Original Article

Predictors of unsafe sexual behavior among people living with human immunodeficiency virus/AIDS attending antiretroviral therapy center in Western India

Kedar G. Mehta, Rajendra Baxi[1], Parag Chavda, Sangita Patel[1], Vihang Mazumdar[1]
Department of Community Medicine, GMERS Medical College, Gotri, Vadodara, [1]Department of Preventive and Social Medicine, Baroda Medical College, Vadodara, Gujarat, India

Address for correspondence:
Dr. Kedar G. Mehta, Assistant Professor, Department of Community Medicine, GMERS Medical College, 1st Floor, College Building, Gotri, Vadodara, Gujarat, India. E-mail: kedar_mehta20@yahoo.co.in

Abstract

Background: As more and more people with human immunodeficiency virus (HIV) live longer and healthier lives because of antiretroviral therapy (ART), an increasing number of sexual transmissions of HIV may arise from these people living with HIV/AIDS (PLWHA). Hence, this study is conducted to assess the predictors of unsafe sexual behavior among PLWHA on ART in Western India. **Materials and Methods:** The current cross-sectional study was carried out among 175 PLWHAs attending ART center of a Tertiary Care Hospital in Western India. Unsafe sex was defined as inconsistent and/or incorrect condom use. A total of 39 variables from four domains viz., sociodemographic, relationship-related, medical and psycho-social factors were studied for their relationship to unsafe sexual behavior. The variables found to be significantly associated with unsafe sex practices in bivariate analysis were explored by multivariate analysis using multiple logistic regression in SPSS 17.0 version. **Results:** Fifty-eight percentage of PLWHAs were practicing unsafe sex. 15 out of total 39 variables showed significant association in bivariate analysis. Finally, 11 of them showed significant association in multivariate analysis. Young age group, illiteracy, lack of counseling, misbeliefs about condom use, nondisclosure to spouse and lack of partner communication were the major factors found to be independently associated with unsafe sex in multivariate analysis. **Conclusion:** Appropriate interventions like need-based counseling are required to address risk factors associated with unsafe sex.

Key words: India, people living with human immunodeficiency virus/AIDS, predictors, sexual behavior

INTRODUCTION

Human immunodeficiency virus (HIV) affects a total of 34 million (31–36 million) people globally.[1] India has the third largest number of HIV cases in the world (after Africa and Nigeria), with an estimated 23.9 lakh infected individuals. Based on HIV sentinel surveillance, it is estimated that India has an adult HIV prevalence of 0.31%.[2] The most common mode of HIV transmission is through unprotected sex with an infected person, which contributes about 87.4% route of HIV transmission.[3]

Until recently, the focus of HIV prevention effort worldwide was largely on people uninfected with

Access this article online

Quick Response Code:

Website: www.ijstd.org

DOI: 10.4103/0253-7184.176220

How to cite this article: Mehta KG, Baxi R, Chavda P, Patel S, Mazumdar V. Predictors of unsafe sexual behavior among people living with human immunodeficiency virus/AIDS attending antiretroviral therapy center in Western India. Indian J Sex Transm Dis 2016;37:21-7.

HIV and for a long time, the sexual behavior of HIV-infected persons did not receive any serious attention for a variety of reasons. Earlier, diagnosis of HIV-infection appeared to imply a death sentence. In this context, the sex life of those infected seemed a secondary issue making prevention focused on sexual behavior hard to imagine. Although many HIV-infected individuals avoid risky behaviors, still substantial numbers of HIV-infected persons, continue to engage in HIV transmission risk behaviors.[4] This can also lead them to acquire re-infection by resistant strains of HIV or acquiring other sexually transmitted infections (STIs) which hastens AIDS progression.[5] Furthermore, as more and more people with HIV live longer and healthier lives because of antiretroviral therapy (ART), an increasing number of sexual transmissions of HIV may arise from these people living with HIV/AIDS (PLWHA).[6]

Moreover, PLWHAs on ART may perceive the chances of transmitting HIV as being less frequent after initiation of ART.[5] It is noteworthy that PLWHA who receive ART and who engage in unsafe sexual behavior may harbor and spread drug-resistant HIV, which constitutes a considerable public threat.[7]

Thus, with the rollout of ART in India currently there are as high as 4 lakh people are on ART.[3] However, still there is a paucity of studies focusing on the predictors of unsafe sexual behavior among these PLWHA on ART. An earlier study in the same setting by Patel *et al*. has tried to explore the predictors using qualitative methods.[8] Quantitative data sets are needed to help validate and determine the representativeness of such qualitative findings. Thus, the current study is carried out with the objective to assess the predictors of unsafe sexual behavior among PLWHA attending ART center in a tertiary care hospital in Western India.

