwork, newly emerging themes and possible interpretations, existing gaps in the original guidelines, strengths and weakness and future directions of fieldwork in terms of selecting potential participants and key informants. We will discuss field observations and written notes on those observations with the research team. These feedback sessions will contribute to ongoing data analysis.

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.

Informed, verbal consent will be obtained for behavioral survey and qualitative data collection from all subjects before starting the interview and trained interviewer will conduct the interview. A brief overview of the study objectives will be read aloud in Bangla to them. The interviews will be conducted at hotel after having sex. Participation in the study will be voluntary. Proper privacy and confidentiality will be maintained during interview and biomedical specimen collection. .

No subjects will be identified in any report or publication about this study. All data collected will be kept confidential. In case if disclosure is ever required as instructed by law, ICDDR,B will take all steps allowable by law to protect the privacy of personal information. All information collected in this study will be stored in a locked file cabinet. Access to this cabinet will be available only to those researchers directly involved in this study.

All instruments used in the biomedical part of the study will be sterilized and disposable syringe and needles will be used. Only standard clinical examination will be performed. Diagnosis will be done according to WHO syndromic management flow chart and standard treatment regimens will be given. The tests will enable precise diagnosis and treatment at the revisit.

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 laboratory animal 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.

Reference:

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15. Khairun Nessa, Shama-A-Waris, Zafar Sultan, Shirajum Monira, Maqsud Hossain, Shamsun Nahar, Habibur Rahman, Mahbub Alam, Pam Baatsen, Motiur Rahman (2004) Epidemiology and etiology of sexually transmitted infection among hotel based sex workers (HBSWs) in Bangladesh. J Clin Microbial. 42(2): 618-21
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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.

It is our expectation that the proposed research among adolescents and youth will have national and international impact. This study will help us to understand the social and behavioral factors which lead them to risky sexual behavior and help us to know the prevalence of STI among this group. This information would give us direction in designing more culturally acceptable intervention programs on STI/HIV for the adolescents and youth in Bangladesh.

A dissemination seminar will be held after completion of the study for representatives from Govt. of Bangladesh, NGOs', donor community, implementing agencies and management agencies. The data generated from the research will be presented in conferences and will be published in journals.

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 study will be collaborative one between LSD, PHSD and HSID of ICDDR,B and FHI Bangladesh. Scientists from LSD will be mainly involved in biomedical component of the study and overall management of the study. Scientists from PHSD and HSID will be involved in behavioral component of the quantitative part and qualitative component of the study. FHI will collaborate with us in the study by providing access to clients of sex workers in hotels under intervention.

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.

1. Name: Motiur Rahman, M.D, PhD

2. Present position: Associate Scientist and Head RTI/STI Laboratory, Laboratory Sciences Division (LSD)

3. Educational Background:

Institution and location	**Degree**	**Year**	**Field of study**
Karolinska Institute, Stockholm, Sweden	PhD	1997	Microbiology, Molecular Biology
Medical College Hospital, Rangpur, Bangladesh	MBBS	1986	Medicine, Surgery Gynaecology

4. List of ongoing research protocols (Start and end dates; and percentage of time)

4.1 As principal Investigator

Protocol Number	Starting date	End date	% time
2002-008	7/02	6/05	10%
2004-034	12/04	12/06	25%
2003-035	7/04	09/05	20%
2004-043	1/05	1/06	20%

4.2 As Co-principal Investigator

Protocol Number	Starting date	End date	% time
HIV surveillance	01/04	12/05	5%

5. Publications

Types of publications	**Numbers**
a) Original scientific papers in peer reviewed journals	33
b) Peer reviewed articles and book chapters	-
c) Papers in conference proceedings	18
d) Letters, editorials, annotations, and abstracts in peer-reviewed journals	-
e) Working papers	-
f) Monographs or books	2

Publications

6. Five recent publications including publications relevant to the present research protocol

1. Khairun Nessa, Shama-A-Waris, Anadil Alam, Mohsina Haque, Shamsun Nahar, Faisal Arif Hasan Chowdhury, Shirajum Monira, Monir Uddin Badal, Jinath Sultana, Kazi Faisal Mahmud, Joseph Das, Dipak Kumar Mitra, Zafar Sultan, Najmul Hossain and **Motiur Rahman**. **(2004)** Sexually transmitted infections (STIs) among brothel-based Sex Workers (SWs) in Bangladesh: high prevalence of asymptomatic infection.. Sexually Transmitted Diseases. 32(1): 13-19.

