

**REPRODUCTIVE TRACT INFECTIONS AND SEXUALLY
TRANSMITTED DISEASES IN A RURAL AREA OF BANGLADESH:
INSIGHTS FOR ACTION FROM RESEARCH**

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List of Abbreviation

AIDS	Acquired Immune Deficiency Syndrome
BRAC	Bangladesh Rural Advancement Committee
CEDPA	Center for Development and Population Activities
CSW	Commercial Sex Worker
DSS	Demographic Surveillance System
HIV	Human Immuno-deficiency Virus
ICDDR, B	International Centre for Diarrhoeal Disease Research, Bangladesh
ICPD	International Conference on Population and Development
ICRW	International Center for Research on Women
IEC	Information, Education and Communication
PID	Pelvic Inflammatory Disease
RTI	Reproductive Tract Infection
RDP	Rural Development Programme
STD	Sexually Transmitted Disease

ABSTRACT

Objectives: The study aimed to assess the magnitude of problem associated with RTIs/STDs in rural Matlab, Bangladesh. It estimates the prevalence and attempts to explore the risk indicators for RTIs and STDs among people of different age group within the existing socio-cultural context.

Methods: A combination of qualitative and quantitative research methods was utilized. In-depth interview, focus group discussion, and a cross-sectional survey of randomly selected men, women, and adolescent boys and girls were the main methods employed. The ICDDR, B surveillance database provided the sampling frame.

Results: About 19% of people in Matlab have had STDs. Lack of awareness, risky sexual behaviour, lack of accessibility and availability of adequate services, traditional and unhygienic health practices, absence of programme efforts, and illiteracy and poverty were the prevalent socio-cultural factors that potentially has put people at risk of RTIs, STDs as well as HIV/AIDS epidemic. The bridge between non-commercial and commercial partners was laid by men whom work in urban area push up the likelihood of infection from the high risk (urban) to low risk group of women in the village. Risky sexual behaviour was also prevalent among adolescents. Partners' communication and treatment seeking behaviour were found to be very poor among adults and not at all among adolescents. There is a need for collaborative action addressing rural people's risk-assessment component.

Conclusion: To avert the situation, a holistic approach should be adopted with greater emphasis on RTI/STD control and prevention together with human relationship, communication, gender, family interaction and socio-economic status that would determine the nature and extent of people's risk and vulnerabilities. Because of the sensitivity of issue, it is important to think about how to achieve community acceptance, so that programme can expand and sustain itself.

INTRODUCTION

Background

Since early eighties, the sexually transmitted diseases (STD) are a great public health concern in the world particularly in developing countries as it enhances the transmission of Human Immunodeficiency Virus (HIV). Besides, STDs can have serious consequences on reproductive health and well-being of both men and women (1). Both short- and long-term sequelae of untreated STDs cause profound biomedical, social and economic impact on individuals and communities. Thus, the control of STDs is now recognized as a global priority (2). In 1994, the International Conference on Population and Development (ICPD), held in Cairo, identified the issue as one of the essential components of reproductive health and goal to prevent and reduce the spread of STDs, including HIV/AIDS and to provide treatment for STDs and their complications, such as infertility with especial attention to women (3).

In the South-East Asia region, STDs pose a continuing and serious health problem. The overall response to prevent and control the problem is limited. Some major reasons for this limited response are: lack of awareness of the diseases and their consequences, lack of resources, and political and cultural unwillingness to address STDs. In many developing countries, an emphasis has been given to the prevention and management of STDs as a part of HIV prevention component. But little is known about the extent of STDs, behaviours (sexual and health seeking), socio-cultural and economic factors and situations that increase the vulnerability to be infected by STDs and foster or inhibit prevention and management efforts of these diseases. As a consequence, in many places, widespread STD transmission occurs as a result of risky sexual behaviour, gender and power imbalance surrounding sexual relationships, shame and stigma, and weakness in healthcare systems, which prevent many from availing necessary care.

According to WHO, the prevalence of STDs is much higher in most developing countries than in developed countries (4). In Bangladesh, little is known about STD prevalence, social context of their transmission, and of their sequelae. However, a limited number of prevalence studies points to an alarming situation. The government has given priority to reproductive tract infections (RTI) and STDs prevention and management as necessary component of the Essential Service Package. The government health programmes targeted for women of reproductive age (15-49 years) address the behaviour change communication, management of RTI/STD cases and promotion of condom. Almost all these work are urban-based focusing the high-risk group of population. Understandably by focusing on disease, signs and symptoms, these approaches do not incorporate the broader context of behaviour, relationships and the realities of everyday life where in risk and vulnerabilities are often hidden and unrecognizable.

At the same time, these programmes do not include the males of reproductive age and adolescents as well as do not pay any attention towards rural people. As more rural people including adolescents migrate for livelihood from the protection of their natal village, their sexual risk and vulnerabilities increases as does their subsequent need for adequate intervention.

Reproductive tract infections and sexually transmitted diseases

Reproductive tract infection (RTI) is defined as the infection of either the lower or upper reproductive tract, or both. The infection may or may not be sexually transmitted and caused by organisms, which may be exogenous, or endogenous (5). On the other hand, STDs are the diseases that could only be transmitted by sex. According to the source of infection, RTIs can be divided into three major categories (6):

1. Sexually transmitted diseases, e.g. chlamydia infection, trichomoniasis, gonorrhoea, syphilis, chancroid, genital herpes, and genital warts;
2. Endogenous infections caused by the overgrowth of organisms present in the genital tract of a healthy woman, e.g. bacterial vaginosis and vulvo-vaginal candidiasis;
3. Iatrogenic infections, e.g. infection resulting from such unhygienic medical procedures like unsafe abortion, child birth under unhygienic conditions, and post-operative infections.

RTIs may also result from unhygienic health practices such as use of unclean menstrual protection, poor sexual hygiene, vaginal douching, etc. The pelvic inflammatory diseases (PID) are usually caused by the iatrogenic infection. Besides, if the other two above stated infections are left untreated they could cause PID.

There is a clear distinction between RTI and STD. RTIs include all infections of the reproductive tract, whether they are sexually transmitted or not. Bacterial vaginosis and candidiasis, and pelvic inflammatory diseases (PID) caused by iatrogenic infections are considered as RTI, but are not sexually transmitted. On the other hand, the pathogens, which are commonly transmitted through sexual contact (HIV, hepatitis B, C, D, etc.), are not always, or sometimes not at all, an infection of the reproductive tract (7).

Interaction of RTIs/STDs and HIV/AIDS

RTIs/STDs and HIV commonly interact to magnify the effects of the other. The presence of an RTI/STD can greatly increase a person's risk of getting or transmitting HIV sexually. At the same time, the presence of HIV can increase the risk of getting and transmitting other RTIs/STDs and make some RTIs/STDs more serious and difficult to treat (6). Both ulcerative and non-ulcerative RTIs/STDs enhance HIV transmission (8). The presence of a genital ulcer like syphilis, chancroid, herpes, etc. can increase one's risk of HIV infection 10 to 20 folds, and the risk increases 3 to 4 folds where gonorrhoea and chlamydia are present (9).

There is a strong relationship between HIV and other STDs. Both have common mode of transmission. The most important mode of transmission is heterosexual, homosexual and bisexual intercourse. Unprotected sexual intercourse with multiple partners predisposes one to infection with STDs. The same behaviour has also been shown to be risk factor for HIV transmission.

Situation of RTIs/STDs

Global situation

RTIs/STDs have become a silent epidemic that devastates the life of both men and women. Each year, thousands of people die and suffer unnecessarily from the consequences of these infections. For several decades, STDs have ranked among the top five diseases for which adults in developing countries seek health care services (4). Global estimates of the incidence and the prevalence of these infections are limited by the quantity and quality of data available from the different regions of the world. The total number of new cases of the four curable STDs in 1995 was estimated to be just over 330 million, among them 2.2 million cases of syphilis (4%), 62.2 million cases of gonorrhoea (19%), 89.1 million cases of chlamydia (27%), and 167.2 million cases of trichomoniasis (50%). According to the World Health Organization (WHO), the South and South-East part of Asia accounted for the largest number of infection (150 million), followed by the sub-Saharan Africa (65 million) and Latin America and the Caribbean (36 million). The sex distribution of these infections are skewed towards female as 92% cases were trichomoniasis and the other infections burden is somewhat lower, such as 5% were syphilis 58% were gonorrhoea, and 60% were chlamydia (10).

Situation in Bangladesh

In Bangladesh, no national prevalence data on RTIs and STDs are available. Due to difficulties in reporting and specimen collection, and lack of elaborate laboratory methods, studies on the prevalence of RTIs and STDs are rather limited. However, the limited data available from those studies confirm the presence of these diseases in the country. A clinic-based study found that among 564 women attended for various services at a clinic in Dhaka city, 60% have had the laboratory evidence of RTIs/STDs, including 44% with bacterial vaginosis, 3.7% with trichomoniasis, 4.7% with candidiasis, 3.8% with gonorrhoea, and 0.5% with syphilis (11). While a rural study found that among 613 married women, 47% reported symptoms of RTIs and 56% had laboratory evidence of infection, of which 23% had STDs (12).

