ORIGINAL ARTICLE

Prevalence of Sexually Transmitted Infections and its Associated factors among women living with HIV/AIDS

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Abstract

Background: Sexually transmitted infections (STIs) are significant public health problem in India. Studies have shown a considerably higher prevalence of STIs among females as well as in high-risk groups. Thus, we conducted this study to estimate the prevalence of STIs and to find out its associated factors among women living with HIV/AIDS. **Material & Methods**: A cross-sectional study was conducted at the ART centre, Aligarh. A total of 170 HIV positive women were approached with study tools comprising of pre-structured proforma. NACO STIs Syndromes were used to estimate STIs. Data was analyzed using the SPSS version 20.0, keeping significance at $p<0.05$. **Results**: We found the self-reported prevalence of STIs in HIV positive women to be 18.2% (31/170) at the time of interview and 49.4% (84/170) ever since the diagnosis of HIV. Most of the HIV women were presently having vaginal/cervical or urethral discharge syndrome (93.5%) and genital ulcer syndrome (16.1%). STIs were significantly associated with uneducated females and with irregular use of condoms**. Conclusion**: This study found the prevalence of STIs to be still higher among HIV positive women, in spite of years of targeted interventions reducing it. A proper action and further researches are required to explore and manage variables associating STIs for reducing its prevalence

Keywords

STIs/RTIs; Syndromic approach; STD; HIV; AIDS patients; Women; PLHA

Introduction

With an estimated annual 357 million new cases of curable cases, and with a prevalence of over 700 million viral cases, sexually transmitted infections (STIs) pose a major health problem, especially in developing countries, causing an adverse impact on reproductive health. (1) World Health Organization (WHO) now recommends the management of STIs be made a global priority. (1) India accounts for 30-35 million new cases occurring annually. (2) Although community-based surveys by Indian Council of Medical Research have shown STIs and RTIs to be prevalent in about 6% of adult Indians, (3) many

studies have documented the prevalence of these infections ranging from 6% to 61% with a considerably greater occurrence among high-risk groups. (4,5,6,7).

Both men and women are affected by STIs/RTIs, but the larger vaginal surface in women makes them more vulnerable as reflected in the national survey. (3) This higher prevalence in women is further augmented by various factors like lower awareness and ignorance regarding sexual and reproductive health, reluctance to discuss the gynaecological problems with others, fear of internal check–up, as well as other social factors like lower female literacy, cultural factors, and taboos. (8) In fact, STIs and RTIs rank second most common cause of healthy life lost next to maternal morbidity and mortality among females of reproductive age group. (9) Not only the susceptibility is high but their magnitudes are far more widespread and devastating among women with complications like infertility, pelvic inflammatory disease (PID), ectopic pregnancy, congenital abnormalities, cervical cancer, menstrual irregularities and even maternal death. (1,8)

STIs and HIV/AIDS are the partners in crime. These two diseases not only co-exist but also make patient more vulnerable to acquiring the other. Studies have shown that if someone has HIV, and a subsequent STD infection, they put their partner at an increased risk for getting HIV. (10) Thus understanding the patterns of STIs prevailing in HIV seropositive population in the regions of low prevalence of HIV may help in proper planning of STIs control strategies. This research was also required as there is a scarcity of STIs prevalence studies among PLHA women, especially in the Indian subcontinent.

Aims & Objectives

To estimate the prevalence and the pattern of STIs and to find out its associated factors among women living with HIV/AIDS

Material & Methods

Study design and setting: A cross-sectional study was conducted over a period of 12 months duration from July 2015 to June 2016 at the ART centre, Aligarh city, India. Aligarh district being a part of North India, has a lower prevalence of HIV/AIDS than the rest of India. (11) Most of the residents living in rural area predominantly engage in agriculture, while a large share of the urban population of Aligarh city indulges in lock and metal polishing industries. Incidentally, Aligarh is also an educational hub with acculturation of various populations, not only from the different states but also from multiple nations.

Study Population: We aim to study HIV positive women presenting to the ART centre, Aligarh. All the adult HIV women (18 years and above) registered at this ART centre for more than 6 months were eligible for the study. The exclusion criteria were: pregnant, patients suffering from any acute medical condition or any psychiatric condition in which patient could not give a valid consent. Taking the prevalence from ICMR multicentre rapid assessment survey (RAS) at 12% among female clients, (3) and allowable error as 5%, the sample size was calculated by n=4pq/l2 as 169 and we concluded to finally sample 170 females.