2. Tasnim Azim, M Shah Alam, **Motiur Rahman,** M S Sarker, Giasuddin Ahmed, M repon Khan, Saifur Rahman, ASM M Rahman. **(2004).** Impending concentrated HIV epidemics among injecting drug users in central Bangladesh. **Int J of STD & AIDS.** 15:280-83.

3. Zafar Sultan, Shamsun Nahar, Bengt Wretlind, Emma Lindback and **Motiur Rahman**. **(2004)** Comparison of Mismatch Amplification Mutation Assay (MAMA) with DNA sequencing for characterization of fluoroquinolone resistance in *N. gonorrhoeae*. **J Clin Microbial.** 42(2): 591-94.

4. Khairun Nessa, Shama-A-Waris, Zafar Sultan, Shirajum Monira, Maqsud Hossain, Shamsun Nahar, Habibur Rahman, Mahbub Alam, Pam Baatsen, **Motiur Rahman (2004)** Epidemiology and etiology of sexually transmitted infection among hotel based sex workers (HBSWs) in Bangladesh. **J Clin Microbial**. 42(2): 618-21.

5. **Motiur Rahman**, Zafar Sultan, Shirajum Monira, Khairun Nessa, Shamsun Nahar, Josef Bogaerts, and John Albert. **(2002).** Antimicrobial susceptibility of *Neisseria gonorrhoeae* isolated from female sex workers in Bangladesh (1997 – 1999): Rapid shift of susceptibility to fluoroquinolones. J Clin Microbial. 40(6):2037-2340

Biography of the Investigators

1 Name : RUKHSANA GAZI
2 Present position : Senior Operations Researcher
3 Educational background :MSc Public Health in Developing Countries (London University), MBBS (Rajshahi University)

***Professional Training Received*:**

Title	Institute	Year
Epidemiological Approach on Reproductive Health	Bangladesh Institute of Research for Promotion of Essential and Reproductive Health and Technologies (BIRPERHT)	1995
Quantitative Research Methodology	Bangladesh Management Development Centre, Dhaka	1995
Other Reproductive Health	Marie Stopes Clinic, Dhaka	1999
Behavioural Surveillance System Start to Finish Training	Family Health International, Bangkok, Thailand	2003
Methods for Measuring Maternal Health	Maternal and Child Epidemiology Unit, London School of Hygiene and Tropical Medicine, London	1994

List of ongoing research protocols (start and end dates; and percentage of time)

4.1. As Principal Investigator

Protocol Number	Starting date	End date	Percentage of time
B/C 04211140	October, 2004	March, 2005	50%
2005-002	February, 2005	July, 2005	15%
2005-005	April, 2005	March, 2007	50%

5 Publications

Types of publications	Numbers
a) Original scientific papers in peer-review journals	8
b) Peer reviewed articles and book chapters	1
c) Papers in conference proceedings	16
d) Letters, editorials, annotations, and abstracts in peer-reviewed journals	5
e)Working papers	5
b) Monographs	1

6. Five recent publications including publications relevant to the present research protocol

- **Gazi R** and AMR Chowdhury (**2003).** Perceptions of Rural Bangladeshi Women on Sexually Transmitted Infections. **South Asian Anthropologist,** vol 3 (2) 2003.

- Goodburn E, **Gazi R**, Chowdhury M **(1995).** Beliefs and Practices Regarding Delivery and Post-partum Maternal morbidity in
  Rural Bangladesh. **Studies in Family Planning**, 26(1): 22-32.

- **Gazi R,** SA Khan, AMR Chowdhury **(1999).** Effect of Adolescent Family Life Education Programme of BRAC. **J Diarrhoeal Dis Res**, Jan 1999; 119.

- **Gazi R,** Khatun J, Ashraf A (2004). Retention, perceived usefulness, and use of family health card in the Bangladesh Health and Population Sector Programme**. The Health Care Manager,** 23 (4) 341-52

- **Gazi R,** Goodburn E, Chowdhury AMR **(1999).** Risk Factors for Perinatal Deaths in Rural Bangladesh. **Journal of Health and Population in Developing Countries,** 2(1): 70-77.

Biography of the Investigators

1 Name : FARIHA HASEEN

2 Present position : Operations Researcher

3 Educational background :

Institution and location	Degree	Year	Field of study
National Institute of Preventive and Social Medicine, Bangladesh	MPH	1999	Health Education
Mymensing Medical College Bangladesh	MBBS	1993	Medicine, Surgery Gynaecology

Professional Training

Training Course on Applied Statistics and SPSS in Institute of Statistical Research and Training, Dhaka University in 2003

Introductory Course on Epidemiology and Biostatistics held from August 3 to 28, 2003. Organized by the Training Department of ICDDR,B.