MATERIALS AND METHODS

The current cross-sectional study was carried out at ART center of a tertiary care hospital - Shree Sayaji General Hospital, Vadodara - attached to Medical College Baroda in Western India, over a period of 2 years. The proportion of inconsistent condom use from the qualitative study was 0.2, keeping the confidence interval (CI) at 95% and the width of CI at 0.15 and based on these estimates, the sample size calculated was 154.[9] Assuming a 10% refusal rate. Finally the sample size came to 175 participants.

Before starting the study, necessary clearances were obtained from Institutional Ethics Committee for Human Research and State AIDS Control Society.

The participants were enrolled in the study after taking written informed consent in English or vernacular language. An interview schedule was used for collection of the information on the variables of interest with study participants. A semi-structured questionnaire used for the interview was first prepared in English version and then translated to vernacular language (Gujarati). Finally, the Gujarati version was translated back to English to check the validity. The interview schedule was designed to last approximately 30 min and was administered in Gujarati or English based on the language preferences of the individual. All interviews were conducted in private cabins to ensure privacy. On each day of data collection based on the expected number of ART center attendees, the study participants were selected by systematic random sampling.

The primary outcome was measured as a dichotomous variable, based on whether condoms were used during each sexual act in the preceding 3 months (defined as "consistent condom use" or "Safe Sex") or not (defined as "inconsistent condom use" or "Unsafe Sex"). Socioeconomic stratification of the study participants was done using modified Prasad classification commonly followed in India.[10] A total of 39 predictor variables included in the study were grouped in four constructs viz., sociodemographic, relationship related, medical and psycho-social factors.

Univariate analyses were performed on all variables to assess their completeness and distributional properties. Those variables that showed significant association with unprotected sex ($P < 0.05$) from each constructs (sociodemographic characteristics, clinical profile, beliefs and attitudes regarding sexual behavior, sexual practices, status disclosure, and domestic violence) in bivariate analysis were included for the multivariate analysis.[11] Factors that were independently associated with unprotected sex were explored using multivariate analysis using SPSS software version 17.0 (IBM corporation, Chicago, USA).[12]

Data safety and confidentiality was also given due consideration. The file containing identity related details was kept password protected, and the filled proforma were kept in lock with key accessible only to the researcher.

RESULTS

Table 1 presents the sociodemographic profile of the respondents. Nearly, two-third of participants were in the age group of 26–40 years. The study could

Table 1: Sociodemographic profile of the study participants

Characteristics	Frequency (%) *n*=175
Age	
≤25	22 (12.6)
26-40	113 (64.6)
>40	40 (22.9)
Gender	
Male	85 (48.6)
Female	90 (51.4)
Religion	
Hindu	162 (92.6)
Muslim	12 (6.9)
Christian	1 (0.6)
Marital status	
Single	14 (8)
Married	124 (70.9)
Divorced	8 (4.6)
Widowed	24 (13.7)
Separated	5 (2.9)
Education	
Illiterate	28 (16)
Primary	44 (25.1)
Secondary	68 (38.9)
Higher secondary	20 (11.4)
Graduates	15 (8.5)
Occupation	
Employed	104 (59.4)
Unemployed	71 (40.6)
Socioeconomic class (modified Prasad classification)	
Class I	12 (6.8)
Class II	23 (13.2)
Class III	25 (14.4)
Class IV	78 (44.8)
Class V	36 (20.7)
Residence	
Urban	97 (55.5)
Rural	63 (36)
Tribal	15 (8.6)

ensure almost equal participation from two genders. The majority of the respondents were educated, married, followed Hindu religion and from lower socioeconomic class. Nearly half of the participants came from urban areas and were unemployed. The proportion of unsafe sexual behavior among PLWHA on ART was found to be 58% in this study. Almost 90% (156) of the participants knew the serostatus of their partner and nearly 2/3rd (105) of them were seropositive.

