Research

A Retrospective Study of Women Accessing Integrated HIV Testing and Counseling Services in Northern India

Neema Negi1, Sravya Kurapati2, Bimal Kumar Das2 and Madhu Vajpayee2*

1Department of Molecular Biology, Umea University, Umea, Sweden.
2Department of Microbiology, All India Institute of Medical Sciences, Ansari Nagar, New Delhi-110029, India

Abstract

Objective

The objective of the study was to highlight and assess the risk determinants that endanger women to HIV/AIDS and provide insights into the equation between women and HIV.

Methods

This was a retrospective study that analyzed the data gathered from 2011 to 2015 at the Integrated Counselling and Testing Centre (ICTC) of All India Institute of Medical Sciences. Odds ratio was calculated for statistical analysis.

Results

Out of the total 4458 participants, 30.55% tested HIV positive, 65.52% tested negative and 3.92% women sought counseling alone with the majority being aged from 15-45 years. Illiteracy, unemployment and more importantly, heterosexual route of transmission placed married/widowed women with known seropositive spouses, in high exposure groups which were initially undermined. Discrimination by healthcare workers, family members and educational institutes was also reported. Irregularity in follow up by some participants in window-period highlighted the lack of HIV/AIDS awareness.

Conclusion

The evaluated risk factors illustrated the pressing need for HIV related education, establishment of a protective legal environment and raising awareness about legal rights of women living with HIV/AIDS. Women must be recognized as an important target population for designing and implementing policies to provide universal access to HIV prevention, treatment, care and support.

Key Words: HIV; Counselling; Testing; Women; India

Introduction

Of the 34.3 million adults living with HIV (15 + years), 17.4 million are females [1]. In sub-Saharan Africa, young women are 8 times more likely to be HIV positive than men [2]. Likewise, in Asia, women account for an increasing share of infection from 21% in 1990 to 35% in 2009 [3]. According to the National AIDS Control Organization's 2014-15 annual report, in 2011, women constituted 39% of the total 2.09 million people living with HIV/AIDS (PLHA) in India [4]. In Sub Saharan Africa, young women accounts for 56% of adults living with HIV [5]. Approximately, 4,500 new HIV infections have been reported in young women in African regions in 2016 [5]. In the United states, women accounted for 19%(7,402) of the 39,513 new HIV diagnoses in 2015 and 287,400 women were reported living with HIV at the end of 2013 [6]. Studies have shown that the impact of HIV infection can be sensed in most facets of women's psychological and biological health which include sexual life, relationship with partner and family, pregnancy, childbirth, and exposure to sexually transmitted infections [7]. This is further exacerbated by chronic gender inequality, gender based violence, poor access to education, lack of...
economic independence and family support [8]. Despite such debilitating effects on women specifically, there is a dearth of data on the underlying factors that increase the risk of HIV infection in women.

The latest HIV surveillance report from India estimates HIV prevalence among women to be 0.22% which is slightly below the national figure of 0.26% [9]. However, trends of increase in adult prevalence have been noted in some low prevalence regions especially in the north i.e. Delhi, Punjab, Chandigarh, Uttarakhand and Jharkhand. Delhi in particular, is a high risk region because of the presence of a large migrant population estimated at 0.88 million. Interestingly, a majority of the migrants in Delhi are from the northern states of Uttar Pradesh and Bihar. Furthermore, in a case control study conducted in 7 districts in rural India, Saggurti N and colleagues showed that men with migration history were 4 times more likely to be exposed to HIV and women with migrant spouses are 2.3 times at risk of HIV exposure compared to non-migrant workers. Given these compelling data and the paucity of data specifically on women, our group wanted to analyze and identify factors that predispose women to risk of HIV exposure in northern India [10]. This study was thus carried out in one of the biggest tertiary care centers in northern India that provides healthcare services to people from Delhi and other northern states. The main aim of this study was to provide a comprehensive understanding of the putative risk factors associated with women testing positive for HIV and those that are exposed to high risk behaviors. Data that were collected at an HIV integrated counseling and testing center at the tertiary care center were retrospectively analyzed to answer three research questions proposed by the study- (1) what are the factors predisposing women to HIV infection in northern India?, (2) what are the implications of a seropositive status on their physical, social and mental wellbeing? and (3) what are the reasons for low post test counseling attendance rates? Our study revealed that married women with known seropositive spouses were at the highest risk of HIV infection followed by those with spouses of unknown serostatus. Also, discrimination by family members was reported in many cases.