Study instruments: A predesigned, pre-structured questionnaire was administered in the local language to all the selected women, which studied their demographic, social profiles and clinical characteristic. For estimating STIs, we used National AIDS Control Organization (NACO) STIs Syndromes, (2) which included:

- Urethral Discharge Syndrome (UD), Vaginal Discharge & Cervical Discharge Syndrome (VCD)
- Painful Scrotal Swelling Syndrome & Inguinal Bubo Syndrome
- Genital Ulcer Disease Syndrome - (Non-herpetic and Herpetic)
- Lower Abdominal Pain Syndrome (LAP)
- Oral and/or Anal STIs
- Genital Scabies

Data Management and Statistics: Statistical analysis was performed using Statistical Package for Social Sciences (SPSS) Version 20. (12) The categorical variables were represented by percentage (%) along with 95% confidence interval. The statistical significance was first tested by bivariate logistic regression analysis and all those variables, which were significant ($p<0.05$), were further analyzed after adjustments with the other significant factors using multiple logistic regression, using 'enter' method.

Ethics: The Institutional Ethics and Research Advisory Committee, JN Medical College, AMU, Aligarh approved the study. An informed consent was obtained from each participant, prior to the study. The participants were ensured about the privacy and confidentiality of the exercise. We use unique identification number for each participant to maintain confidentiality. Appropriate health

education, counselling, and referral were provided to all the patients.

Results

Socio-demographic and clinical characteristics

Out of the total 170 females we studied, most of them were in the 31 – 40 years age group, with the mean age being 36.5 +9.1 years (ranging from 18 to 70 years). About 73% of females were living in a rural area, with a majority of them being Hindu. About two-thirds of the women were currently married, one-third widowed, while a tiny proportion was separated or divorced. However, the literacy rate among the study population was 46.5%, while 62% were employed and one third were housewives. Most of the study population belonged to lower socioeconomic status. Of those who were having active sexual relations, only 74.1% gave the history of using condoms, with about half of them putting it in regular and consistent use. In regard to the sero-positivity status of their husbands among those who were tested, 62.6% of them were positive. Among the clinical profile, a majority were asymptomatic with mean CD4 cell count being 420.7 ±183.7 per mm3 (Table 1).

Prevalence, pattern and associated factors

We found the self-reported prevalence of STIs in HIV positive women to be 18.2% (31/170) at the time of interview and 49.4% (84/170) ever since the diagnosis of HIV. Among the patients who were having STIs, Vaginal/Cervical Discharge syndrome (90.3%) was the most common STIs syndrome, followed by genital scabies in 45.2% and genital ulcer disease in 16.1% (Figure.1) & (Figure. 2)

We used logistic regression to understand the role of various socioeconomic, demographic and clinical factors affecting the presence of STIs syndrome. First, we conducted bivariate analysis and found age group between 18-45 years (OR 7.91; CI 1.04 – 60.46), married females (OR 2.81; CI 1.08 – 7.29), illiteracy (OR 3.68; CI 1.49 – 9.11), low CD4 count (OR 3.629; CI 1.07 – 12.35) and irregular usage of condom (OR 6.875; CI 1.67 –28.26) to be significantly associated with presence of STIs. All these factors were further analyzed by multivariate analysis to reduce confounding. In the final model, current presence of STIs was found to be significantly and independently associated with illiterate females (OR 11.17; CI 1.74 – 71.65) and inconsistent use of condoms (OR 11.43; CI 1.94 – 67.33) in comparison to literate and those who use it regularly, respectively (Table 2).

Discussion

With this study we tried to ascertain two things; the estimates of STIs prevalent in females with HIV/AIDS and the factors associated with it. The prevalence of STIs in HIV positive women to be 18.2% at the time of interview and 49.4% ever since the diagnosis of HIV and this STIs was significantly associated with uneducated females and irregular use of condoms.

The prevalence of STIs we found in our study was found to be similar to other studies from India. (13,14,15,16,17) However this prevalence is on higher side than the findings of community based STIs/RTIs study by Indian Council of Medical Research. (2) Contrary to our study, various studies among sero-negative population have reported a wide range of prevalence of STIs ranging from 4.8% to 60%. (6,18) These wide-ranging findings may attribute to the differences in assessing instruments, different population, and methodologies. While most of the studies from India investigating prevalence of STIs, are conducted in clinical settings, either dermatological OPD or STD dedicated clinic, would be biased toward higher prevalence in their findings.

