

# Assessing vulnerability to HIV of migrant female students: A mixed method exploratory study

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## Introduction

HIV/AIDS continues to be a public health problem with 1.8 million (1.4 million–2.4 million) new HIV infections and 940,000 (670 000–1.3 million) deaths due to AIDS-related illness in 2017 (1). Females bears the brunt of this disease as HIV infection remains the leading cause of mortality among women of reproductive age group (2). Adolescent girls and young women comprise 60 % of all new infections among young people aged 15-24 years (2). The Southeast Asian region accounts for the second highest number of PLHIV. Of these, India accounts for 2.1 million PLHIV in 2017. (3,4) In India it is estimated that approximately 87.58 (36.45 – 172.90) thousand new HIV infections occurred in 2017 and females constituted 39% (8.16 lakhs) of the HIV infected individuals. (4).

Annually the number of new infections varies among the various states in India but it has

been observed that 71% of the total new infections is accounted for by only 10 states. One of these states is Delhi (4). Migration is an independent risk factor with female migrants 1.6 times more likely to be HIV positive. (5) In India the HIV prevalence among the internal migrants (rural to urban) is four times the national prevalence (4). In the past, researchers have largely focused on male migrants and/or their partners both internationally (6,7) as well as in India (8–10). Parents driven by increased aspiration for academic learning send their youth to metropolitan states like Delhi to attain higher education. (11) This study focuses on migrant female college students. Very few studies have been conducted among the female migrants, very few are from India. Thus, present study was conducted with the objective to assess vulnerability and risk of HIV infection among migrant female college students in Delhi.

## Methodology

A sequential mixed-method study design (12) was used to explore the HIV vulnerability among migrant female college students in Delhi, India. It was carried out from March 2015 to April 2016. The study was conducted in five (of 13) randomly selected colleges in North Campus of University of Delhi. A list of all students was acquired from selected colleges from which a list of eligible participants was prepared. A student of age 18 years and above was considered to be included for the study if her native place of residence was outside Delhi and she had been residing in her current place at least a year. A participant though non-resident of Delhi but commuting back home daily was excluded.

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Total number of eligible participants from five selected colleges were; 800, 920, 2140, 1103 & 1040. A population proportionate sampling method was used to select migrant students from each college for inclusion in the study. Subsequently, 16, 15, 34, 18 & 17 participants were selected randomly using computer generated random numbers. As very limited literature was available on prevalence of vulnerability indicators in the specified population, sample size was estimated after assuming 50% prevalence. Absolute error was assumed to be 10% and a confidence level of 95%, the minimum required sample size was 96 for the quantitative component of the study. A total of 100 students were selected from colleges. In depth interviews were conducted with all study participants showing HIV related high risk behavior. In depth Interviews were conducted till saturation was achieved.

The Interviewer administered a semi-closed questionnaire which was developed and pilot tested. It was used for quantitative data collection. The tool was adapted from National Integrated Biological and Behavioural Surveillance (IBBS) 2014-15 (13). The following information was captured using the questionnaire: socio-demographic details, HIV related knowledge questionnaire (22-item), protection measure awareness and peer's HIV related behavior. Upon completion of aforementioned details, the study participant was given another proforma in a sealed envelope. This proforma was used to collect data on number of sex partners if any; type of protection used during last sexual intercourse, pattern of condom usage and injectable drug use. Proforma was self-administered and contained instructions to seal the envelope after completion. Each envelope was collected the same day. The respondents who reported in affirmative to having had unprotected sexual intercourse were identified and approached after 15 days for semi-structured, in-Depth, face to face, interviews.

The semi-structured interviews allowed our participants to freely elaborate on their experiences, in their own words. All in Depth Interviews were conducted at the place of participant's residence. Conducting in Depth Interview at respondent place of residence helped gain trust and maintain confidentiality. The author

(VG) received training prior to conducting an in-depth interview. Rapport was established prior to asking the sensitive questions. Each interview lasted for a duration of 45 and 60 min. The progress of the interview was from less sensitive to more sensitive questions.