Table 2 displays the results of multivariate analysis of the relationship of the predictor variables with unsafe sex among study participants. Among sociodemographic variables, young age-adjusted odds ratio (AOR = 5.02, CI: 1.13–9.30), illiteracy (AOR = 5.88, CI: 1.02–10.92), and urban residents (AOR = 2.94, CI: 1.53–5.16) were found to be independently associated with unsafe sex. With regard to clinic variables, lack of counseling on sexual behavior (AOR = 7.13, CI: 2.10–13.98) and solitary counseling of the client (AOR = 4.87, CI: 1.32–7.89) were independently associated with unsafe sex.

Misbelief about cessation of HIV transmission risk after starting of ART, misbelief about absence of need of using condoms after starting ART, lack of partner communication about safe sex, nonconvincing partner communication regarding safe sex, nondisclosure to the partner and unknown partner serostatus were found to be independently associated relationship related or psycho-social predictors of unsafe sex. While, marital status, misbelieve about safety of double condoms use, stigma and domestic violence were found to be statistically significant in bivariate analysis but did not show significant association in logistic regression model.

DISCUSSION

More than half of the participants practiced unsafe sex in the current study. A review of studies on sexual risk behavior among PLWHA by Crepaz and Marks showed that a considerable percentage, between 10% and 60%, depending on the specific sex act of seropositive individuals continue to engage in unprotected sexual behaviors that place their partners at risk for infection and place themselves at risk for contracting secondary infections.[13]

Young people (age <25 years) were 5 times more likely to engage in unsafe sex in this study. In a study by Chakrapani *et al.* to find out the correlates of inconsistent condom use by PLWHA no difference was found in inconsistent condom use as per the age of the participants though they found a gender difference and reported that females were less likely to have inconsistent condom use.[14]

Similarly, illiterate people were also 5 times more likely to engage in unsafe sex. This is likely because of the high self-efficacy for condom-use among educated people. Educated people are also more likely to be well informed about sexual intercourse as the main route of HIV transmission, making them use condom consistently to prevent transmission of HIV. Chakrapani *et al.* also found inconsistent condom use to be more among those who did not reach up to high school, but the difference they found was not statistically significant.[14] A

Table 2: Multivariate analysis for the exploratory variables with unsafe sex among study participants (multiple logistic regression model)

Exploratory variables	AOR	95% CI		Level of significance (*P*)
		Lower limit	Upper limit	
Sociodemographic variables				
Age group (≤25)	5.0241	1.1306	9.3044	0.0386*
Education (illiterate)	5.8877	1.0217	10.9284	0.0473*
Marital status	1.6151	0.1535	24.7227	0.1143
Address	2.9459	1.5368	5.1681	0.0147*
Clinical variables				
No counseling regarding sexual behavior	7.1379	2.1001	13.9838	0.0054*
Counseled alone	4.8732	1.3189	7.8932	0.0412*
Beliefs and attitudes				
Double condoms safe during sex	3.6155	0.6064	9.6339	0.5420
After starting ART can't transmit HIV	6.9034	3.1884	15.2334	0.0231*
No condoms once ART started	7.3642	2.4501	12.7087	0.0431*
Partner communication				
No discussion regarding safe sex	13.8376	4.8509	23.9948	0.0025*
Non convincing regarding safe sex	2.8431	1.1539	4.8762	0.0312*
Serostatus disclosure				
Nondisclosure to spouse/main partner	5.1505	1.0629	9.5935	0.0468*
Spouse serostatus (unknown/positive)	3.5954	1.3344	6.6617	0.0291*
Stigma, discrimination and violence				
Perceived stigma	1.2982	0.7831	5.9124	0.6291
Experience of domestic violence	4.6394	0.1141	12.5814	0.4169

*Statistically significant. AOR=Adjusted odds ratio; CI=Confidence interval; ART=Antiretroviral therapy; HIV=Human immunodeficiency virus

similar study by Natal Ayiga in Uganda among ART-experienced individuals also showed that consistent condom use was more in secondary and higher secondary educated individuals.[15]

In our study, married individuals were found to be engaging in safer sex as compared to those who were not married (single, widow, divorced, separated). However, this was not found significant in multivariate analysis. The other sociodemographic factors that were tested for association with unsafe sex viz., gender, religion, employment status and socioeconomic class were not found to be associated with unsafe sex. This was in conformity with earlier studies done in South Africa by Eisele *et al*. and in the US by Sears *et al*.[7,16] Further, the study by Natal Ayiga showed consistent condom use to be more among medium and high-income group that was not corroborated by our study.[15]