Assessing STIs clinically by syndromic approach is challenging task, more so among Indian women who feel ashamed of mentioning it. Women may be reluctant to talk about the problem and deny their symptoms, while some may not report them due to lack of knowledge considering their symptoms to be a normal occurrence. Never the less, syndromic approach with its proven efficacy and greater applicability, was observe to be an excellent tool to assess STIs among HIV positive women in our study.

Along with presence of STIs, various symptoms we probed, had an interesting picture among HIV sero-positive women. The most common syndrome in our study population was Vaginal/Cervical Discharge syndrome (VCD) followed by Genital scabies and lower abdomen pain syndrome. Our study finding is cohesive with previous studies where vaginal discharge is reported to be most common STIs symptom among females with as well as without HIV. (6,14,19,20,21). The Genital scabies – the second most common in our study – has been reported most common by a previous study done in Aligarh. (22) The said study was an out-patient department statistic-based study, done in

dermatological OPD, not taking into account the women with vaginal discharge, who visited gynecological OPD, leading to it not being most common syndrome. To the best of our knowledge, this study is the first study that studied the scabies infection which is recently adopted by NACO as one of STIs, among HIV sero-positive patients from Southeast Asia. Among the patients who have STIs, 16.1% reported having genital ulcer disease. This is comparable to finding of studies from Punjab and Gujarat who reported having GUD among STIs HIV co-infected women as 16% and 21% respectively (19,20), while study from Aligarh also had similar findings in sero-negative women. (22)

A majority of the females with STIs were in the age-group of 18-45 years. This is the sexually active group which has increased susceptibility to STIs. This finding is cohesive with earlier studies. (6,22,23) While females of reproductive age group were significantly associated with presence of STIs in bivariate analysis, it became non-significant on multivariate analysis. Most of the previous studies in India have done solitary either on urban or in rural settings, unable to compare the influence of residence, STIs in our study population were evenly distributed in both rural and urban HIV females which is similar to previous studies. (24,25) While married women had higher odds of having STIs in bivariate analysis, it became non-significant in multivariate. Inconsistent findings have been reported in previous studies in regard to association of marital status and presence of STIs, (24,26) while we were unable to find any such relation. Illiterate women were found to be 11 times more chance of having STIs in comparison to literates. Lack of education translates to lack of knowledge, leading to poor genital and menstrual hygiene. Moreover, lack of education not only makes a person ignorant about the disease transition but also about its management with low health seeking behavior, (26,27) leading to its higher prevalence among illiterates. Previous studies have also reported similar findings. (17,26)

Interestingly, regarding family planning methods, consistent use of condoms was lacking in our study population, which could be one of the reasons for the higher prevalence of STIs among them. In fact, irregular use of condom was found to be a risk factor of developing STIs among HIV positive women in our study. Earlier reports are varying with our finding. Although Bhilwar et al reported higher odds of having RTI among those who do not use condom but did not independently predicted STIs, (28) while Shukla et al in their study among Female sex workers found not using condom to be one of the predictor of STIs. (4) They also discussed the issue of not using condom with regular partner as they are perceived as “safe”. Our findings duplicate these facts that regular and consistent use of condom can prevents STIs. (29). Although condom use as a method of family planning seems to have increased, it is a matter of concern that regular and consistence condom use may not have improved. (5,30) These findings endeavor us towards a holistic approach for condom promotion, not only with irregular partner and to prevent unwanted pregnancy, but as a means for preventing RTIs even with regular partners and spouses. The stress is toward both, correct and consistence use of them in preventing the STIs. (29)

We had some limitation. The choice of study centre was based on convenience. As this was a centre based study, finding may not replicate a prevalence in a community. Due to stigma among PLHA, leave alone stigma with STIs, conducting this study in a community would be difficult and might yield bias. Furthermore, most of the HIV patients in India are registered at these ART centre. To increase the specificity, we could also have collected the specimen from the patients and confirm our finding but with an invasive methodology, response rate would be much lower, biasing away results from actual prevalence in the study population. With the syndromic approach having a reasonable sensitivity and good acceptability (31) we might have unveiled the true picture in our population. Former studies based on syndromic approach for assessment of STIs, used prior classification of STIs. As far as we know, this is the first study which uses latest STIs classification including genital scabies as one of STIs, which even was second most common syndrome in our study.