Materials and Methods

This was a retrospective study conducted to analyze the data collected at the ICTC at the All India Institute of Medical Sciences (AIIMS), a tertiary healthcare center and National HIV Reference Centre in New Delhi in north India. The collected data used for analysis was part of routine ICTC service provision and HIV diagnosis.

Study Population

Unlinked anonymized participant data with specific queries which includes questions on their risk groups, level of education, spouse serostatus were collected by trained female counselors at ICTC for the period- 2011 to 2015. The total study population was further categorized in four different groups on the basis of their age as- Group I: 0-14 years, Group II: 15-30 years, Group III: 31-45 years, and Group IV: 46-60 years for in depth analysis. Filters and specific queries were then used to sort out data pertaining to women. Also, all the participants involved in the study were first time visitors to the ICTC and were usually referred either by clinicians or came to the center voluntarily. All the participants were counseled for window period and those who tested negative but were in high risk groups were reminded two to three times by counselors to visit ICTC after three months. Furthermore, informed written consent was taken from each participant prior to both their counseling and testing. In case of minors (<18years), the details about the test were explained to the parents or any guardian who accompanied them to the center and assent was signed by their guardians.

We have National AIDS Control Organization's approval (NACO) to conduct HIV testing involving Human Subjects as per the current guidelines. The collected ICTC data was recorded as per guidelines laid down by NACO.

Integrated HIV Counseling

All the participants seeking voluntary counseling were interviewed by counselors trained and certified by the Delhi State AIDS Control Society (DSACS), a state level body of the National AIDS Control Organization (NACO). Pre Test counseling was performed for every participant wherein the option to go through a screening test for HIV was explained to the participant and informed consent was obtained. Participant specific information about personal risks, details about risk behavior, modalities for prevention, HIV testing procedures, their limitations and interpretation were discussed at length.

The same counselor interviewed the participant pre and post test to maintain confidentiality. After HIV testing, post test counseling was conducted at the time of report collection to inform the participant about her HIV test result. Few participants collect their report either on the same day of pre test counseling and HIV testing while some prefers to come later. In case of a negative or intermediate result, the concept of window period was explained and they were encouraged to repeat the test after a gap of three months.

In the event of a positive test result, the newly diagnosed participant was explained the implications of her HIV status. Psychosocial support was provided by preparing and assisting her with disclosure of HIV status to her family and peers. They were provided with strategies to cope with emotional distress. Apart from this, participants were explained the importance of adherence to medication, overall medical care. Adolescent girls were informed about their needs associated with emerging sexuality, including mechanisms for communicating HIV status to partners and avoiding high-risk behaviors. In case of married women, HIV test for their partner or spouse was recommended. Counselors equipped participants with management strategies and also provided support to the participant to adjust to her HIV status.
HIV Testing

HIV diagnostic tests were performed in accordance with the testing strategies adopted by NACO and were done on the same day as counseling. 3 mL whole blood was collected by trained phlebotomists from persons recommended for HIV testing by the ICTC counselors. As per the stipulated guidelines, ELISA was used as the primary diagnostic assay for the initial part of the study period. Samples determined nonreactive by ELISA were declared HIV negative. However, in case of a reactive sample, further confirmation was obtained by performing Enzyme Immunoassay (EIA). A non-reactive sample was confirmed to be negative whereas a reactive sample was tested with another EIA. Samples that were reactive on all three tests were determined to be HIV positive. During the latter part of the study period, a revision of the national testing guidelines resulted in a new testing approach. Samples were screened using a three rapid test strategy, each based on a distinct principle.

Measures

Different variables including age, occupation, education level, marital status, serostatus of spouse or parent, type of risk groups were measured in study population (women). Information regarding different variables was recorded after the completion of a verbal questionnaire that is provided each year by DSACS, NACO. As stated above, trained counselors verbally asked the participant about their demographic details, their familial relationships, their relationships (both sexual and emotional) with their partners and the type of support they needed. Based on the responses provided by the participant to these questions, the questionnaire is filled out.