In clinical profile, the place of diagnosis of HIV and the Centers for Disease Control/World Health Organization (CDC/WHO) staging at the time of the study were tested for association with unsafe sex along with counseling related variables. There was no significant difference found in unsafe sexual practice either as per place of diagnosis of HIV or the CDC/WHO staging of the respondents. However, not receiving counseling regarding sexual behavior was found to be significantly associated with unsafe sex that remained an independently associated predictor of unsafe sex even after adjusting for other confounding variables. Those who had not received such counseling were 7 times more likely to engage in unsafe sex. This finding was corroborated by a meta-analytic review that concluded that after counseling and testing, PLWHA reduced unprotected intercourse and increased condom use.[17] Another recent editorial review by Crepaz *et al*. also found similar observations.[18] Moreover, even a study conducted by Kalichman *et al*. concluded that a tailor made behavioral counseling intervention is effective in HIV-transmission risk reduction among PLWHA.[19] It was observed in current study those who were provided counseling singly were found to be almost 5 times more likely to engage in unsafe sex as compared to those who were provided counseling with a partner.

The beliefs regarding condom safety, need for condom use after starting ART, the need for condom use when a spouse is positive, safety of double condoms as well as negative attitudes like condom interferes with sex and it is uncomfortable to both partners were tested for association with unsafe sex.

Unsafe sexual practice is expected to be more among those participants having concerns about the efficacy of condoms. This study also found

that those having concerns over the efficacy of condoms were more likely to be engaging in unsafe sex, yet the difference was not found to be statistically significant in bivariate as well as multivariate analysis. Milam *et al*. also did not find any significant difference in risky sexual practice with reference to beliefs about condom efficacy among heterosexual HIV-positive men.[20] Whereas, misbelieve about the higher safety of double condoms was found to be associated with unsafe sex in bivariate analysis but in multivariate analysis the difference was not found to be significant.

We also found a common misbelieve among PLWHA about the cessation of transmission of HIV after starting ART. This was associated with 7 times higher likelihood of engaging in unsafe sex in multivariate analysis. This lead PLWHA to believe that there is no need to continue condom use after starting ART. Such believe was also associated with almost 7 times higher likelihood of engaging in unsafe sex. A meta-analytic review by Crepaz *et al*. concludes that although PLWHA receiving ART did not exhibit increased sexual risk behavior, even when therapy achieved an undetectable viral load, people's beliefs about ART and viral load were found to be associated with unprotected sex.[21]

Certain negative attitudes like "condom interferes with sex" and "condom use is uncomfortable to both partners" were not found to be associated with unsafe sex in bivariate analysis. Whereas, many earlier studies have shown that negative beliefs and attitudes about pleasure were associated with unsafe sex in various populations.[13,20,22-23]

Several studies have also reported a significant association of alcohol use with risky sexual practice.[24,25] However in our study, no such difference was found in sexual practice between alcohol users and nonusers.

In published literature on risky sexual behavior self-efficacy has been defined as confidence in one's ability to enact safer sex practices such as refuse unsafe sex, negotiate condom use, and goes on to include disclosure to a partner about one's serostatus. Lack of self-efficacy has been shown to be associated with unsafe sexual practice among people with HIV.[20,26] We asked our respondents whether they had actually discussed safe sex with their partners and if they were able to convince them for safe sex. More than half of our respondents did not discuss safe sex with their partners, and this was significantly associated with unsafe sex in both bivariate and multivariate analysis. Hence that, those who had not discussed safe sex with their partners were 14 times more likely to engage in unsafe sex as compared to those who discussed such issues with their partners.

This study showed those who had not disclosed their serostatus to their spouse were 5 times more likely to engage in unsafe sex. Earlier studies have also shown such association of serostatus nondisclosure with unsafe sex.[27,28] Lately a recent study by Chakrapani *et al*. also found that those who had not disclosed their HIV status to their regular partners were more likely to have inconsistent condom use.[14] Thus, this research gives support to India's new draft HIV/AIDS bill that includes a legal duty for people living with HIV to notify a sexual partner of one's HIV status and engage in safer sex practices.

Further, a significantly high unsafe sex was found among those respondents whose partner's serostatus was either positive or unknown compared to those having a seronegative partner.