The findings of a study carried out by the Dhaka Medical College and Hospital were indicative of wide STD prevalence in Bangladesh. According to the investigators, the number of STDs in Bangladesh was estimated at 2.3 million in 1996 (13). Recently it is reported that 22%

of injecting drug users, 87% of floating sex workers, 70% of brothel-based sex workers, 20% of long route truck drivers, and 36% of men who have sex with men were suffering from STDs (14). The prevalence of STDs is very high among commercial sex workers (CSW). A cross-sectional study carried out among 300 CSWs of a brothel in Bangladesh showed that 60% of them had syphilis (15). The number of RTI/STD cases is increasing as evident from the outpatients attending different medical hospitals (16).

Why RTI/STD services are essential

RTIs/STDs have not only been the Cinderella of tropical medicine, but more especially a neglected aspect of women's health. Both women and newborns bear the bulk of the prevailing RTI/STD health consequences, which not only inflict physical discomfort but also serious societal problems. RTIs/STDs cause PID with resultant infertility, ectopic pregnancy, cervical cancer, foetal wastage, low birth weight, infant blindness, neonatal pneumonia, and mental retardation. If left untreated, it can increase the risk of maternal and neonatal mortality. Infertility as a result of PID accounts for 50 - 80% of the infertility in Africa (17). Carcinoma of the cervix is a major public health problem throughout the world. It is the second most common malignancy in women worldwide and the leading cancer in women of developing countries (18).

In developing countries, one of seven males with gonorrhoea has recently been reported to develop urethral stricture. Urethral stricture is a progressive condition that often led to serious genito-urinary problem (17). About 10 - 30% of untreated men who had gonorrhoea developed epididymitis, and 20 - 40% of the epididymitis cases become infertile (7).

Social consequences resulting from RTIs/STDs, such as stigma and discrimination predominantly affects women. Infections are often left untreated due to stigma and cultural taboos associated with RTIs, lack of awareness of the risk of untreated infections, and inaccessibility of appropriate services. Women who suffer from complications like infertility, miscarriage or still birth, are socially ostracized. While both men and women can be infected, it is often the man whose sexual behaviour put his partner's health at risk (19). Extremely poor and destitute women often resort to commercial sex as a livelihood. Poverty-stricken or abandoned women are often victims of forced sex (20).

In Bangladesh, women suffer more from RTIs/STDs than men (19). Moreover, lack of female controlled barrier methods and the power dynamic in sexual relationships frequently limit a woman's ability to negotiate the conditions under which intercourse occurs. Women are, thus, less able to prevent exposure to STDs than men are. For anatomic reasons, transmissions of HIV or discharge syndromes following exposure appear to be more efficient from male to female than from female to male. When transmission does occur, a woman is most likely to become asymptotically infected, and thus fail to seek care. If she does develop symptom, she faces

serious dilemma, since it is a shame to seek care from male health practitioners. Options for seeking treatment of a woman for RTI or STD are extremely limited. In addition, STDs in women may cause family disruption, abandonment, divorce, or social ostracism.

Factors behind RTI/STD epidemic in Bangladesh

In Bangladesh, about half of the population live in absolute poverty in a way that one person earns one dollar a day or less. The economic vulnerability leads people to migrate inside and outside the country to earn money. The Bangladesh economy relies on more than 1.5 million migrant workers, including truck drivers, businessmen and labourers (21). About 75,000 Bangladeshi go abroad every year for employment (13). These migrants who spend much of the year away from their families are known to engage in risky sexual behaviour as they have no knowledge about safe sex. The 'safe sex' is a practice, which protect people not from conception rather from spread of STDs.

Poverty as well as family pressure to maintain livelihood forces many women into commercial sex. There are more than 100,000 commercial sex workers in Bangladesh (21). Some studies report that each commercial sex worker has an average of four to six clients each day. This means that everyday in Bangladesh, over half a million men pay for sex (22). The most frequent visitors to prostitutes are businessmen, students, rickshaw pullers, truck drivers and foreign tourists (23). Several studies have shown that a marked increase of STDs and HIV infection has occurred in this population over the past few years (24). Neither they have any knowledge about the disease, its transmission and prevention, nor do they practice safe sex (21).

Though Bangladesh is a conservative country, polygamy is not uncommon here. Besides the migrants and CSWs, these practices are going on by the general people under the blanket of a blissful innocence both in rural and urban areas. For example, in one study, it was found that about half of the young men have had premarital sex, while the level was somewhat lower for females because of greater social control and greater disgrace for themselves and their families if discovered, risk of pregnancy, doomed prospect of good marriage, and much earlier age at marriage (20, 25). Unmarried men are most likely to have sexual relations with unmarried kin because they find it hard to know other girls, but sometimes also with married brother's wife (25). Khan and Arefeen (26) make the point that professional prostitute is usually unavailable in the rural areas, and rural men who go to prostitute almost always do so when visiting the larger urban areas. It is easier for a married man to indulge himself in sex with a number of women as of less social risk. Why and in what circumstances men practice extramarital sex? If the wife is sick (includes sickness due to menstruation or childbirth), ugly looking, or pretty but cannot satisfy her husband then a man go to other women (20). However,

these findings report a number of occurrences, especially in cases where the husband is away from home for long time (23, 25). These people are also practicing unsafe sex as the condom use rate is very low (3.8%) (27). In summary, even if there is some discussions, the above stated factors indicate that the country is not totally out of danger for an explosive outbreak of RTI/STD and HIV/AIDS as well.

Sexual health project design

In 1997, a sexual health project began in Matlab, a rural area of Bangladesh, under a collaborative research project of the Bangladesh Rural Advancement Committee (BRAC) and International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR, B).

Since 1966, Matlab has been a demographic surveillance area of ICDDR, B. In one-half of the Demographic Surveillance System (DSS) area, ICDDR, B provides intensive maternal and child health and family planning services. BRAC as part of its Rural Development Program (RDP) targets the poorest of the poor with special emphasis on improving health and socio-economic condition of women and children through group formation in village organizations, skill development training, and provision for non-formal primary education and collateral-free loans for income generating activities. The Essential Health Care component of RDP includes the promotion of safe water and sanitation, health and nutrition education, immunization, family planning and basic curative services.

Since 1992, BRAC initiated a joint research project with ICDDR, B to determine how and in what way the socioeconomic development affects the health and well-being of the rural poor. To make the comparison easier, the study area is divided into four cells: ICDDR, B intervention, BRAC intervention, BRAC and ICDDR, B intervention, and a comparison area where the government is being working considered as a standard area. A sexual health programme was integrated into this project with support from the International Center for Research on Women (ICRW) and Center for Development and Population Activities (CEDPA). This collaborative research is being conducted in 14 villages of Matlab. The goal of this project is to develop an educational intervention that is targeted to sexual health needs of rural women, men and adolescents. In order to develop process and contents for a sexual health education program, preliminary research has been conducted. This research has served to identify the sexual health needs of the target population, and to find out sexual health practitioners and individuals who can provide sexual health education to adult and youth. On the basis of the above mentioned research, the project felt a need to understand what people know about STDs, what they do after getting the infection, how patients communicate with their partners, and whether the partners are notified or getting treatment for the infection. This will assist programme planners in

developing education materials and approaching an effective system of case screening, management and prevention as well.

Objectives of the study

The objectives of the study are as follows:

1. To measure the current level of knowledge on RTIs/STDs, in terms of symptom, transmission, harmful effect, treatment and prevention;
2. To estimate the prevalence of STDs among people of different age group, i.e. adult of reproductive age (20-45 years) and adolescents (12-19 years);
3. To explore treatment seeking behaviour of infected persons and their partners;
4. To inquire partner communication about STDs; and
5. To examine the sexual behaviour that put people at risk of RTIs/STDs.

METHODS AND POPULATION

Study setting

The study was conducted in Matlab, a low-lying delta area, 40 miles South-East of Dhaka, the capital of Bangladesh. As in most of rural Bangladesh, the majority of the Matlab population is poor. Matlab has about 142 villages with a population of 150,000, which are involved in the programmes of ICDDR, B and BRAC, 85% of whom are Muslim. Typical dwellings are a household with one or two rooms, an earth floor, thatched or corrugated iron-sheet roof, and five to six people are dwelling. The staple food is rice grown during monsoon season and jute, the main cash crop, is grown during February-May. Most people work in agriculture though other activities like fishing and small-scale trading are common. Matlab bazaar, contains the police and government headquarters, market, and health facilities. Smaller towns are linked to Matlab bazaar by boats which is the main means of travel besides foot. Approximately, one-third of the population are under 15 and 10% are over 60. The farmers of Matlab, representative of the rural poor in Bangladesh, own less than two acres of land and 30% are landless (28).

Study population and sampling

The study utilized a combination of qualitative and quantitative research methods. Subjects for the study were adults and adolescents, both male and female permanently residing in 14 villages in Matlab under BRAC-ICDDR, B Joint Research Project. The adults (men and women) were married aged between 20-45 years, and the adolescents (boys and girls) were unmarried aged between 12-19 years.

The qualitative interviews involved 20 men, 20 women, 13 boys, and 12 girls sampled by using strategic technique. What is meant by strategic is, informal discussion with community people helped find appropriate persons to interview with. Eight single sex focus group discussions were also conducted with 50 adults and 20 adolescents. The main criteria for selecting the respondents were their knowledge of area and the culture. The community health workers of BRAC initially helped make contact with one or two respondents. These interviews then directed the choice of other respondents to reach a range of different experiences. Interviews were done in three randomly selected villages of 14 villages under the project. The BRAC community health workers and the traditional healers served as key informants.

