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Prevalence of HIV and Syphilis in Patients Attending Sexually Transmitted Infections (STI) Clinic in an Urban Slum

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ABSTRACT

Background: People with sexually transmitted infections (STIs) constitute the high-risk group for transmission of HIV. The present study was planned to estimate the prevalence of HIV and syphilis in patients attending STI Clinic and to assess the socio-demographic determinants of the study subjects.

Methods: A cross sectional descriptive study of three-month duration was undertaken from January to March 2011 in STI clinic in an Urban Health Center. Method of sampling was universal sampling i.e. all patients attending the STI Clinic were included as subjects. After obtaining their informed consent subjects were interviewed face to face using pre-tested, semi-structured questionnaire. Questionnaire included information about clinical history, socio-demographic characteristics, and details regarding high-risk behavior and contact history. All subjects were clinically examined for presence of any ulcer or discharge, etc. Participants were subjected to HIV, VDRL and microscopic examination for vaginal discharge. Subjects and partners were managed as per National AIDS Control Organization (NACO) guidelines. Symptoms of subjects were again evaluated after 14 days at the time of follow up visit.

Results: Prevalence of HIV was 8.5% while that of syphilis was 5.9% and that in transgender was 25% and 12.5% respectively with majority in 20-40 yr age group and marital status and education playing significant role. Bacterial vaginitis was the most common infection found in 41(42.3%) subjects. Significant association was observed between number of sexual partners, homosexual and bisexual behavior, as well as sero-positivity for HIV and syphilis (P<0.001).

Conclusion: There is a need of scaling up of efforts for high-risk groups to discourage their high-risk behavior and thus bring down the prevalence of HIV and syphilis amongst them.

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Introduction

In 2009, there were an estimated 2.6 million people who became newly infected with HIV and there are more than 39.5 million people living with HIV worldwide[1]. According to National AIDS Control Organization (NACO), number of people living with HIV in India in 2008 was 2.27 million with an estimated adults HIV prevalence of 0.29%[2].

Sexual transmission is the predominant mode of HIV transmission and is estimated to be the major risk for about 86% of those infected[3]. Acquired Immune Deficiency Syndrome (AIDS) is currently one of the leading causes of death among 15 to 24 years adolescents and young adults. Reducing adolescent sexual risk

behavior has become an international public health priority[4].

The interaction of syphilis and HIV infection is complex and remains the subject of ongoing research[5,6]. Syphilis co-infection with human immunodeficiency virus is emphasized because it affects the initial presentation, disease course, diagnosis, and treatment of syphilis [7]. Syphilis increases the risk of HIV acquisition and transmission, and patients with either sexually transmitted infection (STI) frequently attend the same STI clinics[8].

Studies done to evaluate the impact of early syphilis infection on HIV had shown that syphilis was associated with a decrease in CD4 cell counts and an increase in HIV-RNA levels[9,10,11]. Syphilis can also increase HIV transmission by increasing viral shedding and seminal viral load[12]. However some studies have shown that syphilis leads to transient decrease in CD4 counts and rise in HIV viral loads; nonetheless, the effect of syphilis co-infection on HIV disease progression (time to AIDS or death) is unclear[13].

A high incidence rate of syphilis was observed among STI clinic attendees and this high rate of syphilis among STI patients is contributing to the spread of HIV-1 in India[14].

As it is known that presence of any form of sexually transmitted disease amongst men or women facilitates the occurrence of HIV it was decided that HIV testing services should be integrated with other routine clinical care services. Integration of HIV testing into routine clinical care has proven useful for expanding provider-initiated testing and counseling in a number of clinical settings[15]. In South China, STI clinic-based screening for syphilis and HIV represents an excellent opportunity for scaling up integrated services where syphilis and sexually transmitted HIV cases are both rapidly increasing[16]. Recommendations for treatment of syphilis remain the same for patients with and without HIV[17]. Genital ulcerative disease appears to have a greater impact than non-ulcerative disease on occurrence of HIV epidemics. There is evidence that STDs increase the risk of HIV in men, however such evidence is equivocal for women[18].

The present study was planned to estimate the prevalence of HIV and syphilis in patients attending STI Clinic and to assess the socio-demographic determinants of the study subjects.

Methods

A cross sectional descriptive study of three month duration was undertaken from January to March 2011 in STI clinic in an Urban Health Center. Method of sampling was universal sampling i.e. all patients attending the STI Clinic except pregnant females were included in the study.