Conclusion

Overall, this study revealed a moderately high prevalence of STIs among HIV positive women, which is a point of concern because it may be facilitating the transmission of HIV. Inspite of years of targeted interventions program running at reducing the risk of acquiring STIs, our study findings raise concerns. Not only the prevalence of STIs among HIV positive women are on higher side, but a large proportion were found to be not using a condom. Two

important predictor of sexually transmitted infection in our population was illiteracy and not using a condom. Both can be easily countered by increasing the health education among females regarding the sexual and personal hygiene and for correct and consistent use of condom, not just as a contraceptive but also to prevent STIs, even by married couples.

Our study finding is a reminder that NACO should adopt a strategic plan toward the goal of ending the sexually transmitted infection by installing regular health education and STIs prevention counseling and regular STD screening and treatment by syndromic approach as an important component of HIV and STIs prevention

Recommendation

Providing better health education to female living with HIV/AIDS regarding sexual and personal hygiene and for correct and consistent use of condom would decrease the prevalence of STI among them.

Relevance of the study

Prevalence of STI among female living with HIV/AIDS is still higher than general population, which can be reduced by regular STD screening and health education.

Authors Contribution

YA: Concepts Design, Literature search, Data acquisition, Data analysis, Manuscript preparation, editing and review. NK: Concepts Design, Literature search, Data analysis, Manuscript preparation, editing and review. AA: Concepts Design, Manuscript editing and review. U.: Data analysis, Manuscript preparation, editing and review.

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Tables

TABLE 1 SOCIO-DEMOGRAPHIC PROFILES OF STUDY POPULATION

Pattern of Depression		Frequency	Percentage	95% CI
Age	18-30	52	30.6	24.1 – 37.9
	31-40	70	41.2	34.1 – 48.7
	41-50	33	19.4	14.2 – 26.0
	51 and above	15	8.8	5.4 – 14.0
Residence	Rural	124	72.9	65.8 – 79.1
	Urban	46	27.1	20.9 – 34.2
Religion	Hindu	153	90.0	84.6 – 93.7
	Others	17	10.0	6.3 – 15.4
Marital Status	Married	108	63.5	56.1 – 70.4
	Separated	3	1.8	0.06 – 5.1
	Divorced	5	2.9	1.3 – 6.7
	Widowed	54	31.8	25.2 – 39.1
Education	Illiterate	91	53.5	46.0 – 60.9
	Primary	43	25.3	19.4 – 32.3
	Secondary	26	15.3	10.7 – 21.5
	Graduation and above	10	5.9	3.2 – 10.5
Occupation	Unemployed	5	2.9	1.3 – 6.7
	Housewife	60	35.3	28.5 – 42.7
	Employed	105	61.8	54.3 – 68.7
Socio-economic class*	I	9	5.3	2.8 – 9.6
	II	7	4.1	2.0 – 8.3

	III	26	15.3	10.7 – 21.5
	IV	67	39.4	32.4 – 46.9
	V	61	35.9	29.1 – 43.3
Family	Nuclear	108	63.5	56.1 – 70.4
	Joint	62	36.5	29.6 – 43.9
Spouse status†	Sero positive	67	39.4	32.4 – 46.9
	Sero negative	40	23.5	17.8 – 30.5
	Unknown	63	37.1	30.2 – 44.5
Condom use‡	Consistent	33	40.7	30.7 – 51.6
	Inconsistent	27	33.3	24.0 – 44.1
	Never	21	25.9	17.6 – 36.4
WHO stage	Asymptomatic (I)	116	68.2	60.9 – 74.8
	Symptomatic (II/III/IV)	54	31.8	25.2 – 39.1
CD4 counts§	<200	12	7.3	4.2 – 12.4
	≥200	152	92.7	87.6 – 95.8

** Mod BG Prasad; †Among those who were tested; ‡Among those who were eligible; §Among those who's resent CD4 cell count was available*

