

**Prevalence of reproductive tract infections/sexually
transmitted infections and their treatment seeking behaviors
among women in the reproductive age group,
Imphal East district, Manipur state, India, 2007**

By

Sagolsem Ibungochouba Singh

(MAE- FETP Scholar 2006-2007)



National Institute of Epidemiology
(Indian Council of Medical Research)
R – 127, Third avenue, Tamil Nadu Housing Board
Ayapakkam, Chennai, Tamil Nadu
Pin – 600 077

JANUARY 2008

Prevalence of reproductive tract infections/sexually transmitted infections and their treatment seeking behaviors among women in the reproductive age group, Imphal East district, Manipur state, India, 2007

By

**Sagolsem Ibungochouba Singh
(MAE-FETP Scholar 2006-2007)**

*Dissertation project submitted in partial fulfillment of
the requirements for the degree of*

Master of Applied Epidemiology (M.A.E)

of



Sree Chitra Tirunal Institute for Medical Sciences and Technology,

Thiruvananthapuram Kerala - 695 011.

**This work has been done as part of the two years Field
Epidemiology Training Programme (FETP) conducted at**



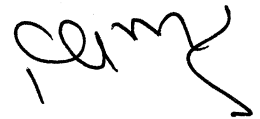
**National Institute of Epidemiology
(Indian Council of Medical Research),
R – 127, Third avenue, Tamil Nadu Housing Board,
Ayapakkam, Chennai, Tamil Nadu.
Pin – 600 077**

JANUARY 2008

CERTIFICATION

This is to certify that this dissertation, entitled '**Prevalence of reproductive tract infections/sexually transmitted infections and their treatment seeking behaviors among women in the reproductive age group, Imphal East district, Manipur state, India, 2007**' submitted by Sagolsem Ibungochouba Singh, in partial fulfillment of the requirements for the degree of Master of Applied Epidemiology, is the original work done by him and has not been submitted earlier, in part or whole for any other (Publication or Degree) purpose.

Date : 29-02-2008



Director

ACKNOWLEDGEMENT

Several dignitaries have extended their valuable time, advice and assistance to me during preparation of this report. I extend with gratitude my sincere thanks to:

Prof. M.D.Gupte, Director, National Institute of Epidemiology (NIE), Chennai for his valuable guidance amidst his busy schedule.

Dr Murhekar Manoj Vasant, Deputy Director, NIE and MAE-FETP course coordinator and supervisor, for his close guidance and encouragement inspite of his busy schedule.

Dr Th. Biren Singh, Additional Director (Public health), Medical & Health Services Department, Govt. of Manipur, Imphal, for his valuable guidance and advice.

Dr Yvan Hutin, resident advisor WHO to NIE, Chennai, for his valuable guidance, comments, suggestions and advice.

Dr Sougajam Sukumar Singh, Chief Medical Officer, Imphal districts for his valuable guidance and help during my field posting. **Dr K. Lokendro Singh**, Dermatologist, Jawaharlal Nehru Hospital, Porompat, Imphal and **Dr Th. Nandakishore Singh**, Assistant professor of Dermatology, RIMS, Lamphelpat for their for their constant support and guidance.

Dr R Ramakrishnan, **Dr (Mrs) Vidya Ramachandran**, Deputy Directors, **Dr P Manickam**, Research Officer, **Dr (Mrs) Vasna Joshua** and **Dr Sundaramoorthy**, Technical officers, NIE, for their constant support and guidance.

Mr. S. Satish, librarian, **Mrs. Uma Manoharan**, secretary to the FETP and other office staff at NIE for their support and assistance.

My father **S. Manihar Singh** and mother **S. Muktamani Devi**, my wife **Ranjeeta (Leima)** and my sons **Puthoiba** and **Tonton**, my **brother, sisters, friends**, for bearing with me in this endeavor of hard work with patience support.

Last but not the least all the respondents who very graciously spared me their valuable time and information in addition to extending their cooperation, which rendered the entire research endeavor a very novel experience.

Date: The 28th January 2008

Sagolsem Ibungochouba Singh

TABLE OF CONTENTS

Acknowledgement
Table of Contents
List of Tables

Section 1: Dissertation

	Page to be started
Abstract	
1. Introduction	1 – 3
2. Methods	4 – 6
2.1 Study population	4
2.2 Operational definitions	4
2.3 Study design	4
2.4 Sampling procedure and sample size	4
2.5 Data collection	5
2.5.1 Information collected	5
2.5.2 Data collection procedure	5
2.6 Data analysis	5
2.7 Human subject protection	6
3. Results	7 - 8
3.1 Demographic details	7
3.2 Prevalence of syndromic STI	7
3.3 Factors associated with symptoms of RTI/STI	7
3.4 Treatment seeking	8
4. Discussion	9 – 11
5. References	12-14

6.	Tables	15 - 18
7.	Annexure 1 Individual questionnaire	19 – 22
8.	Annexure 2 Consent Form-English	23
9.	Annexure 3 Consent Form-Manipuri the local language	24
10.	Annexure 4 10.1 Household identifier collection form 10.2 Participants referral slip	25 25
Section 2: Review of Literature		26 – 52
1.	Introduction	26
2.	Global scenario	26
3.	Prevalence of sexually transmitted infections	27
4.	Factors to increase the risk of transmission	28
5.	Vulnerable populations	28
6.	Correlation to HIV/AIDS	28
7.	Stigma	29
8.	Health and treatment seeking behaviour	29
9.	Sequelae	31
10.	Operational definitions	34
11.	Measures	34
12.	National scenario	36
13.	Scenario of Manipur state and Imphal east district	36
14.	Reference	37

LIST OF TABLES AND FIGURES

Table 1	Socio-demographic characteristics of study participants, Imphal East district, Manipur state, India, 2007	15
Table 2	Prevalence of syndromic reproductive tract infections / syndromic sexually transmitted infections, Imphal East district, Manipur state, India, 2007	16
Table 3	Prevalence of syndromic RTIs / STIs among study populations according to selected characteristics, Imphal East district, Manipur state, India, 2007	17
Figure 1	Treatment seeking behavior among women with syndromic RTIs/STIs, Imphal East district, Manipur state, India, 2007	18

Section 1

Dissertation

ABSTRACT

Introduction

Syndromic diagnosis of STIs/RTIs has been adopted as a simplified and cheap approach. Many women suffer from reproductive tract infections (RTIs) including STIs. WHO estimates that worldwide about 340 million new cases of curable STIs/RTIs occur annually. Failure to diagnose and treat these infections at an early stage may result in serious complications.

Method

We conducted a cross-sectional study. We selected 27 clusters following probability proportional to size from the 200 clusters (villages) and recruited 540 females from the rural areas of the Imphal East district, Manipur state, India, 2007. We interviewed women with symptoms of STI/RTI to understand their treatment seeking behaviour. We used a structured questionnaire.

Result

Prevalence of syndromic STI/RTI was 60%, discharges contributes 44%. Prevalence was higher among young, poor and partners of the drug or alcohol users. There was delay of 59 days (range: 1 day-5 years) to get the treatment. 39% of syndromic patients first sought help for treatment from government health facilities whereas 146 61% received treatment from private practitioners and 105(44%) of women received treatment from unqualified private practitioners including the traditional healers residing in their village.

Conclusion

STIs/RTIs are common and affects the vulnerable populations. They did not seek treatment immediately. Many patients preferred traditional healers. Vulnerable groups needs to be targeted for the treatment. These include lack of privacy, lack of a female doctor, availability and accessibility of these facilities. STIs/RTIs detection and management can prevent HIV transmission. So, it is necessary to educate women about common symptoms of STIs/RTIs and need for treatment.

Key words: Imphal East district, Manipur state, STI, RTI, traditional healer, prevalence.

1. INTRODUCTION

In 1999, the World Health Organization recommends that the term sexually transmitted disease (STD) be replaced by the term sexually transmitted infection (STI). Since the term has been adopted by a wide range of scientific societies and publications.¹ Many women suffer from reproductive tract infections (RTIs) including sexually transmitted infections STIs. WHO estimates that worldwide about 340 million new cases of curable STIs occur annually, 151 million of these infection occur in south and south east Asia.² A large proportion of these infections occur among women in the reproductive age.² In addition, among the cases of incurable viral STIs, including an estimated 5 million HIV infections, occur annually. Surveys in family planning and antenatal clinics in developing countries indicate that the prevalences of syphilis, gonorrhoea and chlamydial infections range between 6% and 40%.³ In many countries, STIs are among the top five conditions for which men and women seek care, representing a considerable drain on health services. STIs constitute a large health and economic burden, especially for developing countries where they account for 17% of economic losses caused by ill-health.⁴ Although infection rates are similar in both men and women, the burden of serious consequences of STIs falls mostly on women and their infants. RTIs often cause discomfort and lost economic productivity.⁵ Failure to diagnose and treat these infections at an early stage may result in serious complications and sequelae, including pelvic inflammatory disease (PID), infertility, fetal wastage, neonatal and infant infections, as well as ectopic pregnancy, anogenital cancer and premature death.⁴ There is a strong correlation between the spread of conventional STIs and HIV transmission, and both ulcerative and non-ulcerative STIs increase the risk of sexual transmission of HIV.^{2,4} Effective management of STIs is one of the cornerstones of control, as it prevents the development of complications and sequelae, decreases the spread of those infections

including HIV in the community and offers a unique opportunity for targeted education about HIV prevention. Appropriate treatment of STIs at the first contact between patients and health care providers is therefore an important public health measure. Traditionally, a presumed sexually transmitted infection has been diagnosed by either clinical appearance alone or laboratory based test. Those can be complicated, expensive and they commonly delay the treatment while test results are awaited. Laboratory based diagnosis is often limited in resource poor country. For these reasons, WHO recommends the syndromic management of STIs in patients at primary healthcare level. This approach uses identification of STI patients based on consistently recognized signs and symptoms including genital ulcer, urethral discharge, vaginal discharge and lower abdominal pain. Management of STI/RTI requires a client-friendly health care system that delivers the right type of care according to the guidelines.

National AIDS Control Organisation (NACO) of India estimates that STIs occur at an estimated rate of more than 40 million every year. The annual incidence of STIs in India is 5%.⁶ During 2005, the prevalence of HIV among the STI population was 6%.⁷ Only 5% - 10% STI patients attend STI Clinics. Nearly 40% of all HIV infections in India are among women. The control of STI/RTI is one of the important strategies under the National AIDS Control Programme. Now, India is under the National AIDS Control Programme (NACP) phase III. RTI management is a part of the reproductive and child health (RCH) programme of India.

Manipur, one of the northeastern states of the Indian union, is geographically very close to notorious drug producing "Golden Triangle". HIV transmission in the state has been mainly through the sharing of needles and syringes among injecting drug users (IDUs). Manipur is one of the six high prevalence states of HIV/AIDS in India.⁸ In Manipur state, HIV positivity and VDRL reactivity among STI patients in

2006 was 4.8% and 1.4% respectively. In Imphal east district, HIV positivity and VDRL reactivity among STI patients in 2006 was 3% and 1% respectively.⁹ The HIV epidemic in the state is now affecting general population through sexual transmission. As STI increases transmission of HIV, appropriate and timely treatment of these infections is the key for preventing the spread of the HIV.

With this background, we conducted a community based study to (1) estimate the prevalence of the RTI/STI symptoms among women in the rural community of Imphal east district and (2) investigate the treatment seeking behaviour of women with these symptoms.

2. METHODS

2.1. Study population

We conducted the study among women 15 to 49 years of residing in rural areas of Imphal east district (2007 population: 84,885). We excluded women with severe and chronic disease and mentally ill patients.

2.2. Operational definitions

We used syndromic approach to identify women with symptoms of RTI/STI in the community and used the case definition given by the Indian National AIDS Control Organization (NACO).¹⁰ We defined a case of RTI/STI as one who had one or more of the following symptoms at the time of the interview: (1) abnormal vaginal discharge, (2) dysuria, (3) lower abdominal pain, (4) ulcer in genital area, (5) swelling in the groin and (6) other related syndromes.