Workshop on Analyzing Adolescent Risk Taking Behavior and Evaluation of Intervention Programs in 33rd Summer Seminar on Population in the year 2002

South East Asian Regional Training Course on Reproductive Health in National Institute of Health and Family Welfare, New Delhi, India and Centre for Education and Training of Health Personnel, Jakarta, Indonesia in 1998

Training on Reproductive Health in National Institute for Population and Reproductive Health Training, Dhaka in 1996

Basic Training on Maternal-Child Health and Family Planning (MCH-FP) Services in National Institute for Population and Reproductive Health Training, Dhaka in 1995

List of ongoing research protocols

4.2. As Co-Investigator:

Protocol Number	Starting date	Ending date	Percentage of time
2004-044	1-10-04	31-05-05	50%

2004-041	1-10-04	28-2-06	50%

5 Publications

Types of publications	Numbers
a) Original scientific papers in peer-review journals	0
b) Peer reviewed articles and book chapters	0
c) Papers in conference proceedings	0
c) Letters, editorials, annotations, and abstracts in peer-reviewed journals	0
d) Working papers	0
Monographs	0

6 Five recent publications including publications relevant to the present research protocol

1) **Haseen F**, Larson CP, Nahar Q, Huq NL**,** Quaiyum MA, Reza M, Aboud F. Evaluation of a School-based Adolescent Sexual and Reproductive Health Education Intervention in Rural Bangladesh, 2004 (Gone for publication as ICDDR,B's working paper)

2) Huq NL**, Haseen F**, Nahar Q, Quiayum MA, Larson CP. Strategies to Improve Reproductive Health Services for Adolescents in Bangladesh: A Worksite (garment factory) based study, 2004 (Under process of publishing as ICDDR,B's working paper)

3) Huq NL**,** Nahar Q, Larson CP, **Haseen F**, Quaiyum MA. Strategies to Improve Reproductive Health Services for Adolescents in Bangladesh: A community based study, 2004 (Gone for publication as ICDDR,B's working paper)

4) Ashraf A, Mercer A, Huq NL, **Haseen F,** Nowsher Uddi, Masud Reza. Changes in Use of Services in the Transition to a Static Clinic System in Two Rural Upzilas, 1998-2002, 2004 (Gone for publication as ICDDR,B's working paper)

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.

We have budgeted 25% salary of PI Dr. Motiur Rahman who will be involved in overall management of the project and will supervise the laboratory component. Dr. Faria Haseen will spent 50% of her time for the project and will be responsible for overall coordination of the project. Dr. Rukhsana Gazi will spend 25% of her time.

Dr. Sharful Islam will spent 20% of his time and will provide suggestion and expert opinion on qualitative component of the project.

We have budgeted for 3 research officer for laboratory activity, 2 research officer for indepth interview and 3 interviewer and 2 paramedics for quantitative part of the study.

US $ 41 632 was budgeted for laboratory test, rent utilities and other expenses of the project.

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)

1. RTI/STI service delivery to FHI-BWHC clinics for Hotel Based Sex Workers in Dhaka. US $ 26,000. (2005)

2. Molecular analysis of virulence genes of *Helicobacter pylori* and identification of genotypes associated with overt disease (gastro duodenal ulcer, non ulcer dyspepsia and gastric cancer) in Bangladeshi population. 120,000 (2002-2005)

3. Field evaluation of simple rapid tests in the diagnosis of syphilis US $ 48765 (2004-2005)

4. Molecular and biochemical analysis of intestinal microflora in severely malnourished children with cholera treated with oral rehydration solution with and without amylase resistant starch US $ 22910 (2004-2005).

5. Diagnostic services to HIV/STI surveillance project among men having sex with men (MSMs) in Kathmandu, Nepal (US $ 40, 811)

6. A comparison of two methods (Enhanced Syndromic Management and Periodic Presumptive Treatment) of systematic prevention and control of STIs among hotel based female sex workers in Dhaka, Bangladesh (2004-2006) FHI Dhaka (US $ 24213) and UNICEF (US $ 70,000).

APPENDIX-3

Check List

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

1. **Face Sheet Included** [X]
2. **Approval of the Division Director on Face Sheet** [X]
3. **Certification and Signature of PI on Face Sheet, #9 and #10** [X]
4. **Table on Contents** [X]
5. **Project Summary** [X]
6. **Literature Cited** [X]
7. **Biography of Investigators** [X]
8. **Ethical Assurance** [X]
9. **Consent Forms** [X]

Detailed Budg [ ]