After obtaining their informed consent subjects were interviewed face to face using pre-tested, semi-structured questionnaire. Questionnaire included socio-demographic characteristics, details regarding high-risk behavior (sexual and drug use behaviors), contact history, occupation and other risk factors and history of prior treatments for syphilis. In addition, their detailed clinical history was obtained regarding their complaints. Utmost care was taken to maintain their privacy and confidentiality.

Trans-genders were operationally defined as a state of one's "gender identity (self-identification as woman, man, neither or both) not matching ones "assigned sex" (identification by others as male, female, or intersex based on physical/genetic sex).

All the subjects were clinically examined for presence of any ulcer, urethral/ cervical/ vaginal discharge, etc. All the subjects were then referred to Integrated Counseling and Testing Centre (ICTC) for HIV testing. HIV testing was voluntarily offered and

those subjects opting for HIV testing were given pretest and posttest counseling. Study participants were subjected to blood tests for HIV and syphilis antibodies. The presence of HIV-1 antibody was tested for through ELISA. Positive tests were confirmed by HIV-1/2 Western blot assay.

Venereal Diseases Research Laboratory (VDRL) test was done for diagnosis of syphilis among all study participants. Simultaneously microscopic examination in the form of Gram stain and KOH (Potassium hydroxide) mount was done for cervical and vaginal discharge.

All subjects were managed symptomatically as per NACO guidelines using Syndromic management kits[19,20]. Partner management with grey kit was also done irrespective of presence of partner at the time of visit to STI clinic.

Symptoms were again evaluated after 14 days of Syndromic management kit. To check for their treatment compliance, study participants were asked to bring back the empty blister packets at the time of follow up. Their blood samples were analyzed to estimate the prevalence of HIV and syphilis in the study subjects.

Permission from the Institutional Ethics Committee was taken prior to the start of the study. SPSS software version 16 was used for the statistical analysis. Chi-square test at significance level of 0.05 was used for testing the association between socio-demographic parameters and presence of HIV & syphilis.

Results

Table 1 shows the prevalence of HIV and syphilis in the STI clinic. Overall, out of the 188 clients during the study period the prevalence of HIV and syphilis was 8.5 and 5.9 respectively. HIV-syphilis co-infection was found in 2.7% subjects.

Table 2 shows the distribution of subjects according to their socio-demographic parameters. Majority of the subjects aged from 20-40 years of which 8.6% and 5.8% had HIV and syphilis respectively. Marital status was found to have a significant correlation with HIV and syphilis infections respectively ($P<0.001$). Non-educated and low educated subjects were at higher risk of HIV infection.

Table 3 shows that majority of the subjects (97/188) had vaginal - cervical discharge. 12.5% subjects who were co-infected had urethral discharge, and 20.2% subjects were asymptomatic. These subjects were referred from ICTC to STI clinic in view of history of high-risk behavior.

Table 4 shows that bacterial vaginitis was the most common infection found in 41subjects of which 73.2% relieved from symptoms after 14 days follow up with syndrome management kits.

Table 5 reveals that 70.7% of the subjects had multiple sexual partners. Among subjects in homosexual relation, 19.4%, 13.9% and 8.3% of had HIV, syphilis, and HIV-syphilis co-infection respectively.

Table 1: Prevalence of HIV and syphilis in study subjects

Category	HIV^+ N (%)	$VDRL^+$ N (%)	HIV^+ & $VDRL^+$ N (%)	HIV^- & $VDRL^-$ N (%)	Total
High risk groups (Transgender)	10 (25.0)	5 (12.5)	1 (2.5)	24 (60.0)	40
Low risk groups	6 (4.1)	6 (4.1)	4 (2.7)	132 (89.2)	148
All study subjects	16 (8.5)	11 (5.9)	5 (2.7)	156 (83.0)	188

Table 2: Distribution of subjects with HIV and syphilis according to socio-demographic parameters