Statistical Analysis

Statistical analysis was performed using the Graph Pad Prism 5 software. Four different variables (education, marital status, type of risk groups, occupation levels) were used for Univariate analysis to estimate the differences in variables and strength of association between HIV serostatus and demographic parameters respectively. The difference in the association of these variables was then evaluated based on women's age. Chi square test was used to test for differences in study variables like sociodemographic and behavior parameters. A p value of less than 0.05 was considered significant. The odds ratio of for various variables was calculated along with 95% confidence intervals.

Results

A total of 4458 participants came to the ICTC from 2011 to 2015. Of that, 30.55% tested HIV positive, 65.52% tested negative and 3.92% women sought counseling alone. The majority of the study participants were 15 to 45 years old.

Socio-Demographic Analysis

Literacy levels were highest in group II and lowest in group V (Table1). Furthermore, unemployment was highest in group V and lowest in group I.

Risk of HIV through heterosexual transmission (HT) was found to be most common risk group. However, Parent to Child transmission risk group was more common in group I (Table 1).

For the most part, the participants agreed to undergo HIV testing but a small fraction refused to get tested. While 30.55% tested positive for HIV antibodies, 65.52% tested negative and 3.92% did not have a reported HIV test result (Table 1).

It was observed that 50.88% of seropositive participants belonged to group II followed by group III.

Association of HIV Serostatus with Risk Determinants:

Among the HIV positive participants, association of HIV serostatus was found to be most significant in group II and among them, the illiterate participants were 2.16 times more likely to be HIV positive as compared to literate ones (Table 2). Furthermore, unemployed participants were 2.98 times more prone to HIV infection than the rest. Group I was 13.29 times more likely to get infected with HIV.

In addition to this, it was calculated that the likelihood of married women being HIV positive is 3.51 times and is increased even further to 4.01 times in the case of widows.

Also, on further analysis, women reporting HT were 5.06 times more susceptible to HIV infection than the rest. Within this group, participants whose spouses were known to be HIV positive were 16.87 times more predisposed to contracting the infection.

Illiterate HIV positive participants who have reported HT and have seropositive spouses are 2.43 times more likely to be HIV positive as compared to those whose spouses’ serostatus is unknown. Surprisingly, literate participants falling in the same category as mentioned above were 3.24 times more vulnerable to HIV infection than the ones whose spouses’ HIV serostatus is unknown (Figure 1, 2).
Table 1: Socio-demographic Characteristics of Study Subjects

<table>
<thead>
<tr>
<th>HIV Positive=1362</th>
<th>HIV Negative=2921</th>
<th>Only Counseling=175</th>
<th>Total=4458</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age Group (yrs)</strong></td>
<td><strong>0-14</strong></td>
<td><strong>15-30</strong></td>
<td><strong>31-45</strong></td>
</tr>
<tr>
<td><strong>No. of participants</strong></td>
<td>50 (3.67%)</td>
<td>693 (50.88%)</td>
<td>500 (36.71%)</td>
</tr>
<tr>
<td><strong>Type ofRisk Behavior</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Risk Behavior</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Employed</strong></td>
<td>4 (0.08%)</td>
<td>285 (41.12%)</td>
<td>72 (14.40%)</td>
</tr>
<tr>
<td><strong>Unemployed</strong></td>
<td>29 (58%)</td>
<td>389 (66.13%)</td>
<td>425 (85%)</td>
</tr>
<tr>
<td><strong>Blood Transmission</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Heterosexual Transmission</strong></td>
<td>4 (8%)</td>
<td>577 (83.26%)</td>
<td>402 (80.40%)</td>
</tr>
<tr>
<td><strong>Injection Drug Users</strong></td>
<td>0 (0%)</td>
<td>28 (4.04%)</td>
<td>29 (5.80%)</td>
</tr>
<tr>
<td><strong>Parent To Child Transmission</strong></td>
<td>42 (84%)</td>
<td>1 (0.001%)</td>
<td>1 (0.002%)</td>
</tr>
<tr>
<td><strong>Risk Behavior</strong></td>
<td>3 (6%)</td>
<td>40 (5.77%)</td>
<td>82 (16.40%)</td>
</tr>
</tbody>
</table>
### Table 2: Association of different study variables with HIV positivity (Univariate analysis)