Four villages from the study area of BRAC and ICDDR, B were randomly selected. Respondents were then randomly selected from the registers of Demographic Surveillance System (DSS) of ICDDR, B. The database maintained by the DSS provided the sampling frame. The unique household number identified respondents in the field. Respondents from nex

household was interviewed if the corresponding respondent been absent in two subsequent visits.

The sample size for the survey was determined using the formula for a cross-sectional survey. Using previous study findings of 20% prevalence of RTI or STD among rural women of reproductive age (29), 95% certainty, and expected difference of 4% were used in calculating the sample size. Accordingly, a total sample size requirement was 384. To avoid error associated with non-response, 420 respondents from each group were selected, e.g. men, women, boys and girls, and a total of 1,680 respondents were sampled.

Data collection

Before launching the quantitative survey, pilot activities were carried out. The main objective was to gain an overall insight of existing sexual networking in the village that put the villagers at risk of RTIs/STDs, and to develop research instrument both for the qualitative and quantitative components. The in-depth interview and focus group discussions were conducted with four different groups of respondents (men, women, boys and girls) as well as key informants. The interviews focused on respondents' beliefs, perceptions, understandings, awareness, and interpretations of sexual health problems, treatment, prevention, and sexual behaviour. We also tried to collect the serious and funny stories, jokes, themes and pattern to public discussion and villagers' interpretations of sex, sexuality, high-risk behaviour and sex education.

From the qualitative research findings, some indicators on RTI/STD was sorted out to develop a structured questionnaire. The questionnaire encompassed socio-demographic background of respondents; their knowledge on different RTIs and STDs, such as symptom, mode of transmission, harmful effect, treatment and prevention; prevalence of RTI/STD and prevalent STDs; their practice when they had RTIs or STDs, such as patients' treatment seeking behavior; partners' communication about the disease and partners' treatment seeking behavior. The questionnaire was pre-tested, and modified and edited on the basis of feedback received from pre-testing before finalization. Using this questionnaire, the quantitative survey was carried out.

Data were collected by both local male and female interviewers for male and female respondents respectively. All were educated (higher secondary or graduate) and able to speak the local dialect. Experienced supervisors and the researchers monitored field activities. Data collectors and supervisors were trained for one week on how to use the questionnaire. A series of discussion sessions and practical exercises with role-play were held with them. During the survey, there was continuous feedback between the data collectors and supervisors. The completed questionnaires were checked on a daily basis for completeness and sent back to the field immediately when necessary. Data collection was carried out from January to March 1999.

Qualitative interviews were conducted by one male and one female social science researchers with the help of two programme organizers from BRAC who assisted in writing and translation. The interviews were conducted at local BRAC office as it was difficult to ensure privacy in their respective community or near their household. Besides, respondents also felt inhibited to discuss these sensitive issues so near their households.

Data analysis

The qualitative interviews were coded line by line, and concepts and categories were identified. The analysis focussed mainly on risky sexual behaviour, sexual communication, sexual health problems, its treatment and prevention, fear, anxiety, family and domestic violence. The data revealed consistent patterns of gender-related experiences, beliefs and attitudes about sex and sexuality. These data would complement the quantitative data to understand the cultural meaning and extent of sexual behaviour that enable people at risk of STDs.

The quantitative data were stored and analyzed using SPSS version 9.0 statistical package. Analysis was done in two stages. Firstly, bivariate analysis i.e. chi square test was done to study the STD prevalence and to see the statistical significance of difference between STD knowledge and practice of adult and adolescent, and male and female. Secondly, a logistic regression was run to see the influence of socio-economic factors on STD knowledge, and on STD patients' practice. It was not possible to run the logistic regression separately for boys and girls due to small number of observations.

Definitions used in the quantitative analysis

Respondents' knowledge was determined in terms of basic knowledge and specific knowledge in range of diseases they were aware. Respondents who had heard of STDs are henceforth termed 'aware'. The basic knowledge was then measured by the aware-respondents' ability to name the range of diseases they knew. The specific knowledge of different STDs was assessed in terms of correct knowledge they had with respect to symptom, mode of transmission, adverse effect, treatment and prevention. It should be mentioned here that as few of the respondents had have knowledge with the diseases other than the white discharge, it was only possible to analyze white discharge.

The economic condition of the respondents was simply defined by the BRAC eligibility, the criteria for which is that the household owns no more than half-an-acre of land including homestead land and at least one member of the household sells at least 100 days of manual labor in a year to earn a livelihood (28).

Diagnosis of RTI/STD

To diagnose the prevalent RTIs and STDs in the community in this study we followed the syndromic diagnosis where diagnosis of disease relies on the recognition of clinical signs and symptom. The diagnostic criteria were as follows:

Vaginal discharge

History of vaginal discharge heavier than normal indicate bacterial vaginosis, candidiasis or trichomoniasis. The discharge may be, fishy odour or offensive. It may be associated with itching in vulva and vagina, staining of cloths, and dyspareunia. There might be a history of soreness of vulva and vagina.

Pelvic inflammatory disease (PID)

Complaint of lower abdominal pain along with history of recent RTIs or STDs, IUD insertion, menstrual regulation, induced abortion, and childbirth under unhygienic condition was likely to be considered as PID.

Gonorrhoea

Symptoms of urethral or vaginal mucopurulent discharge, dysuria and / or lower abdominal pain was being considered as gonorrhoea.

Syphilis

Diagnosis of syphilis was made on the basis of presence of ulcer in genital organ, which might or might not be associated with enlarged lymph nodes in inguinal region.

RESULTS

Characteristics of respondents

Table 1 presents the numbers and categories of respondents who have participated in the study. Respondents were in four groups i.e. adults and adolescents, and male and female. The adults were in the reproductive age groups (20 – 45 years). The adolescents were in between 12 to 19 years of age. Most adults (65%) were illiterate, whereas most adolescents (83%) were literate. There was no sex differentiation in literacy.

Table 1: Respondents participating the study

Group	Adult		Adolescent	
	Male	Female	Boy	Girl
Sample	420	420	420	420
Response	412	412	396	394
Response rate (%)	98	98	94	94

In our sample, most respondents were from BRAC eligible households. Almost all men and most boys were involved in some income generating activities. Their main occupation was farming and wage labour. In contrast, most women were housewives. A small proportion of them was involved with some micro-credit programme, such as poultry rearing, livestock, vegetable, sericulture, and fisheries programme. Girls were not involved in such kind of work.

Determinants of STD knowledge

Basic knowledge

Table 2 presents the bivariate distribution of respondents who were aware about STDs. Respondents were asked whether or not they had heard about RTIs and STDs. Of the total 1,614, 48% had heard about STDs. About 52% respondents did not answer the question and were excluded from further questioning.

Adults (both men and women) were more aware than adolescents (both boys and girls). However, there was no significant sex differentiation in this awareness.

Table 2: Respondents who have heard of STDs

	Adult No. (%)	Adolescent No. (%)	P _{age}
Male	356 (86.4)	36 (9.1)	<.001
Female	342 (83.0)	38 (9.6)	<.001
P _{sex}	0.175	0.789	

It should be mentioned here that these people who were aware could not differentiate between STDs and RTIs. They perceived any disease in the genital organ or region as STDs. In Table 3, aware-respondents' basic knowledge was then measured by their ability to name of STDs they knew. This is strictly a measure of recognition rather than a measure of knowledge in details. Girls could mention most diseases, however, the women and boys the least. Most men, women and girls told about vaginal discharge. A substantial proportion of respondents considered urinary tract infection as a STD. On the other hand, a considerable proportion of 'aware' women and girls did not know the name of any diseases.

Issues regarding perceived illness were also addressed more in-depth in the qualitative interviews. Besides white discharge, women said night pollution and genital weakness were example of serious illness. Most men and boys talked about nocturnal emission. A few said that syphilis, gonorrhoea, piles, and small and weak penis was the disease that could cause loss of life. Some men, women and boys told about AIDS. While sexual weakness is perceived to be a problem among men and women, for biological and socio-cultural reasons, symptoms and complaints are different. While sexual weakness in men is somaticized as impotence and nocturnal emission, in female lack of interest in sex cause sexual weakness or vice versa. Some men and boys interpreted as when semen became liquid, it would strike the brain and create the diseases and then this semen would come out through the penis and soil the navel.

Table 3: List of diseases cited by the 'aware' respondents ("Don't know" is not included in the calculation of the mean number of diseases)

Diseases	Men No. (%)	Women No. (%)	Boys No. (%)	Girls No. (%)
Vaginal discharge	486 (40.6)	402 (36.5)	24 (25.0)	124 (37.6)
Pelvic inflammatory disease	104 (8.7)	44 (4.0)	4 (4.2)	48 (14.5)
Urinary tract infection	164 (13.7)	110 (10.0)	30 (31.3)	58 (17.6)
Gonorrhoea	86 (7.2)	16 (1.5)	-	4 (1.2)
Syphilis	152 (12.7)	62 (5.6)	16 (16.7)	8 (2.4)
Inguinal swelling	18 (1.5)	10 (0.9)	-	-
Others	52 (4.3)	80 (7.3)	6 (6.3)	2 (0.6)
Don't Know	134 (11.2)	376 (34.2)	16 (16.7)	86 (26.1)
Total	1196 (100.0)	1100 (100.0)	96 (100.0)	330 (100.0)
N	356	342	36	38
Mean disease	3.0	2.1	2.2	6.4

Specific knowledge

The 'aware' respondents were then asked on different STDs they knew in respect of symptoms, mode of transmission, adverse effect, treatment, and prevention. The overwhelming majority knew only about the vaginal discharge.