Socio-demographic parameters	HIV$^+$ N (%)	VDRL$^+$ N (%)	HIV$^+$ & VDRL$^+$ N (%)	HIV$^-$ & VDRL$^-$ N (%)	*P* value[a]
Age group (yr)					0.052
<20	0 (0.0)	0 (0.0)	0 (0.0)	19 (100.0)	
20-40	12 (8.6)	8 (5.8)	4 (2.9)	115 (82.7)	
>40	4 (13.3)	3 (10)	1 (3.3)	22 (73.3)	
Sex					<0.001
Male	2 (5.0)	4 (10.0)	3 (7.5)	31 (77.5)	
Female	4 (3.7)	2 (1.9)	1 (0.9)	101 (93.5)	
Transgender	10 (25.0)	5 (12.5)	1 (2.5)	24 (60.0)	
Marital status					<0.001
Married	4 (2.9)	5 (3.6)	2 (1.5)	126 (92.0)	
Single	12 (23.5)	6 (11.8)	3 (5.9)	30 (58.8)	
Education level					<0.001
Illiterate	5 (11.6)	3 (7.0)	0 (0.0)	35 (81.4)	
Primary school	6 (18.8)	5 (15.6)	2 (6.2)	19 (59.4)	
Secondary school	2 (4.1)	2 (4.1)	2 (4.1)	43 (87.7)	
High school & above	3 (4.6)	1 (1.6)	1 (1.6)	59 (92.2)	
Socio-economic class					0.103
Lower	5 (5.5)	3 (3.3)	2 (2.2)	81 (89.0)	
Middle	10 (11.4)	7 (8.0)	3 (3.4)	68 (77.2)	
Upper	1 (11.1)	1 (11.1)	0 (0.0)	7 (77.8)	
Religion					0.413
Hindu	7 (8.9)	5 (6.3)	2 (2.5)	65 (82.3)	
Muslim	9 (8.3)	6 (5.5)	3 (2.8)	91 (83.5)	
Occupation					0.001
Employed	6 (5.5)	4 (3.7)	1 (0.9)	98 (89.9)	
Unemployed	10 (12.6)	7 (8.9)	4 (5.1)	58 (73.4)	

[a] For calculating chi square test, HIV positive, VDRL positive and co-infected were combined together and then compared with those who tested negative

Table 3: Distribution of subjects according to clinical illness

Clinical illness	HIV$^+$ N (%)	VDRL$^+$ N (%)	HIV$^+$ & VDRL$^+$ N (%)	HIV$^-$ & VDRL$^-$ N (%)	Total
Vaginal/Cervical discharge	4 (4.1)	2 (2.1)	1 (1.0)	90 (92.8)	97
Urethral discharge	6 (25.0)	4 (16.7)	3 (12.5)	11 (45.8)	24
Genital ulcer disease	2 (8.0)	1 (4.0)	1 (4.0)	21 (84.0)	25
Inguinal bubo	1 (25.0)	1 (25.0)	0 (0.0)	2 (50.0)	4
Asymptomatic	3 (7.9)	3 (7.9)	0 (0.0)	32 (84.2)	38
Total	16 (8.5)	11 (5.8)	5 (2.7)	156 (83.0)	188

Table 4: Distribution of cervical /vaginal discharge according to the findings of microscopic examination and the results of 14 days follow-up

Microscopic examination	Initially	After 14 days follow up	
		Symptoms relieved N (%)	Symptoms not relieved N (%)
Bacterial vaginitis	41	30 (73.2)	11 (26.8)
Candidiasis	15	10 (66.7)	5 (33.3)
Trichomonas vaginalis	22	18 (81.8)	4 (18.2)
Gonococci	6	4 (66.7)	2 (33.3)
Mixed	10	5 (50.0)	5 (50.0)
No organism detected	3	0 (0.0)	3 (100.0)
Total	97	67 (71.3)	30 (28.7)

Table 5: Sexual risk behavior among study participants

Sexual risk behavior	HIV^+ N (%)	$VDRL^+$ N (%)	HIV^+ & $VDRL^+$ N (%)	HIV^- & $VDRL^-$ N (%)	Total	*P* value[a]
No. of partners						<0.001
Single	6 (5.3)	3 (2.7)	1 (0.8)	103 (91.2)	113	
Multiple	10 (13.3)	8 (10.7)	4 (5.3)	53 (70.7)	75	
Sexual behavior						<0.001
Heterosexual	4 (3.8)	2 (1.9)	1 (0.9)	97 (93.3)	104	
Homosexual	7 (19.4)	5 (13.9)	3 (8.3)	21 (5.8)	36	
Bisexual	5 (10.4)	4 (8.3)	1 (2.1)	38 (79.2)	48	

[a] For calculating chi square test, HIV positive, VDRL positive and co-infected were combined together and then compared with those who tested negative

Discussion

The prevalence of HIV and syphilis in the present study was 8.5% and 5.9% which is similar to a study done in a remote native community of the Peruvian Amazon, where the prevalence was 7.5% (6 of 80) and 6.3% (5 of 80) respectively[21]. In a study done in southern Orissa among STI clinic attendees it was observed that 4% were HIV positive and 4.1% were VDRL positive[22]. In Mumbai, HIV seropositivity amongst the Voluntary Counseling and Testing Center (VCTC) attendees was 15.6%[23]. The prevalence of trans-gender in the study was high since they were residing near the health center and were working there as commercial sex workers. In addition, the outreach workers of the health center had created awareness regarding regular clinical check-up at the health center especially for the trans-gender population. In the current study, the probable reason for higher percentage of HIV cases was probably that a considerable number of participants were trans-genders who were indulged in high-risk behaviors.