2.3. Study design

We conducted a cross-sectional study of all villages in Imphal east district.

2.4. Sampling procedure and sample size

We considered all the villages in Imphal East district as clusters (n=200). We selected 27 clusters following probability proportional to size. Within the selected clusters, we randomly selected 20 household and interviewed one eligible woman from each household. Assuming a prevalence of syndromic STI/RTI of 50%, planning for a confidence coefficient of 95% and a confidence interval of $\pm 5\%$, a cluster size of 20 and a rate of homogeneity of 0.02, we calculated the sample size as 540.

2.5. Data collection

2.5.1. Information collected

We surveyed women to identify those with symptoms of RTI/STI. We interviewed women with these symptoms to understand their treatment seeking behaviour. We used a structured questionnaire to collect information regarding socio-demographic details, obstetric history, sexual health/hygienic practices, current STI/RTI symptoms and STI/RTI symptoms during last six months. From women having STI/RTI symptoms at the time of interview, we collected information about help and treatment seeking behaviours.

2.5.2. Data collection procedure

We translated the questionnaire into Manipuri, the local language. We pilot-tested the questionnaire before the survey. We trained five female health workers for data collection at the STI clinic, Imphal. Trained female health workers administered the questionnaire. We interviewed each study subject for approximately 30 minutes. We conducted the survey during September-November 2007.

2.6. Data analysis

We analysed the data using Epi Info 3.3.2. We divided the number of women with syndromic STI/RTI by the number of women surveyed to calculate the prevalence of STI/RTI. We calculated prevalence ratios and their 95% confidence intervals to identify factors associated with STI/RTI including demographic variables, socio-economic variables and obstetric history. We compared the mean number of visits to private and government health facilities using an analysis of variance.

2.7 Human subject protection

The ethical committee of the National Institute of Epidemiology, Chennai, approved the study. We obtained written informed consent from the study participants. We ensured privacy when the questionnaire was administered. We referred women with symptoms of suggestive of RTI/STI to the nearest government hospital for treatment.

3. RESULTS

3.1 Demographic details

We recruited 540 women. The median age of the participants was 30 years (range 30-35). Of the 540 females interviewed, 306 (57%) were Hindu, 480 (89%) had their monthly income below Rs. 3000/-, 211 (39%) were employed and 454 (84%) were illiterate (Table-1).

3.2 Prevalence of syndromic RTI/STI

321 (59%) women reported that they had one or more symptoms suggestive of RTI/STI at the time of the interview. Of these, 236 (44%) had vaginal discharge, 126 (23%) had urethral discharge and 110 (20%) lower abdominal pain (Table-2).

3.3 Factors associated with symptoms of RTI/STI

The prevalence of STI/RTI symptoms was significantly higher among women who were of 30 years of age or less [Prevalence ratio (PR)= 2.4, 95% confidence interval (CI) = 1.9-2.9], had monthly income below Rs. 3000 (PR=1.9, 95% CI= 1.3-2.7), had education below secondary school (PR=1.7, 95% CI= 1-1.4) and were non-Hindus (PR=1.8, 95% CI= 1.6-2.1 (Table-3). The prevalence of STI was higher among women who failed to conceive (PR=1.4, 95% CI= 1.3-1.7), had pregnancy complications (PR=1.2, 95% CI= 1-1.5) or delivered at home (PR=3.5, 95% CI=2.3-5.5). The prevalence of symptomatic STI was also higher among women who did not wash their private part regularly (PR=1.3, 95% CI= 1.1-1.6), had sexual relationship during menstruation (PR=1.4, 95% CI= 1.2-1.6) and those whose husband used drugs or alcohol (PR=2.9, 95% CI=2.3-3.7), (Table-3.)

3.4 Treatment seeking behaviour of syndromic RTI/STI

Of the 321 women with symptoms, 241 (75%) reported that they received treatment, while 80 (25%) did not receive any treatment. Of the 241 women who received treatment, 72 (22%) went to government health facilities, 123 (38%) to private health facilities and 46 (14%) to both government and private facilities (Figure-1).

The seventy two women who received treatment solely from government health facilities, went to these facilities 168 times (mean: 2.3, SD=1.1). The 123 women who received treatment exclusively from private health facilities visited these facilities 338 times (mean = 2.7, SD=1.1). The mean number of visits was significantly higher among women who visited private health facilities ($F=6.4$, $p=0.01$).

Of the 241 women who received treatment for their symptoms, 95 (39%) first sought help for treatment from government health facilities including sub-centers, primary health centers, community health centers and STI clinic attached to the district hospital while 146 (61%) went to private practitioners. 105 (44%) of women received treatment from unqualified private practitioners including the traditional healers in the village. The mean duration of symptoms before the patients sought treatment was 59 days (range: 1 day – 5 years).

4. DISCUSSION

The findings of our community based study among the rural population of Imphal east district indicated that more than half of the women in the reproductive age group were having symptoms of RTI/STI. These symptoms were higher among women who were young, poor and those whose husbands used drugs or alcohol. Women with STI/RTI symptoms received treatment after a median delay of two months. Half of the women received treatment from unqualified private practitioners.

Several community based studies in India reported a high prevalence of women with one or more symptoms of STI/RTIs. Those prevalence ranged from 53% in Vellore, Tamilnadu,¹¹ 55% in Gadchiroli, Maharashtra,¹² 61% in Mahindergarh district in Haryana¹³ and 66% in Hoogly district in West Bengal.¹⁴ Therefore, the high prevalence observed among women in Imphal east (59%) is comparable these Indian studies. The HIV epidemic in Manipur is driven by intravenous drug users. HIV prevalence among the intravenous drug users was 20%.⁹ The presence of an STI/RTI increases the risk of acquiring and transmitting HIV infection by three to five times¹⁵ and bacterial vaginosis may be a co-factor for transmission, especially among younger women. The prevalence of STI/RTI symptoms was higher among women whose husbands used drugs. This finding suggests that HIV infection could spread from the drug users to their sexual partners. Effective management of STIs/RTIs thus would help prevent the spread of HIV infection from the drug users to general population. However, typically, the women with STI/RTI in our study were younger, poorer and were close the injection drug users. This suggest that they could have a harder time accessing health care.

The length of time that individuals are infected with a given sexually transmitted disease is an important determinant of its transmission dynamics. If sexual activity continues to occur, then the longer an individual has an untreated sexually transmitted disease, and the more opportunity he/she will have to transmit the infection to others. The duration of infection is also important to the development of complications. In Imphal east, one fourth of the symptomatic women did not receive any treatment. Among those who received treatment, there was a treatment delay of about two months. This delays in the context of the local HIV epidemic is a public health threat. It is necessary to educate women about the need for prompt treatment for their symptoms also, making the public sector more “client friendly” may help reducing the treatment delays.

More than half of the symptomatic women received treatment from private practitioners, majority of whom were unqualified. These private practitioners reside in the same village of the women. Easy accessibility could be one of the reasons for high use of the private sector. Studies conducted in India identified several factors associated with lower utilization of public health facilities for STI/RTI treatment. These include lack of privacy, lack of a female doctor, availability and accessibility of these facilities. However, further studies are needed to understand the reasons for lower utilization of public health facilities in the district of Imphal east.

Our study had one major limitation. We estimated the prevalence of RTI/STI based on the symptoms and did not conduct clinical examination of symptomatic women. In conclusion, RTI/STI are common among the women in rural areas of Imphal east district, affecting the poor women and partners of drug or alcohol users. Symptomatic women do not seek immediate medical help for treatment. Many patients prefer informal, private sector whereas the public sector does not attract many RTI/STI patients. Based on our findings, we can propose several recommendations

for prevention and control of RTIs/STIs in Imphal east district. First, it is necessary to invest in RTI/STI detection and management to prevent spread of HIV. This would be especially useful among women who are below poverty line and whose partners are drug/alcohol users. Second, it is necessary to educate women about common symptoms of RTI/STI and need for treatment. Third, we must encourage unqualified providers in management and referral of symptomatic women. Fourth, we need to investigate reasons for lower utilization of public health facilities.

REFERENCES

1. Guidelines for the management of sexually transmitted infections, World Health Organization, 2003.
2. Lande R. Controlling sexually transmitted diseases. Population Reports, Series L, No 9. Baltimore, MA: Johns Hopkins School of Public Health, Population Information Programme, June 1993.
3. Dallabetta G, Field M L, Laga M, Islam Q.M, STIs: *Global burden and challenges for control, in control of Sexually Transmitted Diseases: A handbook for the design and management of programmes*. Dallabetta G et al. (eds.). AIDSCAP, Family Health International, 2101 Wilson Boulevard, Suite 700, Arlington, Virginia 22201.
4. Adler M, Foster S, Grosskrurth H, et al. Sexual health and health care, sexually transmitted infections. Guidelines for Prevention and Treatment Health and Population Occasional Paper DFID, London.
5. Piot P and Rowley J, Economic impact of reproductive tract infections and resources for their control, in: Germain A et al., eds., *Reproductive Tract Infections: Global Impact and Priorities for Women's Reproductive Health*, New York: Plenum Press, 1992, pp. 227–249; and Over M and Piot P, Human immunodeficiency virus infection and other sexually transmitted diseases in developing countries: public health importance and priorities for resource allocation, *Journal of Infectious Diseases*, 1996, 174(Suppl. 2):S162–S175.

6. Bhalla S., Lalchandani K., Singh s., Somasundaram c, Bhalla V. 3rd International AIDS Society Conference on HIV Pathogenesis and Treatment, Rio de Janeiro - July 24 - 27, 2005, A Study of prevalence of STDs from a rural village in Gujarat, India among the reproductive age (15-49 years) subjects.
7. HIV/AIDS epidemiological Surveillance & Estimation report for the year 2005, April 2006, National AIDS Control Organization Ministry of Health & Family Welfare Government of India, Page 1 of 11, NACO, HSS – 2005.
8. Status report, National AIDS control society programme, Manipur, 2005-06, Manipur state AIDS control society, Imphal, Manipur state, p-3.
9. National AIDS Control Program, State summary report on Sentinel surveillance for HIV infection and VDRL reactivity, Manipur State AIDS Control Society, Govt. of Manipur, 2006.
10. Training module on the Surveillance of Sexually Transmitted Disease. National AIDS Control Organization(NACO), Ministry of health & family welfare, Govt. of India.
11. Jasmin Helen Prasad, Sulochana Abraham, Kathleen M. Kurz, Valentina George, M. K. Lalitha, Renu John, M. N. R. Jayapaul, Nandini Shetty and Abraham Joseph. Reproductive Tract Infections Among Young Married Women in Tamil Nadu, India. *International Family Planning Perspectives*; 2005;31(2):73-82.

12. Banq RA, Banq AT, Baitule M, Choudury Y, Sarmukaddam S, Tale O. High prevalence of gynaecological diseases in rural Indian women. *Lancet*; 1989; 1(8629): 85-88.
13. Aggarwal AK, Kumar R, Gupta V, Sharma M. Community based study of reproductive tract infections among ever married women of reproductive age in a rural area of Haryana, India. *J Commun Dis*; 1999 ;31(4):223-8.
14. Dawn A, Biswas R. Reproductive tract infection: an experience in rural West Bengal. *Indian J Public Health*; 2005: 49(2):102-3.
15. Wasserheit J, Epidemiological synergy: interrelationships between human immunodeficiency virus infection and other sexually transmitted diseases, *Sexually Transmitted Diseases*, 1992, 19(2):61-77; and Cohen M, Sexually transmitted diseases enhance HIV transmission: no longer a hypothesis, *Lancet*, 1998, 351(Suppl. 3):5-7.