Knowledge on vaginal discharge

Respondents knew that it was a woman's disease named as *shadasrab* or *dhatuvanga* (white discharge).

Symptom

About 76% of 'STD-aware' respondents (both adults and adolescents) said that if a woman have had white discharge then something watery substance would be passing out through her vagina, which might be whitish or yellowish. It could be thin or thick like curds that might have an offensive odour. However, a considerable proportion of adolescent boys (29%) and girls (38%) did not know what would be the symptom for white discharge. A few women and girls revealed dyspareunia (painful coitus) and itching could be the associated symptoms for the disease. Few men also considered itching as a symptom. The other perceived symptoms were urinary incontinence, constipation, anorexia, weakness and lower abdominal pain, etc.

Nevertheless, Table 4 shows a significant difference in terms of correct knowledge on symptom of white discharge between the subgroups of study population. Adults knew more than adolescents, and male knew more than female. Regarding this, the respondents who knew something passing out through vagina, dyspareunia and itching, was being considered as correct knowledge.

Table 4: Aware-respondents' correct knowledge on vaginal discharge

	Men No. (%)	Women No. (%)	Boys No. (%)	Girls No. (%)	P _{age}	P _{sex}
Symptom	300 (84.3)	272 (79.5)	22 (61.1)	12 (31.6)	<.001	.012
Spread	160 (44.9)	104 (30.4)	12 (33.3)	4 (10.5)	.006	<.001
Adverse effect	4 (1.1)	8 (2.3)	-	-	-	.217
Treatment	146 (41.0)	84 (24.6)	12 (33.3)	12 (31.6)	.928	<.001
Prevention	174 (48.9)	62 (18.1)	12 (33.3)	4 (10.5)	.033	<.001

Spread

Respondents had a varying view on the mode of transmission of vaginal discharge, though a greater proportion of women (58%), boys (49%) and girls (86%) said that they did not know how one got STD. Some rightly said that it spreads by sex and unhygienic health practice. Significant age and sex differentiations were found in this regard (table 4).

To be able to understand how people conceptualized this disease, the respondents were asked to explain what they meant by the mode of transmission. Most respondents saw a relationship between polygamy and vaginal discharge. About the way of transmission men said

that it was caused by evil wind. It might be caused by constipation, or could be transmitted by blood or wearing cloths of someone who had a STD. As a result of constipation, dirty matters accumulated in the blood could cause the disease. According to married women "Excess sex between husband and wife can develop vaginal discharge because from excess sex the physical strength of the female is gradually diminished." Some said, "It is due to uncleanness and illegal sexual relationships, not due to evil wind or food." Teenage boys said, "If anyone goes to brothels or prostitutes, he may have some diseases." Respondents believed that urine could transmit this disease if men and women urinate in the same place.

Adverse effect

The most common (72%) perceived health consequence for white discharge was physical weakness. Some respondents (11%) said that vaginal discharge could cause loss of function to the other organ(s) in the body like blindness, heart disease, gastric ulcer, etc. In addition, they perceived that women might even die as a result of this disease. Sometimes it would be very difficult to get married if any unmarried girls had become infected with vaginal discharge. On the other hand, a greater proportion of girls (39%) did not know about any adverse effect resulting from vaginal discharge.

Regardless, respondents who said cancer and infection in uterus with resultant infertility could occur as a result of untreated vaginal discharge, were considered to have a correct knowledge. Table 4, shows a very low proportion of men and women have had this knowledge with no sex difference. In contrast, none of the adolescents had such kind of knowledge.

Treatment

Many adults (44% men and 50% women) and adolescents (48% boys and 33% girls) felt that women should seek treatment from traditional healers if they got vaginal discharge. They believed that herbs were more effective for this disease. Their second and third choices of seeking treatment were medical doctors, and pharmacists or village doctors respectively. The popular view of women and girls as to the remedy for this disease was nutritious food and cool diet e.g. coconut milk. In contrast, a considerable proportion, 20.3%, of girls reported that they did not know what the treatment should be. Nonetheless, Table 4 presents a significant sex differentiation regarding the right knowledge in this respect. Knowledge about seeking treatment from medical doctors was being considered as correct.

Prevention

Most women (73.2%) and girls (77.6%) and many boys (39.6%) did not know anything about the prevention of vaginal discharge. In contrast, many men (43.6%) and a considerable proportion

of boys (35.4%) said safe sex practice help prevent the spread of vaginal discharge. What they meant by safe sex practice was use of condom to prevent the disease rather than conception. About 11% of women and 18% of girls thought hygiene practice during menstruation and cleanness could help prevent the disease. Regardless, a significant difference between the subgroup of study population was found concerning the right knowledge in this respect (Table 4). Adults were found more aware than adolescents, and male were more aware than female. People who knew safe sex and hygiene practice as means to prevent white discharge were being considered as having correct knowledge.

The qualitative data provided some extra information in order to understand villagers' perspectives in preventing the disease. Men believed "if woman has no sex, she has no vaginal discharge." Women said, "there is nothing to prevent this disease." The common response was that treatment from traditional healers was the best means to prevent this disease. A few mentioned about condom but included with other form of contraceptives – all assumed to prevent vaginal discharge: "To prevent this disease we should use pill, condom, or copper-T."

Disease complained by respondents during last three months

Table 5 lays out the bivariate analysis of RTI/STD prevalence among adults and adolescents, and among male and female. Respondents were asked whether they have had symptom(s) related to infections in the genital organ and/or region during the last three months. Of the 1,614 respondents, a total of 308 (19%) respondents had been suffering from STDs during that period. A significant difference was being found among adults and adolescents, and among male and female. Female suffered more than male and adults suffered more than adolescents.

Table 5: Respondents having STDs during last 3 months

	Adult No. (%)	Adolescent No. (%)	P _{age}
Male	36 (8.7)	8 (2.0)	<.001
Female	188 (45.6)	76 (19.3)	<.001
P _{sex}	<.001	<.001	

Many women and most girls complained of vaginal discharge followed by pelvic inflammatory disease. Female who had complained of vaginal discharge could be of bacterial vaginosis, candidiasis or trichomoniasis. Many men and most boys had urethral discharge followed by the genital ulcer. The urethral discharge and genital ulcer were suggestive of gonorrhoea and syphilis respectively. A small proportion men and women complained of swelling in inguinal region with a history of genital ulcer a few months before, which implied the secondary stage of syphilis (Figure 1).

Women found to have a STD were asked about their husbands' mobility i.e. whether working inside or outside Matlab. A positive correlation (.400 which is significant at .01 level) was found among wives' disease and husbands' mobility outside Matlab. Out of 188 women having a disease, 111 (59%) said that their husbands went to Chandpur district town or Dhaka city for work and stayed there for some period.

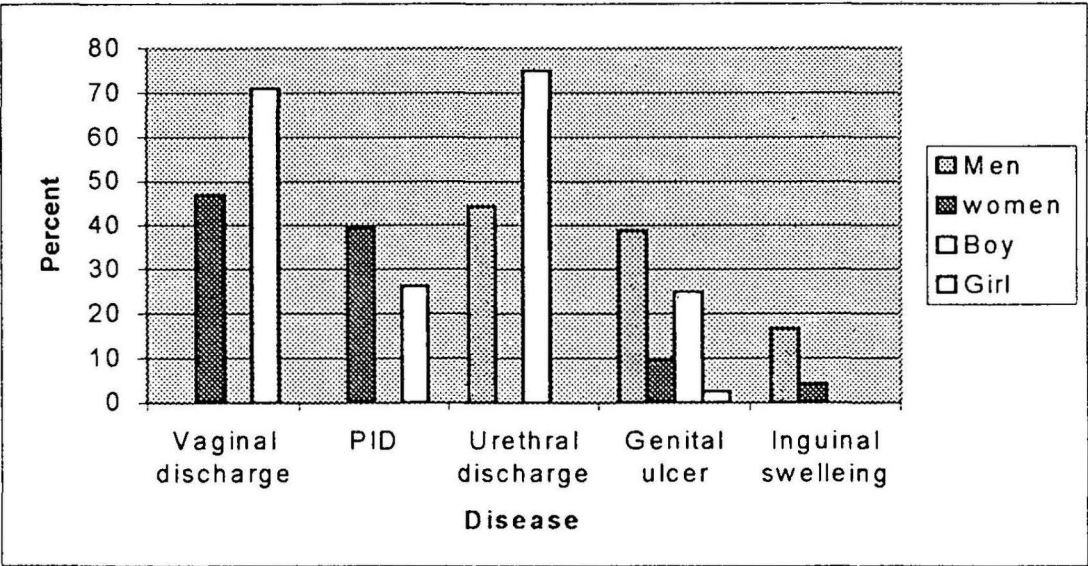


Figure 1: Distribution of STD symptoms among respondents who had STDs during the last three months

Treatment seeking behaviour of STD patients

Of the 308 persons who had STDs, 176 (57%) knew about treatment but did not receive any treatment. This distribution is skewed towards female. More girls (97%) and women (47%) did not seek treatment compared with boys (25%) and men (33%). Many men (39%) sought treatment from medical doctors, some (17%) from traditional healers and some (11%) from pharmacists/village doctors, whereas women had received treatment mostly from traditional healers (26%) and secondly from medical doctors (20%). Only a few women (6%) sought treatment from pharmacists/village doctors. In contrast, adolescents (75% boys & 3% girls) who sought treatment, all from pharmacists/village doctors. Only two women were not aware about treatment.