During the in Depth Interview, the respondents were asked to narrate their the nature of current relationship (casual or committed) and its driving factors, their perceptions about premarital sexual relations, preferences about discussion for sexual relation, factors that pushed or pulled them to indulge in sexual activity, their perception about HIV/AIDS related risk, method of protection used during last sexual act and exploring the reasons for not using condom consistently.

Data analysis was performed using (SPSS v.20) IBM corp. Descriptive results are shown as frequencies, mean and range. Bivariate analysis was done to association between HIV vulnerability with its determinants using Chi square test, Fisher's Exact Test and t-test. Thematic analysis was done for qualitative data so collected. Notes were made during the In Depth Interview which were coded categorized manually to form themes. Themes were developed by two independent teams and then later compared to come to consensus.

### **Ethical consideration**

Ethical clearance was obtained from the Institutional Ethics Committee. Due permission was taken from the competent authority of the University to conduct the study. Informed written consent was obtained prior to data collection from each participant.

### **Results**

All the participants who were approached agreed to participate in the study. Age of the study population ranged from 18 to 23 years (n=100) with mean (S.D.) of 19.9 ( $\pm 1.1$ ) years. All the respondents were unmarried. Respondents were dependent on their parents for their financial needs with mean (S.D.) monthly expenditure of Rs 5450 ( $\pm 1808.3$ ). Study population consisted of individuals from all over India who had migrated to Delhi to pursue higher education (Table 1).

**Table 1: Socio-Demographic details of the respondents**

S. No.	Age (in years)	Frequency **
1.	18-19	40
2.	20-21	49
3.	22-23	11
<b>Place of origin</b>		
1.	Neighboring states	62
2.	States (mid-range distance) Mp, maharashtra, wb, bihar, j&k and jharkhand	21
3.	States (long distance) Ne states and southern india	17
<b>Religion</b>		
1.	Hindu	91
2.	Muslim	3
3.	Others	6
<b>Academic year</b>		
1.	1 <sup>st</sup> year	20
2.	2 <sup>nd</sup> year	45
3.	3 <sup>rd</sup> year	35
<b>Academic stream</b>		
1.	Arts / humanities	32
2.	Commerce	13
3.	Mathematical sciences	10
4.	Biological sciences	45
<b>Duration of stay in delhi (in years)</b>		
1.	1-2	60
2.	3-4	39
3.	>4	1
<b>Place of current residence</b>		
1.	Within campus	29
2.	Outside campus	71
<b>Monthly expenditure (in rupees)</b>		
1.	<4500	24
2.	4501-5500	47
3.	>5501	29

Every responding student had heard about HIV/AIDS, but the respondents harbored misconceptions regarding modes of transmission and methods of prevention of transmission of HIV infection (Table 2).

Approximately half (n=48) of the respondents perceived themselves as vulnerable to acquiring HIV infection. Among the stated reasons for self-perceived vulnerability, a majority of the respondents [21(43.7%)] reported that they were not vigilant in the past whether a sterile needle was used during medical investigation or during blood donation [6,(12.5%)]. Approximately one fourth [13 (27%)] had self-perceived vulnerability due to the incurable nature of the disease and ten percent [5(10.4%)] felt vulnerable because anyone could be infected by HIV infection. Few (2,4.1%) also reported unprotected intercourse and multiple partners (1, 2%) as the reason for self-perceived vulnerability to acquire HIV. Of the total respondents who perceived themselves as vulnerable; (8, 16.6%) undertook HIV tests and of them only 2 respondents knew their HIV serostatus.

One third (29%) of the respondents (n=100) reported consuming alcohol. In the past one month, the frequency of alcohol consumption ranged from 0-6 times. All the participants who reported consuming alcohol were less than 21 years old. Of the surveyed respondents 23 students had received formal sex education. Majority of them (11, 47.8%) had sex education session in their school, one third (7, 30.4%) acquired knowledge from NGO camps. Few respondents (3, 13%) obtained information by interacting with Biology teachers and two respondents (8.6%) reported receiving information from both school and NGO camps.