**Table 1: Socio-demographic characteristics of study participants,
Imphal East district, Manipur state, India, 2007**

Characteristics	No.	%	
Age [*]	< 20	56	10
	21-29	198	37
	30-44	255	47
	>45	31	6
Religion	Hindu	306	57
	Non-Hindu	234	43
Education	Illiterate [†]	454	84
	Literate	86	16
Occupation	Employed	211	39
	Unemployed	329	61
Monthly income [‡]	Above Rs. 3000	60	11
	Below Rs 3000	480	89

^{*} National AIDS Control Organisation, HIV sentinel surveillance, India.

[†] Below 12th standard

[‡] Personal income

Table 2: Prevalence of syndromic reproductive tract infections / syndromic sexually transmitted infections, Imphal East district, Manipur state, India, 2007

Symptoms [§]	Current		Last six months	
	Total	%	Total	%
Genital ulcer	11	2	15	3
Vaginal discharge	236	44	238	44
Urethral discharge	126	23	100	19
Swelling in the groin	35	7	34	6
Lower abdominal pain	110	20	129	24
Others	10	2	5	1
Total STI symptoms	321	59	331	61

[§] Some had more than one symptoms

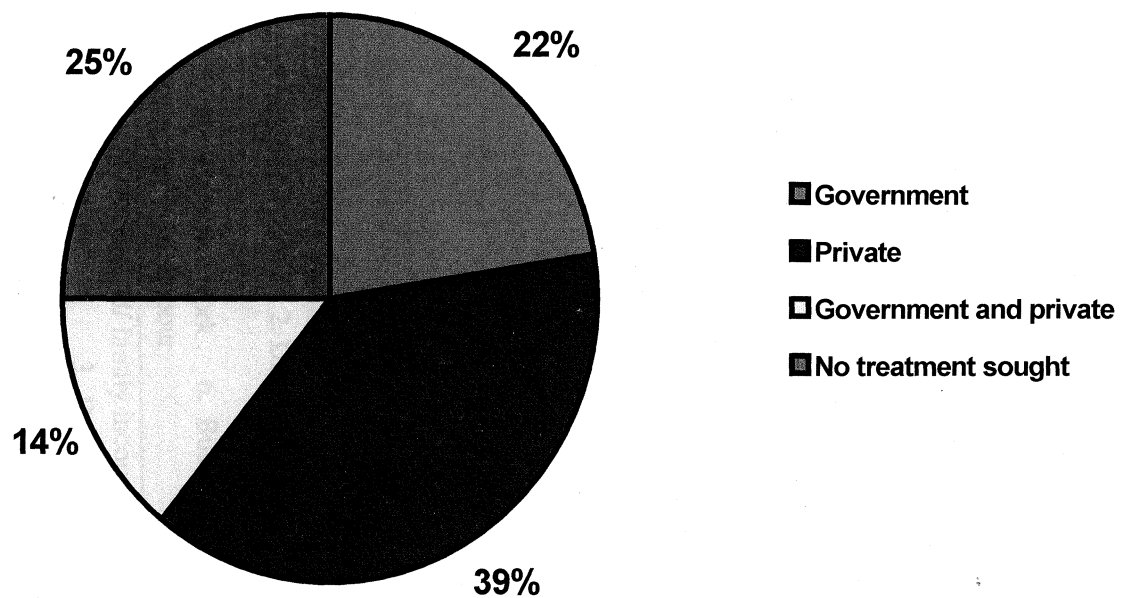
Table 3: Prevalence of syndromic RTIs/STIs among study populations according to selected characteristics, Imphal East district, Manipur state, India, 2007

Characteristics		Prevalence of disease						Prevalence Ratio	95% Confidence Interval
		Among exposed			Among unexposed				
		#	Total	%	#	Total	%		
Demographic	Age below 30 years	253	330	77	68	210	32	2.4	1.9-2.9
	Non-Hindu	187	234	80	134	306	44	1.8	1.6-2.1
	Unmarried	210	349	60	111	191	58	1.0	0.8-1.2
Socio-economic	Used of drugs/alcohol by husband	192	226	85	50	172	29	2.9	2.3-3.7
	Monthly income below Rs. 3000**/BPL	301	480	63	20	60	33	1.9	1.3-2.7
	Education ^{††}	117	175	67	204	365	56	1.2	1.0-1.4
	Unemployed	204	336	61	117	204	57	1.1	0.9-1.1
Personal hygiene	Sexual relationship without condom	13	13	100	24	35	69	1.5	1.2-1.8
	Sexual relationship during menstruation	38	48	79	203	350	58	1.4	1.1-1.6
	Not washing private part regularly	51	67	76	270	473	57	1.3	1.1-1.6
	No change of cloth during menstruation	21	36	58	300	504	60	1.0	0.8-1.4
	Not use of sanitary napkins during menstruation	138	224	62	183	316	58	1.0	0.8-1.1
	No bath during menstruation	89	139	64	232	401	58	0.9	0.8-1.0
Obstetric history	Delivered at home	189	259	73	16	77	21	3.5	2.3-5.5
	Treated for infertility	52	63	83	191	335	57	1.4	1.3-1.7
	Pregnancy complications	163	248	66	80	150	53	1.2	1.0-1.5
	Current pregnancy	17	30	57	226	368	61	0.9	0.7-1.3
	No children	27	41	66	215	357	60	1.0	0.9-1.4
	Delivery in the last six months	24	38	63	218	361	60	1.0	0.7-1.2

** Personal income

†† Below 12th standard

**Figure 1: Treatment seeking behavior among women with syndromic RTIs/STIs,
Imphal East district, Manipur state, India, 2007**



ANNEXURE 1

Questionnaires for the prevalence study of STI/RTI based on syndromic approach and treatment seeking behaviors among women in the reproductive age group, Imphal East district, Manipur state, India, 2007.

*I am a MAE scholar from National Institute of Epidemiology, Chennai, India, now posted at Imphal East district, Manipur state. I am carrying out a study to estimate the prevalence of STI based on syndromic in Imphal east district. The study findings will be used to make recommendations for interventions. No names will be taken.
All data will be handed with strict confidence.*

Cluster No. _____	<u>Name of the village</u> _____	Study ID No. _____
Date of Interview (dd/mm/yyyy) _____	Interviewer's Name: _____	Consent: 1.YES 2.NO

FORM NO. A: I would like to ask few questions about you:

DEMOGRAPHIC INFORMATION	
Q. 1. How old are you? Years _____	
Q. 2. What is your religion? 1. Hinduism 2. Islam/Muslim 3. Christian 4. Others	<i>Tick one only</i>
Q. 3. What is the highest level of education you attained? 1. Illiterate 2. Literate and till 5th 3. Till 12 th 4. Graduate and above	<i>Tick one only</i>
Q. 4. What is your occupation? 1. Agriculture/Unskilled Worker 2. Driver/Cleaner 3. Industrial & Factory worker 4. Hotel staff 5. Service/office work 6. Business 7. Unemployed 8. Student 9. Housewife 10. Labour	<i>Tick one only</i>
Q. 5. What is your average monthly household/ family income? 1. Nil 2. < Rs.500.00 3. Rs 500 to Rs 1500 4. Rs 1500 to Rs 3000 5. Rs 3000.00 to Rs 5000 6. > Rs 5000	<i>Tick one only</i>
Q. 6. Are you _____ 1. Unmarried 2. Married 3. Never married 4. Separated/Deserted 5. Divorcee 6. Widowed	<i>Tick one only</i>
<i>If unmarried, go to Q. No. 13 to Q.No.16, then continue from Q. No 19 onwards.</i>	
Q. 7. What is the occupation of your husband? 1. Agriculture/Unskilled Worker 2. Driver/Cleaner 3. Industrial & Factory worker 4. Hotel staff 5. Service/office work 6. Business 7. Unemployed 8. Student 9. Labour	<i>Tick one only</i>

FORM B. *I would like to ask few questions about your personal or family:*

PERSONAL/FAMILY HISTORY				
Q. 8. Is your husband used like _____		Tick one only		
1. Alcohol	2. Ganja	3. Heroin	4. SP Tablet	5. None
Q. 9. How many children do you have?		Tick one only		
two		1. None	2. One	3. Two
Q. 10. When was your last childbirth?		Tick one only		
year		1. No child	2. 6 months	3. 6-12 months
Q.12. Are you pregnant now?		1. Yes		
Q.13. Did you suffered from inability to conceive or pregnancy?		1. Yes		
Q. 14. Did you suffered once or more the followings in your life?		Tick one only		
		1. Abortion/miscarriage	2. Termination of pregnancy	
		3. Still birth	4. Ectopic pregnancy	5. None
Q. 15. Where you delivered your children(s)?		Tick one only		
		1. Home	2. Hospital/Health centers	
Q. 16. Do you take bath everyday during menstruation period?		1. Yes		
Q. 17. Do you change your cloths (undergarments) daily during menstruation?		1. Yes		
Q. 18. Do you use sanitary napkins during menstruation?		1. Yes		
Q. 19. Do you wash your private parts regularly?		1. Yes		
Q. 20. Do you have sexual relationship during menstruation?		1. Yes		
Q. 21. If yes to Q. No. 17, Do you use condom during sexual relationship?		1. Yes		

FORM NO. C: C.I. a. PRESENT SYMPTOMS

Identification of symptomatic STIs /RTIs		
Q. 22. Now, do you have any of the following problem/s now? (Please tick against the Sl. No.* -----Yes/ No)		
Q.22.1. Genital ulcer: Sores, blisters or ulcers in the genital area	1. Yes	2.No
Q.22.2. Vaginal discharge: Foul smelling, discharge (watery or pus or white) with itching from genitals	1. Yes	2.No
Q.22.3. Urethral discharge: Pain or burning sensation during urination and a feeling to pass urine often, itching, burning in the genital area, discharge	1. Yes	2.No
Q.22.4. Lymphadenopathy: Swelling, rashes on the genitals or surrounding area or Hip pain, swollen lymph glands in the groin	1. Yes	2.No
Q.22.5. Lower pain abdomen: Continuous pain in genitals & lower abdomen or pain during sexual intercourse	1. Yes	2.No
Q.22.6. Misc: Pubic lice or scabies	1. Yes	2.No
Q.22.7. If yes to any of the Q above, the subject has STI/RTI symptoms	1. Yes	2.No

* * Sometimes woman complains of more than one disease. If the complain is more than one, tick all the relevant complains

C.1.b. PAST SYMPTOMS (Tick one only)

<i>Identification of symptomatic STIs /RTIs</i>		
Q. 23. Now, do you have any of the following problem(s) in the last six months? (Please tick against the Sl. No [†] ----- Yes/ No)		
Q.23.1. Genital ulcer: Sores, blisters or ulcers in the genital area	1.Yes	2.No
Q.23.2. Vaginal discharge: Foul smelling, discharge (watery or pus or white) from genitals	1.Yes	2.No
Q.23.3. Urethral discharge: Pain or burning sensation during urination and a feeling to pass urine often, Itching, burning in the genital area, discharge	1.Yes	2.No
Q.23.4. Lymphadenopathy: Swelling, rashes on the genitals or surrounding area or Hip pain, swollen lymph glands in the groin	1.Yes	2.No
Q.23.5. Lower pain abdomen: Continuous pain in genitals & lower abdomen or pain during sexual intercourse	1.Yes	2.No
Q.23.6. Misc: Pubic lice or scabies	1.Yes	2.No
Q. 23.7. If yes to any of the Q. above, the subject has STI/RTI symptoms	1.Yes	2.No

FORM D HELP AND TREATMENT SEEKING

Q 24. Sources: For your symptoms, from which of the following sources did you seek help?												
a. Home remedies, self care, family or non-professional friends	1.Yes		2.No									
b. Purchased the medicine from Pharmacy shop	1.Yes		2.No									
c. Health worker	1.Yes		2.No									
d. Primary health centre or sub-centre	1.Yes		2.No									
e. Government hospital	1.Yes		2.No									
f. Private hospital	1.Yes		2.No									
g. NGO-health camp	1.Yes		2.No									
h. Private practitioner-Allopathy	1.Yes		2.No									
i. Private practitioner-Specialist	1.Yes		2.No									
j. Private healer-traditional medicine(Local Quake)	1.Yes		2.No									
k. Homeopathy	1.Yes		2.No									
l. Others-specify	1.Yes		2.No									
Q. 25. Sequence of providers consulted (on the basis of the Q. No. 21)												
Sequence	a	b	c	d	e	f	g	h	i	j	k	l
Provider type (above list)												
Number of visits												
Q. 26. What was the first help you sought for this problem outside your home, other than from friends or family?" Enter First help seeking from above list, ONE only (aside from self-care, family-friends):												