In our study, HIV-syphilis co-infection was found in 5(2.7%) subjects whereas in an Israeli HIV clinic it was observed that in 1060 HIV infected clients, 150(14.1%) were co-infected with syphilis[24]. In a similar study in Rio de Janeiro, the prevalence of syphilis was 2.7%[25].

Marital status and employment status had a significant association with having HIV and syphilis. The reasons why unmarried subjects were having more chances of HIV and syphilis are exposure to multiple sexual partners, unprotected sexual intercourse, and drug abuse. The main reason why education status has been observed as a significant association with HIV/syphilis is the lack of knowledge among the uneducated regarding safe sexual practices. In Rio de Janeiro, no association was found be-

tween co-infection and age, education and the laboratory parameters tested[25]. In Argentina, the prevalence of HIV, syphilis and HIV/syphilis co-infection was significantly ($P < 0.001$) higher in men than in women (HIV: 20.1% vs. 4.6%; syphilis: 39.3% vs. 17.4%; co-infection: 13.6% vs. 1.7% respectively)[26]. The main reason why prevalence of HIV and syphilis was lower among females is that most of them were homemakers as compared to males who were indulged in outdoor activities in the form of their occupation thus having greater chances of high-risk behavior.

In our study, majority of the subjects had vaginal - cervical discharge as the most common symptom. Six (37.5%) of the sero-positive subjects had urethral discharge as the most common complaint. Similarly, in South Orissa, HIV sero-positivity was seen mostly in persons presenting with the symptoms like urethral or cervical discharge and genital ulcer[22].

In the current study on gram stain and KOH mount, bacterial vaginitis was the most common infection found in 41(42.3%) subjects. However, another study conducted in reproductive health clinic in India again showed bacterial vaginitis (26%) as the most common infection[27].

In our study, 67(71.3%) women with vaginal/cervical discharge had symptomatic relief with syndromic management kit. However, in a study done in Pakistan symptomatic relief was observed only in 56% of the patients[28]. In Mumbai, symptomatic relief was present in 88% of the women after 14 days[29]. Not checking for treatment compliance in their study could be the probable reason for lesser symptomatic relief in the study done in Pakistan.

In our study out of the 36 subjects in homosexual relationship, seven (19.4%) subjects were HIV positive. In Mumbai, HIV prevalence among men having sex with men (MSM) was 12.5%[30]. In both the studies, prevalence of HIV among homosexuals was found to be greater than that in general population because they were indulged in high-risk sexual practices and had poor treatment seeking behavior.

The study had the limitations in the form that history of high-risk behavior could not be elicited, as the patients were reluctant. Contact tracing was not done rather only presumptive (grey) kits were given to patients for their contacts treatment. VDRL is a screening test but not a diagnostic test. This issue may raise the probability of measurement bias.

Based on the study findings of greater prevalence of HIV and syphilis among transgenders, single/unmarried, male gender, there is a need of scaling up of interventions in high risk groups to discourage their high-risk behavior and thus bring down the prevalence of HIV and syphilis amongst them. Regular HIV testing and better treatment seeking behavior among such individuals should be encouraged.

Conclusion

STI clinic-based screening for syphilis and HIV represents an excellent opportunity for scaling up integrated services, especially in Mumbai where syphilis and sexually transmitted HIV cases are both rapidly increasing. Simultaneously there is a need of scaling up of efforts for transgender population and MSM. In addition, there is alarmingly high prevalence of HIV infection in MSM population as compared to general population in India. High rate of sexually transmitted diseases in them carries greater risk of acquiring HIV infection. Thus, timely intervention is required to control and prevent transmission of HIV and STI in this marginalized population in India. There is a need for greater efforts to reach the groups at greatest risk, as we cannot allow the health of a new generation of people to be lost to essentially preventable diseases.

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Conflict of interest statement

There was no conflict of interest to be stated.

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