PLWHA having unknown/positive serostatus of the partner were 3 times more likely to engage in unsafe sex. This may be due to misbelieve that if both the partners are sero-positive they need not use condoms. Such findings have also been reported earlier in the studies conducted by Wenger *et al*. and Sobel *et al*.[29,30] Chakrapani *et al*. also found the participants having a seropositive spouse were 2 times more likely to have inconsistent condom use in their study.[14] This definitely needs to be corrected with counseling since condom uses not only on prevents HIV transmission to their partners, but also helps protect them from STIs and re-infection with potential ART-resistant HIV strains.

In our study, although unsafe sex was found to be significantly higher among those who perceived stigma and experienced domestic violence in bivariate analysis, it was not found to be independently associated with unsafe sex in multivariate analysis. Whereas, earlier studies have shown an association of stigma, discrimination and domestic violence with unsafe sex.[31-34]

CONCLUSION

Young age group, illiteracy, lack of counseling, disbeliefs about condom use, doubts regarding the safety of condoms and misbelief about no need of condom use after starting ART, nondisclosure of serostatus to the partner and lack of communication with a partner regarding safe sex were the factors

found to be independently associated with unprotected sex.

The efforts at reducing unsafe sex among PLWHA would need to be carried out at different levels. At the individual level, various misbeliefs regarding condom use need to be corrected, at the partnership level serostatus disclosure to the partner and communication with the partner about safe sex needs to be encouraged while at the programmatic level emphasis on need-based counseling is required.

Further studies in this direction with the nationally representative sample are needed to enrich and streamline the component on prevention needs among PLWHA in National AIDS Control Program IV. Policymakers and health care providers should realize that it is crucial to acknowledge the sexual and familial aspirations of PLWHA, to assist them in leading a fulfilling sexual life, and to provide them the necessary information and support in adopting and sustaining safer sex.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