#### **HIV vulnerability: high risk sexual behavior**

Ten respondents (10%) showed high-risk behavior as none of them reported using condom consistently. One respondent reported being in a casual sexual relationship and none reported having had sexual intercourse in exchange of any favors. Of these ten respondents 6 were in a committed dating relationship. No respondents self-reported Injectable Drug Use.

**Table 2. Distribution of response about HIV/AIDS related knowledge (N=100)**

Items related to knowledge about HIV	Correct response (%)
HIV and AIDS are same	70
HIV infected person can look and feel healthy	67
Person suffering from AIDS show symptoms immediately	64
One can tell easily by looking at someone whether he or she is HIV infected.	90
Person can be infected for > 5 years before progressing to AIDS	41
HIV can also infect children	92
<b>MODES OF TRANSMISSION</b>	
HIV can spread by casual actions like shaking hands, hugging, sharing utensils, sharing toilet	87
HIV infection can spread from one person to another by coughing, sneezing	76
HIV can spread by mosquito bite	69
A person can get HIV infection through contact with saliva, urine and tears	59
A woman can acquire HIV infection during	
• Oral intercourse without using condom.	84
• Vaginal intercourse without using condom.	93
• Anal intercourse without using condom.	88
An HIV infected pregnant woman can transmit the disease to her baby	88
HIV can spread by sharing of needle with an HIV infected individual	90
HIV can be acquired by receiving infected blood transfusion	94
It is possible to acquire HIV infection when a person gets a tattoo.	47
<b>PREVENTION AND CURE OF HIV/AIDS</b>	
Condom (male/female) can lower a person's chance of acquiring HIV	78
Douching after intercourse can reduce the risk of acquiring HIV infection	59
Cure is available for AIDS	64
Is there a vaccine that prevent adults from acquiring HIV	31
Few drugs are available for treatment of HIV	66
<b>PROTECTION MEASURES</b>	
Sexual intercourse with one partner using condom always	35
Correct use of Condom while have sexual intercourse	23

The mean age of sexual debut (n=10) was 18.7 years. In the past 6 months, one respondent reported having had multiple partners. During last sexual intercourse three respondents reported using no protection measures, one used Emergency Contraceptive Pill, one respondent used both condom and Emergency Contraceptive Pill and remaining subjects used only condoms as a protection measure. Six respondents (n=10) had sexual intercourse after consuming alcohol. None of their partners used condoms while having intercourse after consuming alcohol. Two of the ten respondents reported perceiving oneself as vulnerable to acquire HIV and had undertaken HIV tests, but none knew their serostatus.

Although only 10% respondents reported in affirmative about their HIV related high-risk sexual behavior, 37% respondents reported that their friends had high risk sexual intercourse i.e. without using condom or had multiple partners or were involved in commercial sex work. Also 8% of respondents reported that their male batchmates indulged in Injectable Drug Use.

Statistically significant association was observed between respondent's sexual behavior and peer influence (p value 0.005), and with current place of partner's residence (p value 0.001). It was observed that the greater proportions of the respondent showing sexual risk behavior were residing in outside campus (8,

11.2%; p value 0.29). Association between mean knowledge of the respondent and their self-perceived vulnerability was determined using t-test which was found to be statistically non-significant (p value 0.335). No statistically significant association was observed between HIV related high risk behavior and monthly expenditure (p value 0.716). (Table 3). Association was examined between HIV/AIDS related high risk behavior and knowledge score, and formal sex education with knowledge scores

using t test and no statistically significant association was observed in both cases.