However, a positive correlation (.294 which is significant at 0.01 level) was being found between STD awareness and treatment seeking behaviour.

The in-depth interview and focus group discussion elucidated why villagers especially women and adolescents preferred to seek treatment from traditional healers and/or pharmacists / village doctors. One woman said, "I have had white discharge. Sometimes I took medicine from the medical doctors and sometimes from the traditional healers. I think the traditional

healers' treatment are more effective because the medical doctor could not cure me." To explain the traditional healers' practice, villagers gave few examples. One is given below:

Rajeeb had been suffering from ulcer in his groin for about five months. Initially it was very small, painless and did not create any problem to him. Gradually it became larger, slight painful and started to discharge pus. He became afraid. He went to Gafur *kabiraj* (traditional healer). Gafur gave him herbal medicine (herbs, leaves and roots of certain plants), an incantation (*tabiz*) and faith healing (*pani pora*). Gafur also advised him "you should pray regularly because this kind of disease is not of a religious man." After doing that Rajeeb became cured off.

Boys said that it was very easy to reach pharmacists/village doctors as well as to buy medicine from them. And they had no fear to disclose their matters.

Partners' communication and treatment seeking behavior

The study tried to investigate whether the STD patients had communicated with their partners or not, and whether this communication put any influence in partners' treatment seeking behaviour. The findings show that among 308 STD patients, 172 (55.8%) adults communicated with their partners about their disease. Women communicated more than men. Only 14 (4.5%) of the partners sought treatment from elsewhere, and more male patients' partners sought treatment than female. It should be mentioned here that all partners who sought treatment being communicated by the patients about their disease. This reflects that communication among partners had a major influence in partner notification and partner management. In contrast, adolescents' partners neither being communicated nor did seek any treatment.

The in-depth-interviews and focus group discussions found partners' communication about sexual health problems, such as RTIs and STDs, infertility, impotency, pre- and extra-marital sex as a source of serious family conflict. A common statement was "patients become afraid to discuss their sickness with their partners because of bicker, violence and infidelity." One woman said, "if my husband knows about my vaginal discharge, I'll loss his faith and he will divorce me." A majority of men felt that it was better not to inform their wives about their disease because of fear of quarrel. "If a man suffer from this kind of disease, it is easy for him to seek treatment from a pharmacist, if he wants to." Both men and women did not bother with partners' treatment as well as re-infection as they did not have clear knowledge about the disease cycle. Only a few agreed that both husband and wife should seek treatment together for a better cured.

The adolescents could not think to share their illness with their partners as it is a matter of dishonour especially for the girls and her family as well. Both boys and girls said, "girls suffer more than boys. If anything has become known about her disease, people will say bad things

about her and she will not be able to go out of the house, no one will marry her and her family will be dishonoured. But for the boy he does not mind anything.”

Respondents reported a positive relationship between STD and domestic violence. Describing the consequences, villagers referred to the case of Gafur and Sakhina as an example:

Gafur and Sakhina got married for ten years. They passed their days reasonably well. Sakhina became suspicious about her husband for quite a few days. But she could not ask him anything because of fear. One day she found an ulcer in Gafur’s genitalia. Shakhina amazingly asked him “what is this?” Gafur became angry and beat her. After that period, Gafur did not talk to Sakhina properly and spent most of his time outside the home.

Influence of socio-economic factors on people’s knowledge and practice

In Table 6, the results of logistic regression analysis of STD awareness on selected variables are presented. The model finds literacy to be the most influential predictor of both adults (men and women) and adolescents though there are some differences between univariate and multivariate examination. The odds ratio for literate men and women were respectively 2.7 and 2.4 which indicates literate persons have had higher knowledge compared to the illiterate ones. A literate adolescent also has had (odds ratio 3.3) more knowledge than do illiterate one.

The model indicates that there is a positive association between high knowledge score and better socio-economic status as well as mobility of respondents i.e. involving in income generating activities, even if it is not significant statistically. However, an important predictor of STD awareness for women was her membership in BRAC. Being a member of BRAC, a woman’s knowledge was (odds ratio 2.9) higher than that of non-members. Moreover, being from a male-headed household was a negative indicator for both women and men. In contrast, it is a positive predictor for adolescents.

Finally, men and women living in either BRAC or ICDDR, B intervention area were more likely to have a significantly high knowledge score compared to the men and women being from an area where BRAC and ICDDR, B working together. In contrast, adolescents being from an area where the both organizations are working together, intended, though not significant have had higher knowledge than those are from either BRAC or ICDDR, B area.

Table 6: Odds ratio for STD awareness and selected socio-economic status indicator (all independent variables are included in the multivariate analysis)

Variable	Men				Women				Adolescents			
	Univariate OR	95% CI	Multivariate OR	95% CI	Univariate OR	95% CI	Multivariate OR	95% CI	Univariate OR	95% CI	Multivariate OR	95% CI
Literate Yes	3.27	1.55-6.87	2.73	1.27-5.88	2.51	1.35-4.70	2.42	1.24-4.72	3.92	1.41-10.92	3.30	1.16-9.38
Economic status Non eligible	2.95	1.22-7.09	2.02	0.81-5.06	1.79	1.03-3.09	1.50	0.82-2.73	1.61	0.99-2.60	1.58	0.96-2.61
Involve in income earning activities Yes	-		-		2.32	0.96-5.59	1.41	0.54-3.70	1.29	0.78-2.13	1.51	0.90-2.53
BRAC membership Yes	-		-		2.61	1.32-5.17	2.93	1.40-6.14	-		-	
Sex of Household head Male	0.25	0.08-0.82	0.26	0.08-0.87	0.39	0.15-1.02	0.47	0.18-1.23	1.16	0.54-2.49	1.28	0.59-2.78
ICDDR,B + BRAC area Yes	0.47	0.26-0.85	0.49	0.27-0.91	0.59	0.35-0.99	0.54	0.31-0.95	1.72	1.05-2.81	1.64	0.99-2.71

Table 7 lays out the regression model of STD patients' treatment-seeking behaviour on their socio-economic status. The model indicates a significant negative association between patients' treatment-seeking behaviour and their literacy. Also patients from lower economic class were more likely to seek treatment though it is not significant in multivariate analysis. However, a positive alliance was being found among patients who were involved with income generating activities, and being from a male-headed household as well as from an area where BRAC and ICDDR, B working together.

Table 7: Odds ratio for treatment-seeking behaviour of STD patient and selected socio-economic status (all independent variables are included in multivariate analysis)

Variable	Univariate		Multivariate	
	OR	95% CI	OR	95% CI
Literate Yes	0.49	0.32 – 0.75	0.57	0.36 – 0.90
Economic status Non eligible	0.48	0.31 – 0.73	0.67	0.42 – 1.08
Involved in income earning activities Yes	1.70	1.01 – 2.84	1.59	0.91 – 2.77
Sex of household Male	1.26	0.71 – 2.21	1.24	0.68 – 2.24
ICDDR,B + BRAC area Yes	1.65	1.09 – 2.51	1.31	0.84 – 2.04

Risk factors for RTIs/STDs

A logistic regression was done to find out the relationship between RTIs/STDs diagnosed syndromically and some risk factors including education, economic condition, and income earning activities as well.

Relationship with education

Adults with no literacy were at higher risk of RTIs/STDs though it is not significant statistically. In contrast, adolescents who had literacy had increased risk of getting the infections (odds ratio 2.9).

Relationship with economic status

Adolescents being from better economic condition were at greater risk of RTIs/STDs. However, there was no such a relation with adult infections.

Income earning activities

Income earning activities had a significant negative relationship with RTIs/STDs in both adults and adolescents.

Sexual network in the community

We tried to find out through in-depth interview and focus group discussions the sexual behaviour in the community that put men, women, boys and girls at risk of RTIs/STDs and HIV/AIDS as well. Figure 2 illustrates an existing sexual network in the area mentioned by the key informants.

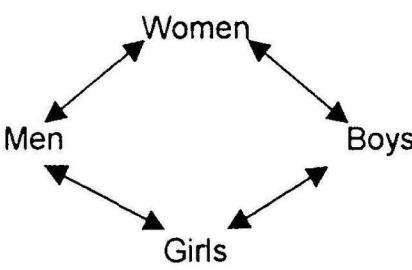


Figure 2: Sexual network in the community

Both monogamy and polygamy are prevalent in the study area. It is not at all uncommon for men and women to marry more than once. For men, having co-wives is quite normal. Generally, a husband marries again if the wife is aged, sick, childless, or of a questionable character, or if she has not borne a male child or if the husband is attracted to another woman. On the other hand, women may marry again if they are widowed or divorced. According to key

informants non-marital sex also exists in the study area between adults and adolescents, and married and unmarried.

Non-marital sex may be broadly categorized into two: pre-marital sex and extra-marital sex. Both of them exhibit risky practices. Out of wedlock sex may take place in the following ways: 1) seduction of either men or women; 2) rape; 3) romantic affairs leading to sex; 4) sex with commercial sex workers.