REFERENCES

1. United Nations Joint Programme on HIV/AIDS (UNAIDS), Global Report: UNAIDS Report on the Global AIDS Epidemic: 2010, Geneva, Published in January 2011, ISBN 978-92-9173-871-7. Accessed on 24 October 2015.
2. National AIDS Control Organization (NACO). HIV Sentinel Surveillance and HIV Estimation in India: A Technical Brief; 2010.
3. National AIDS Control Organisation (NACO). Department of AIDS Control, Ministry of Health and Family Welfare Annual Report; 2011.
4. Kalichman SC. HIV transmission risk behaviors of men and women living with HIV-AIDS: Prevalence, predictors and emerging clinical interventions. Clin Psychol Sci Pract 2000;7:32-47.
5. Wilson TE, Gore ME, Greenblatt R, Cohen M, Minkoff H, Silver S, *et al.* Changes in sexual behavior among HIV-infected women after initiation of HAART. Am J Public Health 2004;94:1141-6.
6. Vittinghoff E, Scheer S, O'Malley P, Colfax G, Holmberg SD, Buchbinder SP. Combination antiretroviral therapy and recent declines in AIDS incidence and mortality. J Infect Dis 1999;179:717-20.
7. Eisele TP, Mathews C, Chopra M, Brown L, Silvestre E, Daries V, *et al.* High levels of risk behavior among people living with HIV Initiating and waiting to start antiretroviral therapy in Cape Town South Africa. AIDS Behav 2008;12:570-7.
8. Patel S, Baxi RK, Mehta M, Patel SN, Golin CE, Bakshi H, *et al.* Sexual behavior among persons living with HIV/AIDS (PLWHA) in Gujarat, India: A qualitative study. Indian J Soc Work 2012;73:177-93.
9. Hulley SB, Cummings SR, Browner WS, Grady DG, Newman TB. Designing Clinical Research. 3rd ed. Philadelphia: Lippincott Williams and Wilkins; 2007.
10. Prasad BG. Changes proposed in the social classification of Indian families. J Indian Med Assoc 1970;55:189-99.
11. DiIorio CK. Measurement in Health Behavior: Methods for Research and Evaluation. San Francisco: Jossey-Bass Publications; 2005.
12. SPSS Inc. Released 2008. SPSS Statistics for Windows. Ver. 17.0. Chicago: SPSS Inc.; 2008.
13. Crepaz N, Marks G. Towards an understanding of sexual risk behavior in people living with HIV: A review of social, psychological, and medical findings. AIDS 2002;16:135-49.
14. Chakrapani V, Newman PA, Shunmugam M, Dubrow R. Prevalence and contexts of inconsistent condom use among heterosexual men and women living with HIV in India: Implications for prevention. AIDS Patient Care STDS 2010;24:49-58.
15. Ayiga N. Rates and predictors of consistent condom-use by people living with HIV/AIDS on antiretroviral treatment in Uganda. J Health Popul Nutr 2012;30:270-80.
16. Sears D, Cabrera-Rodriguez C, Ortiz-Mejia F, Anderson B, Stein M. Sexual risk behaviour among HIV-positive patients at an urban clinic in Santiago, Dominican Republic. AIDS Care 2008;20:191-7.
17. Weinhardt LS, Carey MP, Johnson BT, Bickham NL. Effects of HIV counseling and testing on sexual risk behavior: A meta-analytic review of published research, 1985-1997. Am J Public Health 1999;89:1397-405.
18. Crepaz N, Lyles CM, Wolitski RJ, Passin WF, Rama SM, Herbst JH, *et al.* Do prevention interventions reduce HIV risk behaviours among people living with HIV? A meta-analytic review of controlled trials. AIDS 2006;20:143-57.
19. Kalichman SC, Rompa D, Cage M, DiFonzo K, Simpson D, Austin J, *et al.* Effectiveness of an intervention to reduce HIV transmission risks in HIV-positive people. Am J Prev Med 2001;21:84-92.
20. Milam J, Richardson JL, Espinoza L, Stoyanoff S. Correlates of unprotected sex among adult heterosexual men living with HIV. J Urban Health 2006;83:669-81.
21. Crepaz N, Hart TA, Marks G. Highly active antiretroviral therapy and sexual risk behavior: A meta-analytic review. JAMA 2004;292:224-36.
22. Boone TL, Lefkowitz ES. Safer sex and the health belief model; considering the contributions of peer norms and socialization factors. J Psychol Hum Sex 2004;16:51-68.
23. Di Clemente RJ, editor. Psychological determinants of condom use among adolescents. In: Adolescents and AIDS: A Generation in Jeopardy. Newbury Park, CA: Sage; 1992. p. 34-51.
24. Samet JH, Pace CA, Cheng DM, Coleman S, Bridden C, Pardesi M, *et al.* Alcohol use and sex risk behaviors among HIV-infected female sex workers (FSWs) and HIV-infected male clients of FSWs in India. AIDS Behav 2010;14 Suppl 1:S74-83.
25. World Health Organization. Alcohol Use and Sexual Risk Behaviour: A Cross-Cultural Study in Eight Countries. Geneva: WHO; 2005.
26. Kalichman SC, Rompa D, Di Fonzo K, Simpson D, Kyomugisha F, Austin J, *et al.* Initial development of scales to assess self-efficacy for disclosing HIV status and negotiating safer sex in HIV-positive persons. AIDS Behav 2001;5:291-6.
27. King R, Katuntu D, Lifshay J, Packel L, Batamwita R, Nakayiwa S, *et al.* Processes and outcomes of HIV serostatus disclosure to sexual partners among people living with HIV in Uganda. AIDS Behav 2008;12:232-43.
28. Taraphdar P, Dasgupta A, Saha B. Disclosure among people living with HIV/AIDS. Indian J Community Med 2007;32:121-7.
29. Wenger NS, Kusseling FS, Beck K, Shapiro MF. Sexual behavior of individuals infected with the human immunodeficiency virus. The need for intervention. Arch Intern Med 1994;154:1849-54.
30. Sobel E, Shine D, DiPietro D, Rabinowitz M. Condom use

among HIV-infected patients in South Bronx, New York. AIDS 1996;10:235-6.
31. Pulerwitz J, Michaelis AP, Lippman SA, Chinaglia M, Díaz J. HIV-related stigma, service utilization, and status disclosure among truck drivers crossing the Southern borders in Brazil. AIDS Care 2008;20:764-70.
32. Spire B, de Zoysa I, Himmich H. HIV prevention: What have we learned from community experiences in concentrated epidemics? J Int AIDS Soc 2008;11:5.
33. Maman S, Campbell J, Sweat MD, Gielen AC. The intersections of HIV and violence: Directions for future research and interventions. Soc Sci Med 2000;50:459-78.
34. Heise L, Ellsberg M, Gottmoeller M. A global overview of gender-based violence. Int J Gynaecol Obstet 2002;78 Suppl 1:S5-14.