### Qualitative data

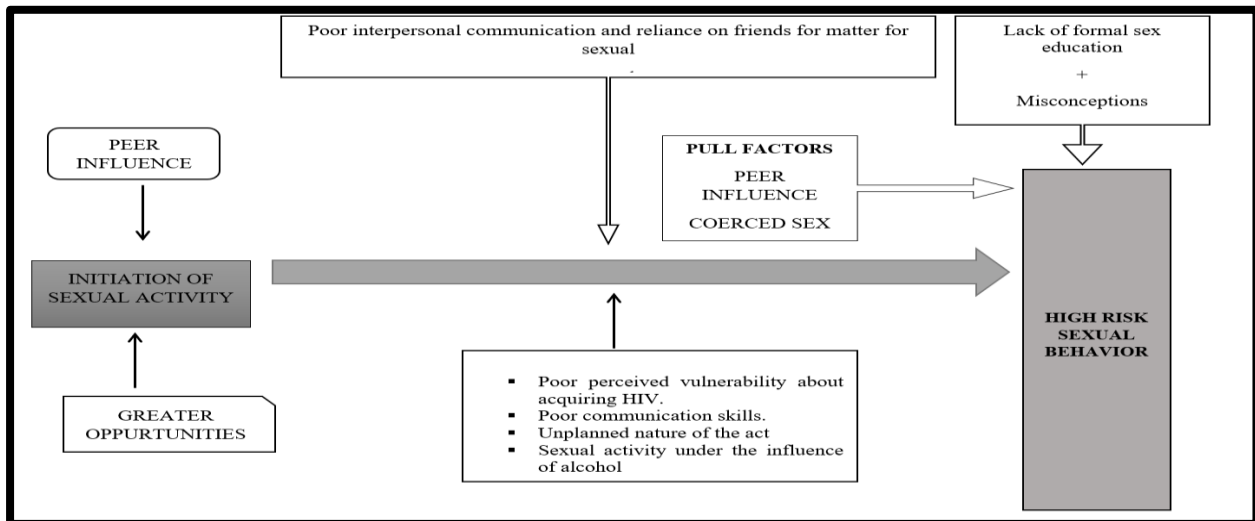
In-depth interviews were conducted with 10 participants who reported high-risk sexual behaviour. It was observed that initiation of sexual activities which converted into high risk sexual behaviour were shaped by various factors (Figure 1).

**Table 3. Association between the sexual risk behavior and partner’s current place of residence, peer influence, monthly expenditure and respondent’s current place of residence.**

Outcome indicator	Sexual risk behavior		Total	p value
	Present	Absent		
<b>Peer influence</b>				
Yes	8(21.6%)	29 (78.4%)	37	.005 <sup>1</sup>
No	2(3.2%)	61(96.8%)	63	
<b>Residence of partner</b>				
Delhi	9(34.6%)	17 (65.3%)	26	<.001
Outside Delhi	1(.06%)	15 (93.7%)	16	
<b>Monthly expenditure (in rupees)</b>				
<4500	4(8.2%)	45 (91.8%)	49	0.716
4500-5500	2 (9.1%)	20 (90.9%)	22	
>5501	4(13.3%)	25(86.2%)	29	
<b>Current Residence</b>				
On campus hostel	2 (6.9%)	27 (93.1%)	29	0.296
Outside campus	8(11.2%)	63 (88.7%)	71	

Fisher's Exact Test. (Fisher Exact test was used, as values less than 5 were present in many cells.)

**Figure 1. Model to explaining factor that led to initiation of sexual activity which converted to high risk sexual activity.**



Following are the push or pull factors that led to early initiation of sexual activity:

a. Peer pressure (the pull factor)

Respondents reported that they had sexual intercourse with their partners as their friends perceived it (intercourse) as a “cool/wow factor”. It was observed that a majority acknowledged that interaction among peers centred on sexual habits and was considered “cool to have sex with one’s partner”, reinforcing the acceptance of sexual experimentation by the youth.

b. Coerced sex (pull factor):

Respondent (2) reported that she was forced into unprotective intercourse by her partner.

c. Greater opportunities for sexual experimentation (push factor)

Participants reported that since they moved out of their homes, they were able to explore various exploits in life, as they were independent and not constantly “supervised”. Overall majority of the participants expressed willingness for sexual intimacy with their partner and acknowledged that lack of supervision was indeed a driving factor for greater independence. This resulted in greater opportunities to explore or experiment the current avenues in their life (alcohol consumption) or in their romantic partnerships.

Some responses are quoted here verbatim.

“Initially my parents were always around telling me what to do and not, they are very conservative. But now I am free to call the shots”

“See, staying in this hostel is fun as you can snoop out at night and return late or sometime next day. No one notices. No one should. It’s fun”

“Ideally, we are not supposed to drink but it’s very easy to bring drinks (alcohol) inside, most of the time guards don’t even check. I have a bottle in my cupboard.”