Pre-marital sex

Pre-marital sex takes place and not uncommon, though, in general, it is not approved by the society. Both boys and girls knew about the occurrence of pre-marital sex in their village or among their friends, relatives, and acquaintances. Usually boys come to girls' house as cousins or friends. In most cases they fall in love and meet in the school, at the cinema hall, in the bushes, or at the embankments. As one boy said "I found my elder sisters and brothers are in love in our house. They meet their lovers while they are going to schools and in the bushes. They also write letters to their lovers. But what they do talk about I don't know." All these matters are going on hiddenly. The guardians do not know about these. There is strict supervision for the unmarried girls by the adults but they often experience pre-marital sex. In most cases, it does not result into marriage. As the key informants reported sometimes these relationships lead to pregnancy and to abortion.

According to a woman "some teenage boys have sexual relations with older women, but this is not for money." Public acknowledgement of pre-marital sex is forbidden. So if a couple is found and/or if the girl become pregnant and there is social recognition of their relationship, the status quo must be upheld. One woman stated her own experience as "I experienced pre-marital sex with my husband. Bad people hated our love. I was afraid of becoming pregnant, but my husband gave me support." Women perceived "Romantic love is good, but pre-marital sex is bad." A negative relationship is found between perception and practice. As for example, "Pre-marital sex is not good though I had it."

Men explained in what circumstances an unmarried girl may have sex. This usually happens if there is some romantic involvement. According to them "Love is very bad, before marriage love is not good." From their accounts more unmarried boys than girls seemed to be involved in pre-marital sex. Because boys are more free and they don't have to think to become pregnant.

While mentioning the consequences of pre-marital sex, a teenage girl said "If you become pregnant before marriage, people will say bad things about you; there is no prestige for the parents, and the marriage broker will not come." Social harmony is restored, either by arranging marriage of the couple, aborting the pregnant girl, leaving the village, etc., and the

problem is publicly resolved. While romantic love conflicts with the practice of marriages traditionally arranged by parents, it seems that movies and outside influences are increasing the occurrence of romantic attachments.

A few cases of pre-marital sex are cited below:

******A teenage boy and a girl developed sexual relationship among themselves. After a while the girl became pregnant. The boy denied the relationship. The child was aborted and the girl was sent to Dhaka for marriage.

******A man was reported to seduce a girl by promising to marry her. They used to have sex regularly. After some time, the man married but another girl.

******A boy and a girl were studying in a same school. They liked each other and fall in love. They developed a relationship of 'deep love' and had sex. As a result of this, the girl became pregnant and helpless. According to the boy's advice, she went to a traditional healer for induced abortion. Septicemia arose as result of insertion of the root of a tree into the uterus. She needed to admit to a hospital in Chandpur town. The boy did not marry that girl. Few months ago she married another man.

People think that pre-marital sex is quite troublesome especially for women. There are lots of risks involved in such relationship. If people ever suspect any affair, they usually watch after the girl. Moreover, the society highly disapproves pre-marital sex. People treat it as social evil and if discovered it is usually severely penalized. Further, men are highly concerned about the confidentiality of the whole affairs, because they do not want to get into trouble in finding a good bride later on.

Extramarital sex

The respondents consistently regarded extra-marital sex as a practice of bad people or people who are not happy or not following religious precepts. Also it is a matter of expense. Men said many men and women (about one third) have other sexual partners to satisfy their sexual desires. The common context of discussion was "Out of sight of the wife, one can fulfill his sexual passion. To stop this, will is enough." Some felt that a wife was responsible for the husband's extra-marital activities. Women felt more fatalistic. Women expressed the view that it is a matter of character: if a husband is good then he is good and if he is bad, then he is bad and there is nothing to be done to change his nature.

Some reasons are identified behind this extra-marital sex. Women's perception is "Men usually go to other women to relief excess sexual desire and mental tension. Men who go to other women instead of their wives have bad character (*khaslot kharap*).” In Matlab, as there is no brothel, men usually go to non-commercial partners. According to them men who had gone to city for work and away from their wives for a long time might have to go to the commercial sex workers.

There are some women in the village whose husbands are staying abroad for a long time, doing and selling sex to other married and unmarried men. Their husbands did not communicate with them properly. A man said, "There is a woman in our village who have sexual relations with many men. I also had sex with her. I think, she does this because of her husband's second marriage. Once the villagers called a *shalish* (a meeting for judgement and punish if anyone being proved of doing something illegal in the society) for her, but she did not care. Police also helped her." To illustrate the reason, a woman said "Some older women have sexual relations with teenage boys, but this is not for money. It is their habit."

Two examples of extra-marital sex is given below:

**A man married a girl living in the next door. They had two kids. He eventually developed a sexual relationship with his pretty sister-in-law. At some point of time the sister-in-law got pregnant. When the parents discovered this, it was too late to arrange an abortion. The man did not deny the charge of making her pregnant. He married her and divorced his first wife.

**A girl was in love with her cousin. After sometime her cousin deserted her and the girl became mentally imbalanced. Later, her parents married her off to a poor ugly looking man. But the girl could not develop a good relation with her husband. The husband has had to go to the town in search of work. During his absence she made a relationship with a married man from another village and had sex with her. Her husband came to know this event. He sent his wife back to her parents' house. The man from the other village, however, continued to visit her. The girl's parents were generous to that man, because he started supporting the family.

Rape

According to men's view rape occurs due to some offensive practice of women. They said, "Rape is due to the seductive movement or physical attraction of a woman and when she refuses, the man gets angry and then rape occurs." A man stated, "Poor people do not do this. Rich do this and it is difficult to say anything against them." Women blamed men for rape. They explained this as "Those men who do rape have so many sexual urges and if they are refused, they do not hear. They are very bad. They do rape besides the road, in the bushes, on the

embankment." Some said "Men who do this have the evil nature in their character." One said, "Women are ashamed to cry or say anything to anyone because of social harassment. Men bend their hands and feet to do this." The common event in the village is: "If a boy likes a girl and wants to marry her and if the girl reject him, sometimes he will take revenge by raping her."

DISCUSSION

Validity and reliability

Though the research area, Matlab, manifests the typical rural characteristics of Bangladesh, it is somewhat different from other rural areas. Because since 1960s, various interventions and research have been going on in this area that may have some influence on peoples' knowledge, beliefs, attitude, and behaviour. Thus, the study site may not accurately reflect the country's overall situation. Moreover, initially it was planned that the study should be conducted in four study areas i.e. BRAC intervention area, BRAC plus ICDDR, B intervention, ICDDR, B intervention area, and control area (government intervention only) as well. But due to some technical constraints, it was not possible to collect data from the control area. As a result, the estimated prevalence and risk assessment for RTIs/STDs may be underestimated while the control area has received only the government intervention like most rural areas in Bangladesh. Therefore, the study result can not be generalized to the entire target population.

The reliability of the data has been studied by comparing the data with another community-based study done by Wasserheit in 1989 and a considerable correspondence was found. Some systematic differences exist, for example, Wasserheit found that all syndromic cases had not been detected as positive by laboratory evidence. This suggests there might be some overestimation in disease prevalence in the study area as no laboratory investigation has taken into account.

In studying practice of RTI or STD patients, the use of questionnaires may have reflected better scenarios due to social desirability bias as the respondents knew that health professionals conducted the study. In an attempt to apply questionnaires to a large sample and keep procedure simple, some questions receive restrictive answers. However, the deficiency was compensated by the use of qualitative methods. The qualitative study has enabled a number of issues to come out clearly in the ways they are perceived, believed or observed by the respondents themselves. They also created opportunities for both the researchers and the community members to explore each other. Despite the differences in their personal characteristics, participants of in-depth interviews have concurring view particularly on risky sexual behaviour and occurrence of STDs.

The result shows that there is no sex differentiation in literacy neither in adults nor among adolescents. It seems to be a selection bias of adult men and women, because in Matlab about 39% of men and 53% of women did not receive any formal education (30). Though the existence of the Matlab study base provided the unique opportunity of selecting respondents at random, it is assumed that literate men are more supposed to work in town during day time. As a result, selecting illiterate men from the next household may blur the sex

difference in literacy and underestimate the rate as well. While a similar proportion of boys and girls have attended either primary or secondary school. It is because of government has taken free primary education programme across Bangladesh to raise the educational attainment of women since late nineties. Some NGOs are also significantly contributing to the female literacy. Moreover, since 1994, with the help of World Bank and Asian Development Bank, the government has launched a special stipend programme to support female secondary school education with the aim to generate a tremendous enthusiasm for female education, which has boosted the enrollment of girls in secondary school (31).

The study has followed the WHO's clinical flowchart in detecting cases in the community and found 19% people have had STDs in the study area. Protocols based on symptoms cannot identify and treat asymptomatic cases, which indicate some underestimation of the magnitude of the problem in the study area. Referring statement above, it is evident that syndromic approach may cause either overestimate or underestimate the situation. In order to get the accurate estimate, laboratory investigation is necessary. However, lack of accurate, affordable diagnostic tests would hinder effective STD control in low-resource settings, where WHO and other health agencies have promoted the use of syndromic STD diagnosis and management as a cost-effective means (32,33). Nevertheless, there is a debate about the effectiveness of this approach. To improve the effectiveness, WHO proposed to add a risk-assessment component. Risk assessment uses socio-economic, demographic, clinical and behavioural indicators to predict which clients are at risk of RTI/STD infection and thus in need of testing and management. For example, in WHO protocol symptomatic women are classified as high risk if they are under 21, single, have more than one sexual partner, or have a new sexual partner. Risk assessment tool can be varied according to local circumstance. Addressing the risk assessment, one study in Malawi, however, found that use of the syndromic approach resulted in more effective treatment of STDs at no additional cost (34). Hence, this study has tried to find out probable risk factors in the study area associated with RTIs/STDs.