[†] Sometimes woman complains of more than one disease. If the complain is more than one, tick all the relevant complains

ANNEXURE - 2

Consent form

Greetings/Namaskar,

We are a team from Health Department, Government of Manipur. We are conducting a study on sexually Transmitted Infections among the women of Imphal east district, Manipur. The participants will be explained about the objectives, method and the risks and benefits of the proposed study, as well as their role in the same, and written informed consent taken from them. In case of those who are not literate, the same will be read out in Manipuri language to them in the presence of a literate witness, whom they know. The signature of the cases as well as that of the witnesses will be taken on the consent form. In cases of minor, either parents or guardians will be obtained the consent

In the present context, due to lack of knowledge and treatment seeking, lots of Sexually Transmitted Infections spreading from it create a serious health problem to the society. It was heighten due do ignorance and negligence of the diseases. Such problem is facing by lots of women in our society. Small germs cause these diseases. The disease gets into our body through contact and once there is infection, it can even permanently deform our body. Not only this, it will incur lots of financial problem to the family to get it treated. You or any of the family members might have suffered with these diseases. You should not fell any while disclosing your problem. If you had taken preventive measures and treated beforehand, you might not have suffered with these diseases. For the prevention of the Sexually Transmitted Infections problem in Imphal east district of Manipur state, we would like to understand the magnitude of this problem and the treatment seeking behaviour of women with Sexually Transmitted Infections. It is true that it can be treated and prevented. If you want to talk separately, we will arrange a convenient place for you. If you want help from the heath personnel, we are ready to refer to the nearest health centre.

In this field we are coming to investigate Thus, between you and we need to ask simple question who have contracted with it and to persons who did not. Within three months time it will be completed. Taking part in this is voluntary. You can choose not to participate. Answering the entire question will take about 30 minutes of your valuable time. At any junction, you can stop answering to question without giving any reason thereof. This will not affect your rights to health care with medical unit or any other right. It is not compulsory to answer all the questions; option for specific answer is also accepted. To make our investigation successful, we need your free and frankness in answering our questions. However, taking part in the survey may benefit to the community, as it will help to understand the problem, its causes and potential solution. When the results have been analyzed, a report will be tabled before the village Panchayat's, Pradhan, state and central government health authority. This will definitely give awareness of Sexually Transmitted Infections to the general mass. The information we will collect in this survey will be completely confidential. They will be informed that no compensation will be paid to them for participating in the study.

If you wish to find out more about this survey before taking part, you can ask me all the questions you want. You can also contact **Dr. S. Ibungochouba Singh, Principal Investigator, MAE Scholar, National Institute of Epidemiology, Chennai, Ambattur. Residence: Lairikyengbam Leikai, Imphal East, Manipur State, India. Phone: 0385-2423178, Mob. +919436038307**

"I have read the forgoing information or it is has been read to me. I have had the opportunity to ask questions about it and my questions I have asked have been answered to my satisfaction. I consent voluntarily to participate as a participant in this investigation and understand that I have the right to withdraw from investigation to anytime without in any way it affecting my further medical care".

Name _____

Signature _____

Date _____

Witness _____

(Consent and signature should be collected from a parent / guardian in case of minors)

গুণাইবিরিকো :

ঐখোয় মণিপুর সরকারগী হকশেল লোইশঙগী মীওইশিংনি । লমদমসিগী মনুংদা লৈরিবা নুপী/নুপাশিংনা খংনরিবা ফিনুংগী লায়নাগী মরমদা থিজিন হুমজিনজবা লাকচবনি । ঐখোয়না পাইখংচরিবা থবক অসিদা, ঐখোয়না খংনিংলিবা পান্দম, অমদি কমদৌনা ঙাকথোক্কদগে হায়বদু মরিক চুমা তাল্লবগা লোয়ননা অদোমগী অয়াবসু লৌজগনি । ঐখোয়না পাইখংলিবা থবক অসি যামদ্রবদা থা ওগী মনুংদদি লোইশিনজগনি হায়বগী পান্দম লৈজৈ । অদোমগী অয়াবা মমত্তংদি লৌজগে ।

হৌজিকী ফিবম অসিদা, মরু ওইনা সমাজ অসিদা নুপী/নুপাশিংনা অসিগুম্বা লায়নাশিংসিগী মরমদা খৌ-রা মরুদবনা, হকশেলগী লমদা অচৌবা চৈথেং অমা পিরিক্ৰি । লায়নাশিং অসিনা হৌজিক্ৰি অদুক্ৰী মতিক শোকহল্লবনি মমসুং খংজিনবিয়ু অপিকপা মহিকশিংনা থোকহনবনি । লায়েংদনা লৈথোক্কগদি পুলিস চুমা হকচাংগী শরুক খরদি শানাইহনবা যাবগী ওইথোকপসু চাং য়ালা রাংনা লৈবনি । লায়েংবদসু পৈশা য়ালা চংগদবা মরুয়া ইমুং-মনুংগী শেল-মগী ফিবমদা অরাবা অমা ওইরক্ৰনি । লায়না অসিনা নারবদি, ইকাইবদগী হায়দোকনিংদবা, তাকথোকনিংদবগা তৌবিগনু । নাবা যাওরগদি মাংজৌননা লৌখংপা য়াবা খৌরাং লৌখত্তুনা লায়েংগদবনি । মরম অদুনা লমদম অসিদা মরিবা নুপী/নুপাশিংদা কয়াম নাহনশ্বে অমদি করম্বা লাইয়েং পথাপ লৌখংকনি হায়বগী মরমদা খংদোক্ৰবা ঐখোয় মাকলিবনি । থাজবিয়ু, লায়না অসি হিদাক লাংথক্ৰা ওমবতা নত্তনা মাংজৌননা লৌখংপা য়াবা খৌরাং পায়খংহৌরবদি মাহনদবা য়াই । চিক্ৰা ঐখোয়গা তাল্লনিংবগা লৈরবসু মফম চাবা মফম অমা হায়নসি, অদুগা লায়েংনিংলবসু মরি লৈনবা মনা লায়েংশঙ তাকচগনি ।

নাবু ওইরবসু, নাদববু ওইরবসু ঐখোয়গী অচম্বা রাহং খরগী পাউখুম মরিক চুমা খুমবিরক্ৰনি খঙৈ । শরুক খবিগে/য়াবিরোই অদোমগী অপান্ধনি, য়াবিরগদি ঐখোয়গী লাইবক ফবনি অদুগা অদোমগী চিল্লবা মতম পুংখাই মমমুক্তি লৌজগে । হংলকপা রাহংশিং খুমবিগে/খুমবিরোই, মরজা হেজা তোকচগে হায়রবসু অদোমগী অপান্ধনি । মদুদা ঐখোয়না অদোমগী পুলিস অমসুং অনা-লায়েংবগী লমদা অয়েংপদি পিরোই । তৌবতবু ঐখোয়গী পান্দম অসি মপুং গনা ফংবা ওম্ববগীদমক অদোম্বা লৌখুপ লৌকোই তৌবিদনা পুকচেল শেংনা খুস্বীয়ু । পুকচেল তিংনা শরুক য়াবিবসিনা মাজদা পিরক্ৰদবা চৈথেং, মতৌ করম্বা ঙাকথোক্কদগে হায়বনচিংবগী মরমদা শুংশোই শোইদনা কাল্লা খরা ফংহনগনি মগনি হায়বসি ঐখোয়গী থাজবনি । তুংদা ঐখোয়না লায়না অসিবু মতৌ করম্বা ঙাকথোক্কনি হায়বগী মরমদা, খুস্ৰুংগী ওইরগনা গ্রমা পঞ্চায়েৎকী প্রধানগী খুথাংদা, নত্রগা রাজ্য সরকার অমদি কেন্দ্র সরকারগী খুথাংদা লৌখংপা য়াবা খৌরাংশিংসু খংহঞ্জরক্ৰনি । অদু ওইরগনি ঐখোয় পুম্বমক ফিনুংগী লায়নাগী মরমদা ভাব তাবা ঙাল্লগনি ।

ঐখোয়না পাইখংলিবা থবক অসিগী মরমদা মাংজৌননা খংনিংবা-হংনিংবগা যাওরবসু তরাম্বা ওকচরি । মখা তানা মাল্লনিংলংবদি মখাদা পীজরিবা মীওই অসিগা তাল্লবিয়ু ।

Dr. S. Ibungochouba Singh, Principal Investigator,

MAE-FETP Scholar, 6 Cohort, National Institute of Epidemiology, Chennai, Ambattur

Residence : Lairikyengbam Leikai, Imphal East, Manipur State.

Ph. 0385-2423178, Mob. +919436038307

থাক্তা পল্লিবা বারোল অসি মুন্না পাজরে । লোয়না লোয়ননা ঐহাকপু অসিগুম্বা রাহংশিং অসি খুম্ববগী তাঞ্জা অমা খংবা অমদি ইশানা য়ানা খুমখিবা ওমজবগী তাঞ্জা অমা ফংজবসি ঐগীদি লাইবক ফবনি হায়না লৌজরে । ইশানা য়ানা শরুক য়াবগী অয়াবা পিজবগা লোয়ননা মখা তানা শরুক য়ানি/য়ারোই হায়বসিদি ইশাগী অপান্ধনি অদুগা তুং-কোইনা শাগী অনা লায়েংবদা মসিনা মরম ওইদুনা করিসু অকাইবা পিরক্ৰোই হায়না লৌজরি ।

.....সহি.....

.....সাখি.....

ANNEXURE 4

Household identifier collection form

HOUSEHOLD ID: _____	Name of the household head _____
Household address:	Landmarks:
ID1 name:	ID2 name:
ID3 name:	ID4 name:

Participants referral slip

Name:	
Age:	
Sex:	
Address:	
Marital status:	
Occupation:	
Present complain:	
Principal Investigator: <i>Dr. S. Ibungochouba Singh</i>	Signature of the health worker

Section 2

Review of Literature

REVIEW OF LITERATURES

1. Introduction

The term "Sexually transmitted disease (S.T.D.)" is used for all infections that are transmitted mainly through sexual contact, during unprotected vaginal, anal or oral intercourse. Some are also transmitted from mother to child before, during birth, and through unsafe blood, blood products, donated organs or tissue and contaminated needles.¹ There are more than 20 infections cover under STI or STD including HIV infection. The mode of transmission of both HIV infection and other sexually transmitted infections is same including the sexual transmission. The World Health Organization recommends that the term sexually transmitted disease (STD) be replaced by the term sexually transmitted infection (STI) and has been adopted since 1999 as it better incorporates asymptomatic infections. In addition, the term has been adopted by a wide range of scientific societies and publications.² The older terminology of "venereal diseases" (VDs) largely has been superseded in the past 50 years by "sexually transmitted diseases" (STDs), and more recently by "sexually transmitted infections" (STIs).^{3, 4} To some, venereal diseases came to be viewed as a narrow and pejorative term limited to gonorrhea, syphilis, chancroid, lymphogranuloma venereum, and granuloma inguinale, and related VD control laws. The term sexually transmitted diseases more easily incorporate the many newly discovered sexually transmitted agents and syndromes.^{3, 5} Biologically, STIs are defined by 4 major categories: genital ulcer diseases, human papillomavirus (HPV), genital discharge diseases, and HIV.⁶