Following are the factors that led to high risk sexual behaviour: Although factual knowledge about HIV/AIDS was adequate among the study population, but the in depth Interview found the translation of this knowledge was not reflected in their sexual behaviour. Upon analysing the interviews, the following domains emerged as contributors to enhanced vulnerabilities for HIV infection.

## 1. Inconsistent use of condom

Respondents harboured misconceptions or false beliefs. Despite being aware that condoms can decrease the transmission of HIV they opted to forgo using condoms as they ‘trust’ their partner and believed that condom acts as a barrier to pleasure. Moreover, respondents also believed that “oral sex” cannot transmit HIV infection.

Individual factors were also identified as factors that eventually lead to inconsistent use of condoms, these were: inability to insist on condom use, embarrassment to purchase condom and unplanned occurrence of sexual act. In addition, it was also found that peer pressure again played a role in lack of condom usage as it was told to them “condom is a barrier to pleasure”.

Quoted below are the statements of some of the respondents in their own words.

“I think condom use should be used all the time if you don’t trust your partner. So, we don’t use it because I trust him. Why decrease pleasure”

“I know that condom use is important but sometimes we don’t plan to have sex. We happened to meet each other and had sex. We didn’t have condom then. Moreover, I am embarrassed to buy one. But it’s okay as I know him, he is trustworthy.”

“We try to use condom but when in situation like when we are high, we did not use. We did not have one.”

“I consider that it would be important to involve both male and female students at the same time so that male himself uses condom rather than the female partner asking him to use one”

## 2. Lack of formal sex education

Respondents emphasise the need for acquiring sex education in a holistic way to ensure complete understanding about AIDS. Respondents identified that sex education is factual and ignored the existing perceptions, belief and behaviour among the students. At the same time the majority of the students emphasized on the need to change the college ambience, to make the college as a platform for imparting information related to sexual health.

Quoted below are the opinions as expressed by the respondents verbatim.

“All I know about HIV infection is from the knowledge I received in school from biology text. Since then I have never heard anything about it. Moreover, what I learnt in school was just causes, transmission etc. I feel it’s important to at least create an atmosphere where it’s more acceptable to discuss sexual matters with reliable individuals”

“I had a session in my school on sex education but it was not very informative. I feel that the sex education session should make us understand about all dimension of sexuality and we should be told everything, all the terms. Not just the facts.”

### 3. Poor interpersonal communication

Communicating about sexual health matters with elders (teachers or parents) was perceived as a taboo and most of the respondents were hesitant to interact about the same. This again was perceived as a missed opportunity to learn to acquire important skills for healthy sexual relationships. Participants relied on friends or internet to seek answers regarding sexual matters. On interviewing the respondents many acknowledged that during their course of stay in Delhi they hadn’t had dedicated session on HIV/AIDS, moreover all the respondents (n=10) reported that it was the “first time” they had discussed sexual health matter in detail with investigator (VG). Moreover, none of the respondents discussed available safe sex options with their partner.

Quoted below is the perception of one respondent showing HIV related high risk behaviour expressing her experiences about discussing sexual matter with parents.

“We hesitate to talk about our personal life with people we are close to as unlike western countries the associated social taboo is immense. What if my family member compel me to get married or worse impose restrictions. I hardly think they would accept with open arms.”

### 4. Poor self-perceived concern

Majority of the respondents considered themselves as non-vulnerable to acquire HIV infection. Only 2 of 10 respondents knew their HIV status despite having HIV related high risk behaviour. None knew the HIV status of their partner. This is a real threat to the health of the respondents as being unaware of one’s HIV serostatus would result in continuing the transmission of HIV.

“ I think that I may be at risk but not more than others, as at some point of time everyone has had a blood test. I did too when I was sick. Needles were used at that time.”

“According to me HIV can affect anyone even me. which could be because of mosquito bite or during the blood donation as needles are used but not because I had sex”

“I don’t think HIV can be transmitted by oral sex. but maybe due to needle as we do donate blood.”