TABLE 2 ASSOCIATIONS OF VARIOUS FACTORS WITH PATIENTS SUFFERING FROM STIS SYNDROME

Variables		STIs Syndrome		Bivariate	Multivariate	
		Present	Absent	OR (95% CI)	OR (95% CI)	p value
Age (in years)	18-45	30	110	7.91 (1.04 – 60.46)	1.58 (0.84 – 29.4)	0.76
	≥45	1	29	Ref		
Residence	Rural	24	100	1.34 (0.53 – 3.36)		
	Urban	7	39	Ref		
Religion	Hindu	27	126	0.70 (0.21 – 2.30)		
	Others	4	13	Ref		
Martial Status	Married	25	83	2.81 (1.08 – 7.29)	3.108 (0.55 – 17.50)	0.20
	Currently Unmarried	6	56	Ref		
Literacy	Illiterate	24	67	3.68 (1.49 – 9.11)	11.17 (1.74 – 71.65)	0.01
	Literate	7	72	Ref		
Employment	Unemployed	21	89	1.18 (0.52 – 2.70)		
	Employed	10	50	Ref		
Socioeconomic status*	I, II & II	5	37	0.53 (0.19 – 1.48)		
	IV &V	26	102	Ref		
WHO staging	I (Asymptomatic)	18	98	0.58 (0.26 – 1.29)		
	II, III & IV	13	41	Ref		
CD4 cells count†	<200	5	7	3.63 (1.07 – 12.35)	0.76 (0.05 – 10.53)	0.84
	≥200	25	127	Ref		
Spouse status‡	HIV +ive	11	56	0.79 (0.27 – 2.16)		
	HIV -ive	8	32	Ref		
Condom Use§	Inconsistent	11	16	6.86 (1.67 –28.26)	11.43 (1.94 – 67.33)	<0.01
	Consistent	3	30	Ref		

** Mod BG Prasad; †Among those who's resent CD4 cell count was available; ‡Among those who were tested §Among those who were eligible*

Figures

FIGURE 1 PREVALENCE OF STIS SYNDROMES IN HIV/AIDS PATIENTS

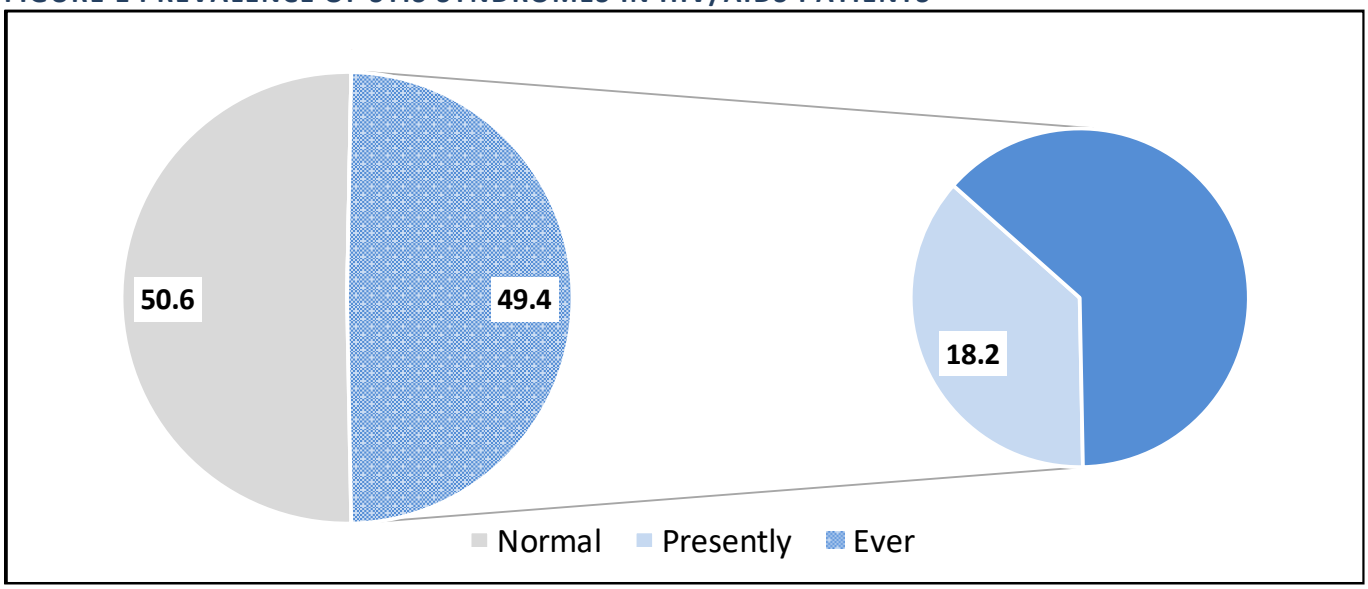

FIGURE 2 PERCENTAGE DISTRIBUTION OF VARIOUS TYPES OF SYNDROMES AMOUNG STIS PATIENTS