2. Global scenario

As per World Health Organization (WHO) during 1999, about 340 million people aged 15 – 49 years suffered from sexually transmitted infection (STI) like syphilis, gonorrhea, Chlamydia and Trichomoniasis etc. world over. Globally, burden of STDs excluding HIV in DALYs estimates in 2002 in both sexes was 1%, female

estimate was 1%. The highest was syphilis among male was (0.3%) but Chlamydia was highest in females (1%). Burden of HIV estimates in 2002 in both sexes was 6%, female estimate was 6%.⁷ Sexually transmitted infections (STIs) constitute 75-85% of the estimated 340 million annual new cases of curable STIs, and STIs account for 17% economic losses because of ill health.⁸ During 1999, the largest number of new infections occurred in the region of South and Southeast Asia and 151 million STI cases (44%) were from South and Southeast Asia, sexually transmitted infection (STI) like syphilis, gonorrhoea, Chlamydia and Trichomoniasis.⁹

3. Prevalence of sexually transmitted infections

Sexually transmitted disease transmission, prevalence, and disease burden are not shared equally between the sexes. Because of economic, biological, and social factors,^{10, 11} women are more susceptible than men for the acquisition of HIV and other STIs. In Western Pacific, studies amongst pregnant women have shown a prevalence rate that ranges from of 5.7% in Thailand¹² up to 17% in India.¹³ One study in a rural population of reproductive age group in Papua New Guinea showed a prevalence rate of 26%, 59% of the women had at least one STI.¹⁴ As many as 70% of the study male participants were unable to mention even one symptom of an STI. Poor treatment-seeking behavior was also observed. The actual prevalence rate in the general population might be higher due to the likelihood of presence of an asymptomatic infection.¹⁵ In a community based study at selected villages of Mahendergarh district in Haryana, India. Sixty-one percent women reported symptoms of RTIs. Eighty-nine percent of women who reported symptoms of RTIs had not consulted anyone for their problem prior to their village based camp. Only 42% symptomatic and 24% asymptomatics.¹⁶ Vaginal discharge was the most common genital syndrome (38%).¹⁷ At least one STI syndrome was noted in 25% of the women subjects; vaginal discharge was the most common and found in 38% of women.¹⁸ In a clinic based study Kampala, Uganda, 21% of the females and 13% of the males had at least one STI.¹⁹

4. Factors to increase the risk of transmission

Certain factors influenced the transmission, they are biological and behavioural. Biological factors are young age of females, immune status of the host and the virulence of the organism. Behavioural factors are known as "risky". Risky behaviours include the following: personal risky sexual behaviours of partner(s), social factor.^{1,20}

5. Vulnerable populations

Several authors identified different populations include: (a). Sexually active teenage girls, (b). Sex workers and their clients and (c). Men or women who have multiple sexual partners, men or women whose jobs separate them from their regular sex partners for long periods of time, such as long-distance drivers, soldiers and migrant workers.^{1,21} Substance abuse, sex work, and STIs are closely connected.^{22, 23, 24} and documents the association of substance abuse, especially the abuse of alcohol and drugs, with STIs.²⁵

6. Correlation to HIV/AIDS

Globally, the most important mode of spread of HIV epidemic is through heterosexual transmission.²⁶ Sexually transmitted infections and HIV infections are both closely correlated to the same risk behaviour.^{27, 28, 29} Some studies have focused attention on the relationship between HIV infection and other STIs.^{30, 31} The presence of an STI increases the risk of acquiring and transmitting HIV infection by three to five times,³² and bacterial vaginosis may be a cofactor for HIV transmission, especially among younger women.³³ Increased incidence of HIV infection has been found in people with genital ulcer disease (GUD), indicating that GUD increases susceptibility to HIV infection.^{31, 34} and increased rates of transmission of HIV infection have been found with co-exposure to GUD and HIV infection, indicating that GUD increases infectiousness of HIV.^{35, 36} Sexually transmitted infections and other reproductive tract infections (RTIs) have received considerable attention since the advent of the HIV/AIDS epidemic,^{37, 38} as well as studies demonstrating reduced

transmission of HIV with improved treatment of STIs.^{39, 40} Increasing evidence suggest that many sexually transmitted infections significantly enhance the acquisition and transmission of HIV.⁴¹

7. Stigma

Stigma is defined as an undesirable attribute in a person that is viewed as setting that person apart from the rest of society.^{42, 43} Shame is an intense negative emotion that results from a person experiencing failure in relation to personal or other people's standards, feeling responsible for that failure, and believing that the failure reflects an inadequate self.^{44, 45} Sometimes referred to as "self stigmatization," it is a reflection of a person's acceptance of the negative aspects of stigma.⁴⁶ Although it can occur privately, shame has also been described as an affective reaction that follows public exposure of some deviation from accepted norms.^{44, 47}

"Stigma is a term that involves both deviance and prejudice but goes beyond both. Stigma involves perceptions of deviance but extends to more general attributions about character and identity. Stigma is more inclusive than prejudice because it involves individual-based responses to deviance, as well as group-based reactions as a function of category membership. Because stigma is socially defined, there is considerable variation across cultures..." (Dovidio, Major, and Crocker, 2000, p. 5).⁴⁸ The threat of the stigma associated with sexually transmitted infections is an integral tool of clinical and public health approaches and genital herpes no exception.⁴⁹ The perception of stigma was an important barrier to limiting the spread of HIV and STI in sub-Saharan Africa. Although communities perceive stigma in different ways, individuals with STIs often anticipate feelings of rejection and shame that lead to long delays in seeking health care.^{50, 51} Recent findings support the view that stigma and shame associated with STIs are important barriers to appropriate diagnostic and treatment services.⁵²

8. Health and treatment seeking behaviour

According to Kasl and Cobb's (1966) "illness behaviour", health seeking behaviour can be defined as any activity undertaken by individuals who perceive themselves to have a health problem or to be ill for the purpose of finding an appropriate remedy. Health seeking behaviour should be distinguished from the

broader concept health behaviour, defined by Kasl and Cobb as any activity undertaken by individuals who see themselves as healthy for the purpose of preventing disease or detecting it in an asymptomatic stage.⁵³ According to Moses and colleagues (1994) report from Kenya, 27% had sought treatment elsewhere earlier in the same episode of an STI, and other sources included other public sector clinics (38%), private clinics (39%) and the informal sector (24%). The last group included pharmacists, traditional practitioners and drug peddlers. The author report: "The main reasons given for having sought care in the private medical or informal sectors were convenience of access and perceived greater privacy." (Moses et al. 1994:1949). Sexual health and sexuality issues are often difficult for many youth and adults to discuss openly.⁵³

Delay in treatment seeking and obtaining diagnosis and treatment can allow for continued transmission and the greater probability of adverse sequelae.^{52, 53} Delays may be attributed to a preference for traditional healers who are still viewed by many as having the best treatment for STIs even though the efficacy of such treatments remains unproved.⁵⁴ The low health seeking behaviour is another problem due to stigmatization of STDs. This is specially the case where STD care is provided easily identified specialists STD clinics. Shame is often associated with having an STD.⁴¹ Sexually transmitted infections remain asymptomatic in women, and detection and treatment are often delayed as a result.⁵⁵

The availability of multiple sources of care, combined with uncertainty about symptoms, stigma surrounding STI and direct problems of access and affordability may lead to considerable delays in diagnosis and treatment in Ethiopia had symptoms for over a week, with 40% already on some form of treatment (Feleke et al. 1990).⁵⁶ The median reported time with STI symptoms before coming to the STI clinic was 14 days (range 2 days to 4 years), with 53% of all patients having taken some form of medication before coming to the clinic. The most frequent single source of medication was the traditional healer (37%). The majority of STI clients (83%) who had seen a traditional healer resided in villages.⁵⁷ There were delayed seeking care for at least one week after the onset of symptoms. However, there were many participants who waited much longer, such as a few months in several cases to over a year among a few cases, before seeking clinical care for their symptoms.⁵⁸

Since over half of all STI clients, had first received medication at a source outside the official STI clinic, these different sources could be targeted to improve STI management and reduce delays in effective treatment.⁵⁹ A large proportion of the patients had sought treatment in public and private sectors before attending the clinic for STIs. Women waited longer than men to seek medical care.⁶⁰ Patients with vaginal discharge preferred traditional healers and pharmacist.⁶¹ Men sought treatment for STI symptoms faster than women, with 68% of men seeking treatment in a week or less, compared to only 35% of women (log rank test: p value ,0.001).⁶² The level of treatment seeking reported is high and the government clinics or hospitals are the main providers of treatment, although genital ulcers, sores or blisters are more likely to be reported to traditional healers than other types of symptoms.⁶³

9. Sequelae

Sexually transmitted infections (STIs), including HIV, continue to present major health, social, and economic problems in the developing world, leading to considerable morbidity, mortality, and stigma⁶⁴ and ranked as top five categories of diseases in adults seeking health-care services.⁶⁵ The prevalence rates apparently are far higher in developing countries where STI treatment is less accessible.⁶⁶ The spread of sexually transmitted diseases (STDs) has been called a "hidden epidemic".⁶⁷ Sexual transmission accounts for a majority of cases of human immunodeficiency virus (HIV) infection worldwide.⁶⁸ G8 leaders have set ambitious target for reducing the global burdens of disease cause by tuberculosis, malaria, and HIV/AIDS by 2010, but why does violence against women, a massive cause of morbidity and mortality, remain overlooked by governments? Violence against women is the extreme end of a sliding scale of discrimination and prejudice against women, and must be addressed as a priority by government if we are to achieve a just world. But, first, doctors and other health-care professionals need to face up to the problem and debate a strategy to deal with it.⁶⁹ STIs remain a major public health challenge in the United States.⁷⁰

Sexually transmitted infections are a major global cause of acute illness, infertility in men and women, ectopic pregnancy, cervical cancer, premature mortality, congenital syphilis and fetal wastage, low birth weight, and prematurity and ophthalmia neonatorum, long term disability and death, with severe medical and psychological consequences for millions of men, women and infants. 65 million people living with an incurable STI.^{72,72} Untreated STIs can result these outcomes.⁷³

Women suffer more frequent and more serious STI complications than men do. Among the most serious STI complications are pelvic inflammatory disease (PID), ectopic pregnancy, infertility, and chronic pelvic pain.⁷⁴ Women are biologically more susceptible to infection when exposed to a sexually transmitted agent. Often, STIs are transmitted more easily from a man to a woman.⁷⁵ RTIs often cause discomfort and lost economic productivity.⁷⁶ The most serious long-term sequelae arise in women: pelvic inflammatory disease (PID), cervical cancer, infertility, spontaneous abortion and ectopic pregnancy, the latter of which may lead to maternal death.⁷⁷

Presence of STI/RTI increases the risk of HIV infection by 8-10 times. Multi partner sex, IDUs, early marriage, violence and sexual abuse against women increase their risk to HIV. New infections are occurring in married women who get infected by their husband.⁷⁷ Studies of the worldwide human immunodeficiency virus (HIV) pandemic link other STIs to a causal chain of events in the sexual transmission of HIV infection.⁷⁹ A person infected with HIV may be asymptomatic and may transmit the disease to another person. Identifying and treating partners of persons with curable STIs to break the chain of transmission in a sexual network always have been integral to organized control programs.⁸⁰

The risk of tubal infertility in women who reported at least one episode of gonorrhea after their last pregnancy. The relative risk of tubal infertility was also higher among women who reported a history of trichomoniasis or genital warts.⁸¹ Chlamydia is generally an asymptomatic infection; therefore, it is less likely to be treated in early stages and can exert a great toll on infected women. Of untreated women, 40% develop pelvic inflammatory disease.⁸² Pelvic inflammatory disease can lead to permanent damage of the female reproductive tract, including the fallopian tubes, uterus, and surrounding tissues, with chronic pelvic pain, infertility, and potentially a fatal ectopic pregnancy.^{82, 83, 84, 85, 86} Of women with a single infection of pelvic inflammatory disease, 20% will experience chronic pain, 9% will have an ectopic pregnancy, and 8% will become infertile.⁸⁷ Pelvic inflammatory disease is responsible for 15% of all infertility.⁸⁸