### Discussion

The current study is rooted by the concept that migrants are at greater risk of acquiring HIV infection and females are biologically and socially more vulnerable (14). Therefore, this study focuses on exploring migrant female college students, and thus attempts to overcome the limitation of minimal representation of female study participants in previous studies (15–17).

Studies conducted to assess HIV related knowledge among youth or migrant females generally showed a wide range of scores which could be because tools for measuring HIV related knowledge varied across the studies were different (17,18). Despite the differences in tools adopted, in studies conducted internationally and in India, found that university college students have better knowledge about HIV/AIDS as compared to rural students which was due to higher education status. (5,19). Higher knowledge score among current study populations resonate in these findings. In contrast to current study it was also observed that HIV/AIDS related knowledge among females (youth and migrants) residing in rural areas was low which could be because the study population

assessed belonged to lower socioeconomic status and had overall poor literacy (20,21).

Literature on the HIV related high risk behaviour among Indian youth is limited. However premarital sexual relationship among Indian youth is not uncommon; in various studies premarital sexual intercourse among females is reported to range from 1 to 6% which is less than that reported in current study (22,23). Higher self-reported risk behaviour in current study could be because a more vulnerable population of migrants was explored. Also more opportunities for social interaction, sexual experimentation, greater independence and absence of direct supervision could also have contributed to their vulnerability.

Various studies have shown that early sexual initiation is associated with HIV related sexual risk behaviour due to inconsistent use of condoms (24,25). Early sexual initiation among current study populations could be explained by a combination of factors such as higher age of marriage and greater opportunities to explore various exploits of life. Unprotected nature of sexual relationships could also be due to gaps in knowledge and behaviour and poor self-perceived vulnerability. Interaction with friends forms an important aspect of life among the youth and studies have shown positive association between friend's sexual exposure and premarital sexual initiation. Additionally, it is also observed that increasing social acceptance of premarital intercourse led to sexual initiation (5,26,27).

Misconceptions about modes of transmission or methods of prevention have been reported in past studies (20,28). This could be due to lack of formal education in matters related to sexual health. Sex education program may not directly reduce the burden of AIDS but it can greatly help in lowering the risks and vulnerabilities of youth. Similar to present study need for formal sex education has also been emphasized in previous studies (29,30).

Elders like teachers or parents provide first opportunity to the youth to communicate about sexual health, and it is reported that parental monitoring and low permissiveness are related with less sexual risk taking e.g., delayed sexual debut, condom use, fewer partners (31,32). Lack of emphasis on the issue of proper communication about sexuality and need to protect oneself

coupled with greater opportunities available, results in youth's greater vulnerability to acquire HIV infection.

In the present study majority of the respondents showing high risk behaviour considered themselves as insusceptible to HIV infection. Similar findings were also reported in a study where participants with decreased self-perceived risk were more likely to engage in risky sexual behaviour (33).

In contrast to present study, higher number of sex partners were reported in a study among youth in India, underreporting in current study cannot be ruled out and is a limitation of studies on HIV related high risk sexual behaviour (5,22).

Limitations: Social desirability bias may have influenced responses including possible underreporting of risk behaviours, such as involvement in commercial sex work. Some of the HIV prevention methods were discussed while assessing the knowledge of the participants. Therefore positive reporting bias in condom usage may have occurred. Since the study lacked a comparison group, it could not identify whether factors determining the vulnerability of the migrant were similar or dissimilar to the non-migrant students. In order to overcome the limitations, the investigator tried establishing rapport and trust prior to asking the sensitive questions, arranging the progression of survey questions from less to more sensitive, and by giving respondents the opportunity to report sexual behaviour anonymously using sealed envelope technique.

## Conclusion

So far studies conducted on migrants have focused on populations of low socio-economic status and poor education background thereby ignoring the vulnerability and risk of HIV among the migrant college students especially females, that constitute a sizable population in the country. Therefore, we conclude that migrant female college students are vulnerable to acquire HIV infection and require focus to measure their HIV vulnerability and risk.

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