Major findings: The risk assessment

In reference to the risk assessment, the study has found that people in rural Matlab are in at risk of RTIs/STDs and HIV/AIDS epidemic. The following figure presents the conceptual framework for the risk factors of above stated diseases recognized in Matlab. The postulated causal web includes programme efforts and socio-economic factors as determinants in addition to lack of awareness and related risky behaviour.

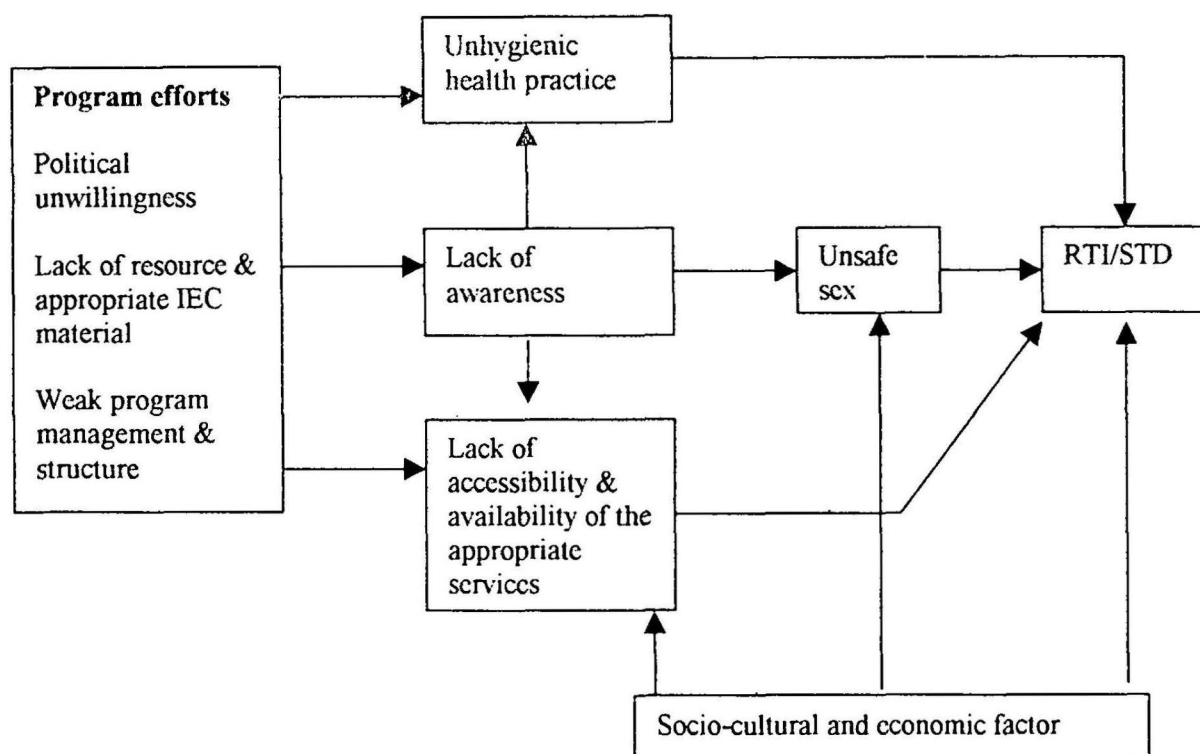


Figure 3: Conceptual framework for the risk factors of RTIs/STDs

Knowledge among people about RTIs/STDs, their symptoms, how they are transmitted, their long-term effects, appropriate treatment measures or sites, where these treatments are available, and preventive measures are highly important. The central and key component for risk factors of RTIs/STDs in the study area is **lack of knowledge**. Respondents do not have knowledge about other STDs except vaginal discharge. Meanwhile, most respondents, especially adolescents lack proper understanding about the details for prevailing vaginal discharge. A few other studies in Bangladesh provide similar evidence on knowledge about RTIs/STDs/AIDS and their risk factors among general people and some high-risk groups of people (20,35).

The second most important indicator of potential risk of STDs and HIV is the **risky sexual behaviour** that is prevalent in the study area. Besides, a positive association is being found between women's disease and husbands' mobility outside Matlab. The men who stay away from their family might have sex with commercial sex workers. This kind of sexual networking between commercial and non-commercial partners by men can serve as a 'bridge' of infection between high-risk and general population, which can push up the likelihood of infection amongst the so called lower risk group of women. Moreover, adolescent sexuality and sexual behaviour cannot be separated from adult view of and investment in the sexual and reproductive health of their young people. The sexual culture of rural Bangladeshi youth, for

example, must be understood in the light of consequences of a pre-marital pregnancy for a never married female adolescent. Because pregnancy before marriage can severely limit a female child's marriage options and reduce her chance of a socially appropriate marriage. She not only incurs dishonour on her family but also compromises her future social security. Most respondents, particularly, adolescents did not have a clear idea of the prevention of STDs. They saw 'illegal mixing' in terms of social costs to the girls and her family, not in terms of health problems. Any sex education programme could be constructed as encouraging pre-marital sex and, therefore, would be unacceptable to parents (36). Even though youth are sexually active, silence, warnings and admonitions (particularly for girls) serve parents as a suitable way of telling a daughter what terrible things could happen to her if she 'found out' or worse still – gets pregnant.

The third common risk factor is the **lack of accessibility and availability of adequate service** in the study area. Most STD patients did not seek any treatment and the distribution is skewed towards female, it may be due to men have more biomedical symptoms that tends them to seek treatment. Women, boys and girls who sought treatment preferably from traditional healers and pharmacists/village doctors rather than from health professionals. Discussants expressed concerns about the perceived lack of confidentiality as well as matter of expense in medical doctors. Moreover, treatment facilities for STDs are seriously inadequate. The data on quality of sexual health services are also scarce. In Bangladesh, poor sexual health services are available at the tertiary level, and 70% of those are urban based. Of those that are rural based, services are poor, facilities are ill-equipped and inaccessible (37). Each thana (a rural district) hospital must serve as many as 200,000 potential clients. Furthermore, most doctors are male, "and culturally prohibited for a women to be seen, let alone physically examined, by any male other than her husband....." (38). Further, patients do not seek any treatment because of culture of silence, shame and fear of stigmatization. Therefore, most cases of RTIs and STDs have left undiagnosed and untreated.

Partner notification or contact tracing is an important component to prevent re-infection of the index patient, and reduce burden of infection in the community. It was found to be very poor in the study area. Who could notify partners? It is one of the most difficult tasks. Fenton (1998) suggested either the client or the provider or both can contact the partner (34). Though respondents indicated a positive relationship between partners' communication and domestic violence, results show all partners who sought treatment being communicated by the patients about their disease. This does indicate patients themselves could put an important role in contact tracing and management. Moreover, to initiate partner notification, willingness and ability of health providers are paramount to the success of this approach (34).

Though the data is not presented in this study, some studies done in India and Bangladesh have shown that presence of lower tract infections among women is significantly associated with **poor personal hygiene** and low socio-economic status (11). Women and adolescent girls in Matlab, however, are not at all concerned for and/or practiced the menstrual and sexual hygiene (39), which could, of course, be an another risk indicator for RTIs in the study area.

The conceptual framework accounts the study outcome as the consequences of service giving or **programme effort**. Judith Bruce (40) pointed out an important association between programme efforts under different aspects like policy, resource allocated, programme management and structure, and their impact (40). In this process, a good political will has to be a significant role in reaching the success of the programme. But in most developing countries, despite the high prevalence, RTIs/STDs have received low priority in national health planning and policies. In 1995, the government of Bangladesh has taken a plan to regulate a national surveillance system on RTIs/STDs and HIV/AIDS, and to implement a RTI/STD/AIDS control program as a part of reproductive health care at various levels. The main focus of which would be behaviour change communication, condom promotion and management of RTIs/STDs (7). But the plan has not yet been implemented and nothing has happened on the ground. As Bangladesh is one of the poorest country, it does not have appropriate resources to regulate and maintain these activities at various level. Moreover, lack of coordination among policy makers, weak programme management and structure as well as political unwillingness inhibit the progress of a policy into action. Like other rural areas of Bangladesh, no programme effort has yet been taken in Matlab. Experience in Kenya, Vietnam, Bali, Indonesia and India shows that multi-sectoral and interdisciplinary coalitions are needed to overcome the constraints of effective RTIs/STDs management and control (41).

Referring to the conceptual framework, the study has assessed the relative importance of **socio-economic factors** on disease itself as well as on people's knowledge and behaviour. That literacy is an important indicator of STD awareness is not a surprising finding. However, it does highlight the importance of developing non-written messages on RTIs/STDs together with HIV/AIDS prevention in order to reach the vast majority of Bangladesh's population that is illiterate. This connection also adds more strength in support of adult literacy effort in Bangladesh. Nevertheless, the finding shows that literate people who have STDs, are less likely to seek treatment. Same finding has also been found among respondents from well-off family. Perhaps the literate and rich people are more concerned for their status in the society, that is why, they have more fear of becoming stigmatized. Thus provision of proper services together with adequate information is equally important alongside literacy.