Women with past chlamydial or gonococcal infections or both were significantly more likely to have bilateral tubal occlusion. The majority of women with bilateral tubal occlusion reported no history of pelvic inflammatory disease symptoms. Other infertile women had a prevalence of *C. trachomatis* antibodies (60%), which was similar to that of patients with bilateral tubal occlusion (71%).⁸⁹ Previous termination of pregnancy, history of sexually transmitted disease and number of sexual partners were identified as risk factors for seropositivity and tubal disease. Screening of women attending the infertility clinic for *C. trachomatis* infection of the cervix, and that testing these patients for chlamydia antibodies may also be useful in planning further investigation.⁹⁰

Many STIs have asymptomatic carriers, more than 50% of women with gonococcal infection are asymptomatic thus there is no incentive to seek health care.⁴¹ Women have a greater than 3 times higher rate of contracting chlamydia than do men,⁹¹ which may be due to the increased number of women who are screened for the disease. As many as 85 percent of women and up to 50 percent of men with chlamydia have no symptoms.^{92, 93, 94, 95} In a study of pregnant women attending the “emergencia gynaecologia” of the Hospital Escuela Oscar Darilo Rosales Arguello (HEODRA), antibodies against HIV were not detected in any of the women (prevalence, 0%; 95% CI, 0.0–0.3), whereas antibodies against *T. pallidum* were detected in 16 (1.5%). Risk factors for syphilis included illiteracy, lower education, and two or more pregnancies.⁹⁶

Many STIs have asymptomatic carriers, more than 50% of women with gonococcal infection are asymptomatic thus there is no incentive to seek health care.⁴² Women have a greater than 3 times higher rate of contracting chlamydia than do men,⁹⁷ which may be due to the increased number of women who are screened for the disease. As many as 85 percent of women and up to 50 percent of men with chlamydia have no symptoms.^{98, 99, 100, 101} In a study of pregnant women attending the “emergencia gynaecologia” of the Hospital Escuela Oscar Darilo Rosales Arguello (HEODRA), antibodies against HIV were not detected in any of the women (prevalence, 0%; 95% CI, 0.0–0.3), whereas antibodies against *T. pallidum* were detected in 16 (2%). Risk factors for syphilis included illiteracy, lower education, and two or more pregnancies.¹⁰²

Furthermore, in pregnant women, STIs may be associated with preterm delivery, maternal-fetal transmission of infection and other neonatal complications via vertical transmission.⁵⁶ In women of childbearing age, STIs (excluding HIV) are second only to maternal factors as causes of disease, death and healthy life lost.¹⁰³ Pregnancy offers no protection against sexually transmitted infections leaving pregnant women vulnerable to the same STDs as women who are not pregnant.^{104, 105} Women with bacterial vaginosis are 40 percent more likely to deliver a preterm, low birth weight infant than are mothers without this condition.^{106, 107} Pregnant women with trichomoniasis may give birth to low birth-weight neonates and may experience premature rupture of membranes and premature delivery.^{108, 109} Although the CDC recommends screening at the first ANC visit and again in the third trimester in high prevalence areas.¹¹⁰ HIV epidemic has entered the third phase in India, wherein significant transmission is occurring through perinatal route.¹¹¹

10. Operational definitions

Standard operational definitions for syndromic STDs were: (1) Genital ulcer-The presence of an ulcer(s) in the genital region with or without associated lymphadenopathy, (2) Urethral discharge-The presence of discharge from the urethra of a male patient, spontaneous or on milking of the urethra, (3) Vaginal discharge-The presence of vaginal discharge from a female which is abnormal in colour, odour and amount, visible with or without speculum examination, (4) Lower abdominal pain-The complain of lower abdominal pain in a women which is accompanied by the presence of abnormal discharge, temperature more than 38⁰C. and pain on moving the cervix, (5) Inguinal swelling or Inguinal Bubo-The complain of enlarged and/or painful inguinal lymph nodes and (6) other related symptoms.¹¹²

11. Measures

Promotion of STIs as a public health problem that can be dealt with by “a magic bullet” approach has reinforced the perception that STIs are still unclean and can be dealt with “out of sight” requiring neither clinical examination nor health education.¹¹³ Furthermore, the move to decentralise STI services to primary health care advocated by the World Health Organization since the 1970s has not made

sufficient impact in reducing STI enhanced HIV transmission and neither has the move to integrate STI services with family planning clinics resulted in a demonstrated reduction in STIs.¹¹⁴

An important determinant of effective STI control is the health seeking behaviour of people with STIs who may seek care from alternative sources (outside an official STI clinic) such as traditional healers, private clinics, pharmacists, and market vendors. Visiting a traditional healer for care was also found to be a risk factor associated with “no condom use,” indicating that condom promotion is not effectively encouraged by this group.¹¹⁵

Prevention opportunities arise from an understanding of STI transmission dynamics. The rate of STIs in a population is determined by the interaction of three principal factors (1) rate of sex partner exchange or exposure, (2) transmission and (3) duration.^{41, 116, 117, 118} Primary prevention of STI begins with changing the sexual behaviors that place persons at risk for infection.¹¹⁹ Counseling skills, characterized by respect, compassion, and a nonjudgmental attitude toward all patients, are essential to obtaining a thorough sexual history and to delivering prevention messages effectively. One approach to eliciting information concerning five key areas of interest. The Five Ps: Partners, Prevention of Pregnancy, Protection from STDs, Practices, Past History of STDs.¹²⁰

The control of STIs presents one of the great health challenges of the last two decades. STIs are spreading rapidly throughout the world. Untreated, they can lead to serious complications and even death.¹ Association of HIV and STIs has led to common control strategies for both.^{121, 122, 123, 124} Other strategies to reduce the impact of STI in pregnancy have included vaginal washing with chlorhexidine to reduce MTCT of HIV in Nairobi.¹²⁵

Prevention and control of sexually transmitted infections should be an integral part of comprehensive sexual and reproductive health services in order to contribute towards the attainment of the Millennium Development Goals and respond to the call for improved sexual and reproductive health as defined in the programme of action of the United Nations International Conference on Population and Development (Cairo, 1994). Despite the call for universal access to sexual and reproductive health was

omitted from the Millennium Development Goals and remains neglected inspite of explaining the disease.¹²⁶ The Millennium Development Goal 6, target 7 calls on nations to have halted and begun to reverse the spread of HIV/AIDS by 2015.¹²⁷

12. National scenario

National AIDS Control Organisation (NACO) of India estimates that STIs occur at an estimated rate of more than 40 million every year. The annual incidence of STIs in India is 5%.¹²⁸ During 2005, the prevalence of HIV among the STI population was 6%.¹²⁹ Only 5% - 10% STI patients attend STI Clinics. Nearly 40% of all HIV infections in India are among women. The control of STI/RTI is one of the important strategies under the National AIDS Control Programme. Now, India is under the National AIDS Control Programme phase III (NACP). RTI management is a part of the reproductive and child health (RCH) programme of India. Sexually transmitted infections remain a public health problem of major significance in most parts of the world¹³⁰ and India is no exception.

13. Scenario of Manipur state and Imphal east district

Manipur is one of the hilly northeastern states of the Indian union bordering Myanmar. It is geographically very close to notorious "Golden Triangle", comprising of Northern Thailand, Northern and Eastern Myanmar and Western Laos. This has been a major centre of Opium poppy cultivation since 19th century. On the other hand, the pattern of HIV transmission in Manipur has been mainly through the sharing of needles and syringes among injecting drug users (IDUs), and especially the youth, since early 1980 with the introduction of heroin (locally known as No. 4) from Myanmar.¹³¹ In a hospital based study of Manipur, the incidence of VDRL reactivity was 3% and HIV infectivity was 1% amongst the pregnant women attending the antenatal clinic.¹³² In another hospital based study amongst the sexually transmitted infections patients of Manipur, the prevalence of HIV was 11%, VDRL reactivity was 7%. The commonest syndromic symptom was genital ulcer (58.4%) and the commonest type was genital candidiasis.¹³³ In Manipur state, HIV reactivity among the STI patients was 5%, pregnant women was 1%, Female Sex Worker was 12%. VDRL reactivity from STI was 1%, pregnant woman was 1% and Female sex worker was 6%. In Imphal east district, HIV reactivity among the STI patients was 3%, pregnant women was 1%. VDRL reactivity from STI was 1%, pregnant women was 0.4%.¹³⁴

REFERENCES

1. Training modules for the syndromic management of sexually transmitted infections, Module-1. Introduction to STI Prevention and Control, Trainer's Guide; *World Health Organisation*, 2007.
2. Guidelines for the management of sexually transmitted infections, World Health Organization, 2003.
3. Judson F. Introduction. In : Kumar B, Gupta S, editors. Sexually transmitted infections, 1st ed. Elsevier: New Delhi; 2005. p. 1-4.
4. Source:16-06-07, www.who.int/mediacentre/factsheets/fs249/en/
5. Bingham JS. Historical aspects of sexually transmitted infections. In : Kumar B, Gupta S, editors. Sexually transmitted infections. 1st ed. Elsevier: New Delhi; 2005. p. 5-17.
6. Vandana K. Madka, Angela A. Giancola, Karan K. Sra, Stephen K. Tyring. Sex Differences in the Transmission, Prevention, and Disease Manifestations of Sexually Transmitted Diseases. *Arch Dermatol*. 2006;142:365-370.
7. The World Health Report 2003, Shaping the Future, 160-165, bookorders@who.int.
8. Mayaud P, Mabey D. Approaches to the control of sexually transmitted infections in developing countries: old problems and modern challenges. *Sex Transm Infect*. 2004 Jun;80(3):174-82.
9. World Health Organization, *Global prevalence and incidence of selected curable sexually Transmitted Infections overview and estimates*, WHO/HIV_AIDS/2001.02, WHO/CDS/CSR/EDC/2001.10, Geneva, 2001.

10. Jean-Robert RM. The woman's status and condom use in Cameroon. *Afr J Reprod Health*. 2003;7:74-88.
11. Quinn TC, Overbaugh J. HIV/AIDS in women: an expanding epidemic. *Science*. 2005;308:1582-1583.
12. Kilmarx PH, Black CM, Limpakarnjanarat K, Shaffer N, Yanpaisarn S, Chaisilwattana P, Siriwasin W, Young NL, Farshy CE, Mastro TD, St Louis ME. Rapid assessment of sexually transmitted diseases in a sentinel population in Thailand: prevalence of chlamydia infection, gonorrhoea, and syphilis among pregnant women, 1996. *Sexually Transmitted Infections* 74(3):189-93, 1998 Jun.
13. Paul VK, Singh M, Gupta U, Buckshee K, Bhargava VL, Takkar D, Nag VL, Bhan MK, Deorari AK. Chlamydia trachomatis infection among pregnant women: prevalence and prenatal importance, *National Medical Journal of India* 12(1): 11-4, 1999 Jan-Feb.
14. M Passey, C S Mgone, S Lupiwa, et al. Community based study of sexually transmitted diseases in rural women in the highlands of Papua New Guinea: prevalence and risk factors. *Sex Transm Inf*; 1998;74:120-127.
15. Garg Suneela, Singh Meghachandra M, Nath Anita, et al. Prevalence and awareness about sexually transmitted infections among males in urban slums of Delhi. *Indian Journal of Medical Sciences*; 2007;61;5:269-277.
16. Aggarwal AK, Kumar R, Gupta V, Sharma M. Community based study of reproductive tract infections among ever married women of reproductive age in a rural area of Haryana, India. *J Commun Dis*; 1999 ;31(4):223-8.
17. George R, Thomas K, Thyagarajan SP, Jeyaseelan L, et al. Genital syndromes and syndromic management of vaginal discharge in a community setting. *Int J STD AIDS*; 2004,15(6):367-70.

18. Thomas K, Thyagarajan SP, Jeyaseelan L, Varghese JC et al. Community prevalence of sexually transmitted diseases and human immunodeficiency virus infection in Tamil Nadu, India: a probability proportional to size cluster survey. *Natl Med J India*; 2002 May-Jun;15(3):135-40.
19. Råssjö EB, Kambugu F, Tumwesigye MN, et al. Prevalence of sexually transmitted infections among adolescents in Kampala, Uganda, and theoretical models for improving syndromic management. *J Adolesc Health*; 2006 Mar, 38(3):213-21.
20. Cates, W. Epidemiology and control of sexually transmitted diseases in adolescents. In: Schydlower, M., and Shafer, M., eds. *AIDS and Other Sexually Transmitted Diseases*. Philadelphia, PA: Hanly & Belfus, Inc., 1990, 409-427.
21. Institute of Medicine (IOM). Eng, T.R., and Butler, W.T., eds. *The Hidden Epidemic: Confronting Sexually Transmitted Diseases*. Washington, DC: National Academy Press, 1997.
22. Blank, S.; McDonnell, D.; Rubin, et al. New approaches to syphilis control: Finding opportunities for syphilis treatment and congenital syphilis prevention in a women's correctional setting. *Sexually Transmitted Diseases* 24(4):218-228, 1997.
23. Cohen, D.; Scribner, R.; Clark, J.; et al. The potential role of custody facilities in controlling sexually transmitted diseases. *American Journal of Public Health* 82:552-556, 1992.
24. Oh, M.; Cloud, G.; Wallace, L.; et al. Sexual behavior and sexually transmitted diseases among male adolescents in detention. *Sexually Transmitted Diseases* 21:127-132, 1994.
25. Beltrami, J.; Wright-DeAgüero, L.; Fullilove, M.; et al. *Substance Abuse and the Spread of Sexually Transmitted Diseases*. Commissioned paper for the IOM Committee on Prevention and Control of STDs, 1997.

26. Piot P, Laga M, Ryder R, *et al*; The global epidemiology of HIV infection: continuity, heterogeneity, and change. *J. Acquir Immune Defic Syndr* 1990; 3: 403-12.
27. Mhalu F, Bredberg-Raden U, Mbenaw E, *et al*; Prevalency of HIV infection in healthy subjects and groups of patients in Tanzania. *AIDS* 1987; 1: 217-21.
28. Melbye M, Njelesani EK, Bayley A, *et al*; Evidence of heterosexual transmission and clinical manifestations of HIV infection and related conditions in Lusaka, Zambia. *Lancet* 1986; 1: ii : 1113-5.
29. van dee Perre P, Le Polain B, Carael M, *et al*; HIV antibodies in a remote rural area in Rawanda, Central Africa: an analysis of potential risk factors for HIV seropositivity. *AIDS* 1987; 1: 213-5.
30. Simonsen JN, Cameron DW, Gakinya MN, *et al*; Human Immunodeficiency Virus among men with sexually transmitted diseases: experience from a centre in Africa. *N Engl J Med* 1988; 319: 274-8.
31. Plummer FA, Simonsen JN, Cameron DW, *et al*; Cofactors in male-female sexual transmission of human immunodeficiency virus type 1. *J Infect dis* 1991; 163 : 233-9.
32. Wasserheit J, Epidemiological synergy: interrelationships between human immunodeficiency virus infection and other sexually transmitted diseases, *Sexually Transmitted Diseases*, 1992, 19(2):61-77; and Cohen M, Sexually transmitted diseases enhance HIV transmission: no longer a hypothesis, *Lancet*, 1998, 351(Suppl. 3):5-7.
33. Sewankambo N *et al.*, HIV-1 infection associated with abnormal vaginal flora morphology and bacterial vaginosis, *Lancet*, 1997, 350(9083): 546-550.

34. Holmberg SD, Stewart JA, Gerber AR, *et al*; Prior *Herpes simplex* virus type 2 infection as a risk factor for HIV infection. *JAMA* 1988; 259: 1048-50.
35. Cameron DW, Simonsen JN, D'Costa LJ, *et al*; Female to male transmission of human immunodeficiency virus type 1: risk factors for seroconversion in men. *Lancet* 1989; 259: 1048-50.
36. Plourde P, Plummer FA, Pepin J, *et al*; Incidence of HIV-1 seroconversion in women with genital ulcers. VI International conference on AIDS, Final Programme and abstracts, Vol 1. San Francisco: 267.
37. Wasserheit JN. Epidemiological synergy. Interrelationships between human immunodeficiency virus infection and other sexually transmitted diseases. *Sex Transm Dis* 1992;19:61-77.
38. Laga M, Manoka A, Kivuvu M, *et al*. Non-ulcerative sexually transmitted diseases as risk factors for HIV-1 transmission in women: results from a cohort study. *AIDS* 1993;7:93-102.
39. Laga M, Alary M, Nzila N, *et al*. Condom promotion. STD treatment leading to a declining incidence of HIV-1 infection in female Zairena sex workers. *Lancet* 1994;344:246-8.
40. Grosskurth H, Mosha F, Todd J, *et al*. Impact of improved treatment of sexually transmitted diseases on HIV infection in rural Tanzania: randomised controlled trial. *Lancet* 1995;346:530-6.
41. Specialist's training and reference module, National AIDS Control Organisation, New Delhi, India.
42. Goffman E. Stigma: notes on the management of spoiled identity. Englewood Cliffs NJ: Prentice Hall, 1963.
43. Lewis M. Shame and stigma. In: Gilbert P, Andrews B, eds. Shame: interpersonal behavior, psychopathology, and culture. New York: Oxford University Press, 1999:126-40.

44. Lewis M. Embarrassment: the emotion of self exposure and embarrassment. In: Tangney JP, Fischer, eds. *Selfconscious emotions: the psychology of shame, guilt, embarrassment and pride*. New York: Guilford Press, 1995:198–218.
45. Tangney JP. Assessing individual differences in proneness to shame and guilt: Development of the Self-Conscious Affect and Attribution Inventory. *J Personality Social Psychology* 1990;59:102–11.
46. Corrigan PW, Penn DL. Lessons from social psychology on discrediting psychiatric stigma. *Am Psychol* 1999:126–40.
47. Tangney JP, Rowland MS, Flicker L, et al. Are shame, guilt, and embarrassment distinct emotions? *J Personality Social Psychology* 1996;70:1256–69.
48. Eli Lieber, Li Li, Zunyou Wu, et al. HIV/STD Stigmatization Fears as Health Seeking Barriers in China. *AIDS Behav.* 2006 September ; 10(5): 463–471.
49. Fortenberry, J Dennis. The Effects of Stigma on Genital Herpes Care-seeking Behaviours. *Herpes*; 2004, 11: 1, 8-11(4).
50. Moss W, Bentley M, Maman S, et al. Foundations for effective strategies to control sexually transmitted infections: voices from rural Kenya. *AIDS Care* 1999;11:95–113.
51. Nuwaha F, Faxelid E, Neema S, et al. Lay people's perceptions of sexually transmitted infections in Uganda. *Int J STD AIDS* 1999;10:709–17.
52. Fortenberry JD, McFarlane M, Bleakley A, et al. Relationships of stigma and shame to gonorrhea and human immunodeficiency virus screening. *Am J Public Health* 2002;92:378–81.

53. Reid G and Dorabjee J. 2004. Resource modules for trainers: *Comprehensive responses for HIV/AIDS Prevention and Care among Drug Users in India. Melbourne.* The Centre for Harm Reduction. The Macfarlane Burnet Institute for Medical Research and Public Health Ltd. Website: www.chr.asn.au, 179-204.
54. Goldin CS. Stigmatisation and AIDS: critical issues in public health. *Soc Sci Med* 1994;39: 1359–66.
55. Division of Sexually Transmitted Diseases, National Center for HIV, STD and TB Prevention, Centers for Disease Control and Prevention (CDC), Sexually Transmitted Disease Surveillance, 1998, Atlanta: CDC, 1999; and Goldenberg RL et al., Sexually transmitted diseases and adverse outcomes of pregnancy, *Clinics in Perinatology*, 1997, 24(1):23-41.
56. Helen Ward, Thierry E Mertens and Carol Thomas. Health seeking behaviour and control of sexually transmitted disease. *Health policy and planning*; 1997,12(1): 19-28.
57. R Zachariah, W Nkhoma, et al. Health seeking and sexual behaviour in patients with sexually transmitted infections: the importance of traditional healers in Thyolo, Malawi. *Sex. Transm. Inf.* 2002;78;127-129.
58. Monica Malta, Francisco I Bastos, et al. Knowledge, perceived stigma, and care-seeking experiences for sexually transmitted infections: a qualitative study from the perspective of public clinic attendees in Rio de Janeiro, Brazil. *BMC Public Health*; 2007, 7:18.
59. Moses S, Ngugi EN, Bradley JE, et al. Health care-seeking behaviour related to the transmission of sexually transmitted diseases in Kenya. *Am J Public Health*; 1994, 84:1891–3.
60. Fonck K, Mwai C, Rakwar J, Kirui P, Ndinya-Achola JO, Temmerman M. Healthcare-seeking behavior and sexual behavior of patients with sexually transmitted diseases in Nairobi, Kenya. *Sex Transm Dis*; 2001 Jul;28(7):367-71.

61. Rizvi N, Luby S. Vaginal discharge: perceptions and health seeking behavior among Nepalese women. *J Pak Med Assoc*; 2004 Dec;54(12):620-4.
62. J J C Lewis, G P Garnett, et al. Patterns of uptake of treatment for self reported sexually transmitted infection symptoms in rural Zimbabwe. *Sex. Transm. Inf*; 2005,81;326-332.
63. Hlengiwe Ndlovu, Nuala McGrath. Self-reported symptoms of Sexually Transmitted Infections and treatment-seeking behaviour in the Microbicides Development Programme (MDP) feasibility study at the Africa Centre, Umkhanyakude district, KwaZulu Natal, South Africa. *hndlovu@africacentre.ac.za*.
64. Lande R. Controlling sexually transmitted diseases. Population Reports, Series L, No 9. Baltimore, MA: Johns Hopkins School of Public Health, Population Information Programme, June 1993.
65. Dallabetta G, Field M L, Laga M, Islam Q.M, STIs: *Global burden and challenges for control, in control of Sexually Transmitted Diseases: A handbook for the design and management of programmes*. Dallabetta G et al. (eds.). AIDSCAP, Family Health International, 2101 Wilson Boulevard, Suite 700, Arlington, Virginia 22201.
66. Adler M, Foster S, Grosskrurth H, et al. Sexual health and health care, sexually transmitted infections. Guidelines for Prevention and Treatment Health and Population Occasional Paper DFID, London.
67. Eng TR and Butler WT, The Hidden Epidemic: Confronting Sexually Transmitted Diseases, Washington, DC: National Academy Press, 1997.
68. Valdiserri RO, Ogden LL, McCray E, 2003. Accomplishments in HIV prevention science: implications for stemming the epidemic. *Nat Med* 9: 881-886.

69. Venis S, et al. Violence against women: a global burden, *Lancet* 2002; 359: 1172.
70. Centers for Disease Control and Prevention (homepage on the Internet). Trends in reportable sexually transmitted diseases in the United States, 2005. Available from: <http://www.cdc.gov/std/stats/trends2005.htm>. [Last accessed on 2007 Feb 19].
71. Source:<http://www.wrongdiagnosis.com/s/stds/intro.htm> ;Access date,21/3/07.
72. Sexually transmitted diseases: policies and principles for prevention and care; WHO/UNAIDS
73. Eng TR, Butler WT, et al. *The hidden epidemic: confronting sexually transmitted diseases*. Washington, DC: National Academy Press; 1997.
74. Chandra, A., and Stephen, E. Impaired fecundity in the United States: 1982–1995. *Family Planning Perspectives* 30(1):34-42, 1998.
75. Holmes, K.; Johnson, D.; and Trostle, H. An estimate of the risk of men acquiring gonorrhea by sexual contact with infected females. *American Journal of Epidemiology* 91:170-174, 1970.
76. Piot P and Rowley J, Economic impact of reproductive tract infections and resources for their control, in: Germain A et al., eds., *Reproductive Tract Infections: Global Impact and Priorities for Women's Reproductive Health*, New York: Plenum Press, 1992, pp. 227–249; and Over M and Piot P, Human immunodeficiency virus infection and other sexually transmitted diseases in developing countries: public health importance and priorities for resource allocation, *Journal of Infectious Diseases*, 1996, 174(Suppl. 2):S162–S175.