Employment outside home was found to be an important indicator for STD awareness as well as patients' treatment-seeking behaviour. This suggests that especial efforts should be made to reach the home bound majority of rural women and female children.

The positive relationship between BRAC membership and STD awareness could have important policy implications. Women's participation in NGOs, and other related village organization activities and social awareness meetings could be an effective and favoured strategy to changing their knowledge and behaviour about their own sex role and rights. Both BRAC and ICDDR, B have the community health workers to provide contraceptives and health services at poor women's doorsteps. Within this realm, these health providers could play an important role in educating people and motivate to seek treatment. The only added cost to the system would be the cost of training the door to door health practitioners themselves.

The causality behind the fact that a man's opinion in the household is a predictor of STD awareness and patients' behaviour is unclear. Perhaps men have some religious absolutism and restrictiveness about this sensitive issue with their wives. On the other hand, their positive attitude towards patients' behaviour indicates the importance of male involvement in the Sexual Health Project for more than just lower the disease prevalence. Their involvement in the project would improve communication with their wives, however, could enhance a healthy relationship among themselves. The healthy environment within a family is important in reducing polygamy in the society.

Respondents' knowledge is being expected higher where BRAC and ICDDR, B working together rather than separately. But the result shows the opposite pictures that may reflect the 'quality of care' issue from the service delivery point. It seems to be a lack of coordination and cooperation among the field workers of both organizations. However, acceptance and utilization of health services depend on its quality of care, for which a good cooperation/coordination between two organizations both at policy and field level is necessary.

ENVISAGED INTERVENTION

The sexual and reproductive health education must be incorporated into existing legitimate informal sex education networks rather than imposed as new, unfamiliar communication strategies. Bearing in mind the situation in Matlab, where resource is scarce and no laboratory support is available, the program should be based on syndromic diagnosis and management. This approach is relatively simple, allows diagnosis and treatment in one visit, and requires minimal provider training but often a narrow approach. In order to include the need of men, women and never married adolescents, the programme should be broadened and embedded the research data that reflect an understanding of the social context of the risk and vulnerabilities. Because the acquisition of safe sex practices is linked less with the acquisition of knowledge than the perceived social and sexual legitimacy to talk about or practice safe sex. The intervention could be carried out in following ways:

Transformation of research data into program data

Data from in-depth interview and focus group discussion will have to be analyzed for repeated story themes and descriptions. Thereafter, the stories and descriptions would be categorized under following headings: pre- and extra-marital sex, sexual communication, forced sex, rape, sex education, STDs, RTIs, treatment and prevention, fears and anxieties, family and domestic violence. These stories and information will be then represented in pictures as flip charts. These pictures would be the most appropriate means to mirror the social context of risk and vulnerability and to encourage the active participation of the target community.

Identify human resources

The preliminary research found certain people have the known social credibility to talk about sex in the society. They are traditional birth attendants, community health workers, pharmacists, village doctors, and traditional healers. Preliminary research also identified sisters-in-law and often grandmothers as those most likely to communicate information about sexual health to the never married and just married adolescents.

Training curriculum

The different health providers will receive training at different sessions. The training curriculum will focus on explanations of contents, explanations and discussions of how, when, where, and with whom to use the materials.

Implementation

After training, health providers integrated the messages, materials and lessons learned from the training into their regular work activities. The pharmacists and village doctors would be responsible for syndromic diagnosis, modern methods of treatment for RTI/STD as well as counseling. To mobilize people at community level, community health workers, traditional birth attendants and traditional healers can play an important role. The responsibilities of the community health workers would be about syndromic diagnosis, motivate patients to seek treatment from trained health providers, partners notification and motivate to seek treatment, and counseling. Moreover, the community health workers would provide information and education to all adults and adolescents during their regular household visit. Dissemination of information to the adolescents could also be done by sisters-in-law and grand mothers, and often through training workshops.

CONCLUSION

In a rural 'conservative' society where a substantial proportion of people have STDs and where risky sexual behaviour is prevalent, the selection of appropriate intervention methods needs to be introduced to the target population by means of psycho-social context of risk and vulnerability. The transmission of STDs is associated with non-legitimate behaviour, but a sexual health programme must appeal to and educate them whose behavior is 'illegal'. Or, it might appear that a sexual health programme is trying to achieve legitimacy for 'immoral' behaviour by exposing youth to private, 'shameful' matters. But cultures have their limitations. Therefore, the promotion of RTI/STD control must employ but not be limited by the socio-cultural context of the sex, sexuality and disease.

These issues are especially pertinent to the situation of never married adolescents. Sex education for adolescents flies in the face of many societies' need to maintain secrecy and silence about sex. Worldwide, adolescents as well as adults lack basic sex education. Though the school based education programme is most preferable approach world-wide to educate the adolescents but in context of Bangladesh it is a quite difficult approach. However, it may be possible to implement the home-based education programme through existing legitimate informal sex education networks. HIV/AIDS prevention programmes have begun a much-needed dialogue about sex. But often the focus is often narrow. Technological solutions are suggested for problems that are far more complex than prevention messages like 'use condom' would warrant. A public health policy maker must consider a holistic approach to HIV/AIDS which lays greater emphasis on RTIs/STDs control and prevention together with human relationship, communication, gender, family interaction and socio-economic status that would determine the nature and extent of people's risks and vulnerabilities.

The programme planners must also consider how a programme of this nature will achieve legitimacy. Because sexual issues are usually sensitive issues, it is important for planners to think about how they will achieve community acceptance – how leaders, advocates and participants will gain legitimacy in the eyes of the community so that the programme can expand and sustain itself.

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APPENDICES

Appendix 1: Checklist for qualitative interview

1. Do you know something about risky sexual behavior? Who do this? Adults? Adolescents? Or, both?
2. Do boys and girls have sex before marriage? With whom? Why do they do this kind of behavior? Could you please tell me some stories that happen in the village?
3. Do married men and women have sex outside marriage? With whom? Why do they do this kind of behavior? Could please tell me some stories that occur in the village?
4. Does rape occur in the village? In what circumstances does it happen?
5. Whether these behavior good or bad? What could be the consequences of these behaviors? How could we prevent it?
6. Do you know something about RTIs or STDs? What are these diseases? What people do when gets this disease? How could we prevent them? Do husband and wife or partners communicate each other about their diseases? If not, why? Whether or not partners seek treatment? If not, why?

Appendix 2: Questionnaire for the quantitative survey

Identification of respondents:

1. Name of respondent:.....

2. Name of the village:.....

3. Village code:

4. Name of Bari:.....

5. Bari code:

6. Area of residence:

MCH-FP area	BRAC+MCH-FP area	BRAC+Comparison area	Comparison area
1	2	3	4

7. CID of respondent:.....

8. RID of respondent:.....

9. Date of birth of respondent:

Day	Month	year

10. BRAC eligible household: Yes ☐ 1 No ☐ 2

11. VO member: Yes ☐ 1 No ☐ 2

12. Name of household head:

13. Sex of household head: Male ☐ 1 Female ☐ 2

14. CID of household head:

15. RID of household head:.....

16. Name of interviewer:

17. Date of interview:

18. Scrutinized by:.....

19. Spot-checked by:.....

20. Re-interviewed by:.....

21. Edited by:.....

22. Coded by:.....

Education:

23. Can you read and write a letter? Yes ☐ 1 No ☐ 2

24. If yes, how many years of schooling did you have?

Occupation:

25. Do you do any kind of work to earn a living? Yes ☐ 1 No ☐ 2

26. If yes, what type of work it is?.....

(Following sections is only for married women)

Characteristic of husband:

27. Name of husband:

28. CID of husband:

29. RID of husband:

30. Date of birth of husband:

Day	Month	Year

Husband's education:

31. Do your husband can read and write a letter? Yes ☐ 1 No ☐ 2

32. If yes how many years of schooling do your husband has?

Husband's occupation:

33. Do your husband do any kind of work to earn living? Yes ☐ 1 No ☐ 2

34. If yes, what type of works it is?

35. Whether this work is inside or outside Matlab? Inside Matlab ☐ 1 Outside Matla ☐ 2

36. Usually (most time) where does he live? With wife ☐ 1 other place ☐ 2

37. If in other place, where?.....

Household characteristic:

38. How much land do you have? Household decimal Farming decimal

39. Whether any member of this household works as a day laborer? Ye ☐ 1 No ☐ 2

40. If yes how many days (average) does he/she work in a year? Days

42. What type of work does he/she do?

Personal question

We came to you to know something about secret in human being. Certainly, you have heard about STDs or hidden diseases that occur in genital areas. If anyone affects by these diseases, he or she can suffer more in lives. But if people have some knowledge about it, then they can easily prevent it. We would like to make aware people about these diseases, so that they can easily protect themselves. To make people aware, we need to know something about their perception of these diseases. For this reason, we would like to know what do you think about these diseases.

Do you ever heard about STDs?	Yes	No	If yes, please tell me the name of these diseases.					Practice			
	1	2	What are the symptom	How to spread	What are the adverse effect	What about the treatment	How to prevent	Did you ever suffer from any disease during last 3 months	What treatment did you seek	Did you inform your partner	Did your partner seek any treatment
Vaginal discharge											
PID											
Urinary tract Infection											
Gonorrhoea											
Syphilis											
Inguinal Swelling											
Don't know											
others											