77. WHO, 2001, op. cit.; and Cates W, Rolfs RJ and Aral SO, Sexually transmitted diseases, pelvic inflammatory disease, and infertility: an epidemiologic update, *Epidemiologic Reviews*, 1990, 12: 199–221.
78. Leaflets and banners of National AIDS Control Organisation (NACO), India.
79. St. Louis, M.E.; Wasserheit, J.N.; and Gayle, H.D. (Editorial) Janus considers the HIV pandemic-harnessing recent advances to enhance AIDS prevention. *American Journal of Public Health* 87:10-12, 1997.
80. Rothenberg, R., and Potterat, J. Strategies for management of sex partners. In: Holmes, K.; Mardh, P.A.; Sparling, P.; et al.; eds. *Sexually Transmitted Diseases*. 2nd ed. New York, NY: McGraw-Hill, Inc., 1990, 1081-1086.
81. Sherman KJ, Daling JR, Weiss NS. Sexually transmitted diseases and tubal infertility. *Sex Transm Dis*; 1987, 14(1):12-6.
82. Division of STD Prevention, Centers for Disease Control and Prevention. Chlamydia: CDC fact sheet. Available at: <http://www.cdc.gov/std/Chlamydia/STDFact-Chlamydia.htm>. Accessed November 8, 2005.
83. Holmes KK, Counts GW, Beaty HN. Disseminated gonococcal infection. *Ann Intern Med*. 1971;74:979-993.
84. Masi AT, Eisenstein BI. Disseminated gonococcal infection (DGI) and gonococcal arthritis (GCA), II: clinical manifestations, diagnosis, complications, treatment, and prevention. *Semin Arthritis Rheum*. 1981;10:173-197.
85. O'Brien JP, Goldenberg DL, Rice PA. Disseminated gonococcal infection: a prospective analysis of 49 patients and a review of pathophysiology and immune mechanisms. *Medicine (Baltimore)*. 1983;62:395-406.

86. Handsfield HH. Disseminated gonococcal infection. *Clin Obstet Gynecol*. 1975;18: 131-142.
87. Westrom L, Joesoef R, Reynolds G, Hagdu A, Thompson SE. Pelvic inflammatory disease and fertility: a cohort study of 1,844 women with laparoscopically verified disease and 657 control women with normal laparoscopic results. *SexTransm Dis*. 1992;19:185-192.
88. Wong T, Singh A, Mann J, Hansen L, McMahon S. Gender differences in bacterial STIs in Canada. *BMC Womens Health*. 2004;4(suppl 1):S26.
89. *World Health Organization Task Force on the Prevention and Management of Infertility*. Tubal infertility: serologic relationship to past chlamydial and gonococcal infection. *Sex Transm Dis*; 1995 Mar-Apr;22(2):71-7.
90. Roberts RN, Quinn AJ, Thompson W et al. Association of Chlamydia trachomatis with tubal infertility. *Ir J Med Sci*; 1993 Jan, 162(1):24-6.
91. Centers for Disease Control and Prevention. Chlamydia. Available at: [http://www .cdc.gov/std/stats/chlamydia.htm](http://www.cdc.gov/std/stats/chlamydia.htm). Accessed November 11, 2005.
92. Fish, A.; Fairweather, D.; Oriel, J.; et al. *Chlamydia trachomatis* infection in a gynecology clinic population: Identification of high-risk groups and the value of contact tracing. *European Journal of Obstetrics, Gynecology and Reproductive Biology* 31:67-74, 1989.
93. Handsfield, H.; Jasman, L.; Roberts, P.; et al. Criteria for selective screening for *Chlamydia trachomatis* infection in women attending family planning clinics. *Journal of the American Medical Association* 255:1730-1734, 1986.
94. Judson, F. Gonorrhoea. *Medical Clinics of North America* 74:1353-1367, 1990.

95. Stamm, W., and Holmes, K. *Chlamydia trachomatis* infections in the adult. In: Holmes, K.; Mardh, P.A.; Sparling, P.; et al.; eds. *Sexually Transmitted Diseases*. 2nd ed. New York, NY: McGraw-Hill, Inc., 1990, 181-193.
96. Carline E L. Hoekstra, Martiene Riedijk et al. Prevalence of HIV and syphilis in pregnant women in LEÓN, NICARAGUA. *Am. J. Trop. Med. Hyg.*; 75(3), 2006, 522–525.
97. Centers for Disease Control and Prevention. Chlamydia. Available at: <http://www.cdc.gov/std/stats/chlamydia.htm>. Accessed November 11, 2005.
98. Fish, A.; Fairweather, D.; Oriel, J.; et al. *Chlamydia trachomatis* infection in a gynecology clinic population: Identification of high-risk groups and the value of contact tracing. *European Journal of Obstetrics, Gynecology and Reproductive Biology* 31:67-74, 1989.
99. Handsfield, H.; Jasman, L.; Roberts, P.; et al. Criteria for selective screening for *Chlamydia trachomatis* infection in women attending family planning clinics. *Journal of the American Medical Association* 255:1730-1734, 1986.
100. Judson, F. Gonorrhea. *Medical Clinics of North America* 74:1353-1367, 1990.
101. Stamm, W., and Holmes, K. *Chlamydia trachomatis* infections in the adult. In: Holmes, K.; Mardh, P.A.; Sparling, P.; et al.; eds. *Sexually Transmitted Diseases*. 2nd ed. New York, NY: McGraw-Hill, Inc., 1990, 181-193.
102. Carline E L. Hoekstra, Martiene Riedijk et al. Prevalence of HIV and syphilis in pregnant women in LEÓN, NICARAGUA. *Am. J. Trop. Med. Hyg.*; 75(3), 2006, 522–525.

103. World Bank. World Development report: Investing in Health. Washington, 1993.
104. Source:<http://womenshealth.about.com/od/pregnancyrelatedissues/a/stdsprgnancy.htm>
105. Source: 16-06-07, www.who.int/mediacentre/factsheets/fs249/en/
106. Hillier, S.; Nugent, R.; Eschenbach, D.; et al. Association between bacterial vaginosis and preterm delivery of a low-birth-weight infant. *New England Journal of Medicine* 333:1737-1742, 1995.
107. Meis, P.J.; Goldenberg, R.L.; Mercer, G.; et al. The preterm prediction study: Significance of vaginal infections. *American Journal of Obstetrics and Gynecology* 173(4):1231-1235, 1995.
108. Division of STD Prevention, Centers for Disease Control and Prevention. Trichomoniasis: CDC fact sheet. Available at: <http://www.cdc.gov/std/Trichomonas/STDFact-Trichomoniasis.htm>. Accessed November 8, 2005.
109. Schwebke JR, Burgess D. Trichomoniasis. *Clin Microbiol Rev.* 2004;17:794-803.
110. Centers for Disease Control and Prevention. Sexually transmitted diseases treatment guidelines 2002. *MMWR Recomm Rep* 2002;51(RR-6):1-78.
111. National Training module on prevention of other to child transmission of HIV. (National AIDS control organization Ministry of health & family welfare Government of India. New Delhi) 2002.
112. National AIDS Control Organization(NACO), Ministry of health & family welfare, Govt. of India; *Training module on the Surveillance of Sexually Transmitted Diseases.*

113. N O'Farrell. Genital ulcers, stigma, HIV, and STI control in sub-Saharan Africa. *Sex. Transm. Inf.* 2002;78;143-146.
114. World Health Organization. Integrating STI management into family planning services. What are the benefits? WHO/RHR/99.10. Geneva: WHO.
115. R Zachariah, W Nkhoma, et al. Health seeking and sexual behaviour in patients with sexually transmitted infections: the importance of traditional healers in Thyolo, Malawi. *Sex. Transm. Inf.* 2002;78;127-129.
116. Anderson, R. The transmission dynamics of sexually transmitted diseases: The behavior component. In: Wasserheit, H.; Aral, S.; Holmes, K.; et al.; eds. *Research Issues in Human Behavior and Sexually Transmitted Diseases in the AIDS Era*. Washington, DC: American Society for Microbiology, 1991, 38-60.
117. May, R., and Anderson, R. Transmission dynamics of HIV infection. *Nature* 326:137- 142, 1987.
118. Jean-Robert RM. The woman's status and condom use in Cameroon. *Afr J Reprod Health*. 2003;7:74-88.
119. *Contraceptive Technology, 18th edition*, <http://www.stdhivpreventiontraining.org>
120. Sexually Transmitted Diseases Treatment Guidelines, 2006. Division of STD Prevention. Updated CDC. Sexually transmitted diseases treatment guidelines, 2002. MMWR 2002;51(No. RR-6). National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (proposed), kgw2@cdc.gov.
121. Adler M, Foster S, Grosskrurth H, et al. Sexual health and health care, sexually transmitted infections. Guidelines for Prevention and Treatment Health and Population Occasional Paper DFID, London.

122. Nayyar A. Questions and answers on reproductive tract infections and sexually transmitted infections. Population Council, UNFPA.
123. Plummer FA, Simonsen JN, Cameron DW, et al. Cofactors in male female sexual transmission of HIV type I. *J Infect Dis* 1991;163:233–9.
124. De Vincenzi I. European study group on hetero-sexual transmission of HIV a longitudinal study of human immuno-deficiency virus transmission by hetero-sexual partner. *N Engl J Med* 1994;333:41–63.
125. Gaillard P, Mwanyumba F, Verhofstede C, et al. Vaginal lavage with chlorhexidine during labour to reduce mother-to-child HIV transmission: clinical trial in Mombasa, Kenya. *AIDS* 2001;15:389–96.
126. Glasier A, Gülmezoglu AM, Schmid GP, et al. Sexual and reproductive health: a matter of life and death. *Lancet*; 2006, Nov 4;368(9547):1595-607.
127. Global Strategy for the Prevention and Control of sexually transmitted infections: 2006-2015. *World Health Organisation*; 2007.
128. Bhalla S., Lalchandani K., Singh s., Somasundaram c, Bhalla V. 3rd International AIDS Society Conference on HIV Pathogenesis and Treatment, Rio de Janeiro - July 24 - 27, 2005, A Study of prevalence of STDs from a rural village in Gujarat, India among the reproductive age (15-49 years) subjects.
129. HIV/AIDS epidemiological Surveillance & Estimation report for the year 2005, April 2006, National AIDS Control Organization Ministry of Health & Family Welfare Government of India, Page 1 of 11, NACO, HSS – 2005.
130. World Health Organization: *Management of Sexually Transmitted Diseases at District and PHC Levels: South - East Asia Regional Office Publication, No.25, 1997, New Delhi, India.*

131. Nabakumar Th, Kananbala S, Winson Th, Sulochana Kh, Brajachand Ng. Increasing trend of HIV seropositivity among commercial sex workers attending the Voluntary and Confidential Counseling and Testing Centre in Manipur, India; *International Journal of STD & AIDS* 2005; 16: 166-169.
132. Bragachand Singh Ng, Laksimi Devi Y, Lokendro Singh H, Ibungochouba Singh S et al. Incidence of HIV(Human Immunodeficiency Virus) and VDRL reactivity among pregnant women. *Journal of Obstetrics and Gynaecology of India*. 42;5:1992, 576-580.
133. Bragachand Singh Ng, Lokendro Singh H et al. Human Immunodeficiency Virus (HIV) infection among sexually transmitted diseases patients attending RIMS hospital. *Journal of Medical Society*.12; 1998, 4-6.
134. *National AIDS Control Program, State summary report on Sentinel surveillance for HIV infection and VDRL reactivity*, Manipur State AIDS Control Society, 2006.