<table>
<thead>
<tr>
<th>Exposure variable</th>
<th>0-14 yrs</th>
<th>15-30yrs</th>
<th>31-45yrs</th>
<th>46-60yrs</th>
<th>&gt;60yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR*(CI^)</td>
<td>P</td>
<td>OR*(CI^)</td>
<td>P</td>
<td>OR*(CI^)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literate</td>
<td>0.76 (0.60 - 1.23)</td>
<td>p=0.3896</td>
<td>0.46 (0.37 - 0.56)</td>
<td>p&lt;0.01</td>
<td>0.71 (0.56 - 0.89)</td>
</tr>
<tr>
<td>Illiterate</td>
<td>1.30 (0.87 - 1.43)</td>
<td></td>
<td>2.16 (1.7 - 2.6)</td>
<td></td>
<td>1.40 (1.11 - 1.76)</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>13.29 (6.31 - 27.97)</td>
<td>p&lt;0.01</td>
<td>0.68 (0.57 - 0.82)</td>
<td>p&lt;0.01</td>
<td>0.87 (0.64 - 1.19)</td>
</tr>
<tr>
<td>Student</td>
<td>0.15 (0.08 - 0.28)</td>
<td>p&lt;0.01</td>
<td>0.11 (0.07 - 0.18)</td>
<td></td>
<td>1.68 (0.33 - 8.40)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>1.38 (0.77 - 2.47)</td>
<td></td>
<td>2.98 (2.48 - 3.5)</td>
<td></td>
<td>1.11 (0.82 - 1.51)</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>2.16 (0.087 - 54)</td>
<td>p=0.69</td>
<td>3.51 (2.71 - 4.54)</td>
<td>p&lt;0.01</td>
<td>0.40 (0.27 - 0.62)</td>
</tr>
<tr>
<td>Divorced/widowed</td>
<td>0.46 (0.01 - 11.49)</td>
<td></td>
<td>0.12 (0.08 - 0.17)</td>
<td></td>
<td>1.00 (0.48 - 2.07)</td>
</tr>
<tr>
<td>Others</td>
<td>3.67 (2.17 - 6.19)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of risk behaviour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterosexual Contact</td>
<td>2.29 (0.71 - 7.42)</td>
<td></td>
<td>5.06 (4.05 - 6.33)</td>
<td></td>
<td>2.38 (1.85 - 3.06)</td>
</tr>
<tr>
<td>Blood Transfusion</td>
<td>0.59 (0.074 - 4.67)</td>
<td></td>
<td>1.69 (1.03 - 2.80)</td>
<td></td>
<td>2.49 (1.39 - 4.46)</td>
</tr>
<tr>
<td>Injection Drug Users</td>
<td>2.16 (0.08 - 54)</td>
<td></td>
<td>0.34 (0.24 - 0.47)</td>
<td>p&lt;0.01</td>
<td>0.16 (0.02 - 1.29)</td>
</tr>
<tr>
<td>Parent To Child Transmission</td>
<td>1.65 (0.04 - 2.3)</td>
<td></td>
<td>0.01 (0 to 1)</td>
<td>p&lt;0.01</td>
<td>5 (0.20 - 123.1)</td>
</tr>
<tr>
<td>Others/not specified</td>
<td>0.31 (0.09 - 1.05)</td>
<td></td>
<td>0.21 (0.15 - 0.30)</td>
<td></td>
<td>0.32 (0.24 - 0.43)</td>
</tr>
<tr>
<td>Known status of parents/spouse Unknown status of parents/spouse</td>
<td>10.34 (5.21 - 20.51)</td>
<td></td>
<td>16.87 (13.31 - 21.37)</td>
<td></td>
<td>4.73 (3.64 - 6.14)</td>
</tr>
<tr>
<td>0.096 (0.04 - 0.19)</td>
<td>0.05 (0.04 - 0.07)</td>
<td></td>
<td>0.21 (0.16 - 0.27)</td>
<td></td>
<td>0.11 (0.06 - 0.20)</td>
</tr>
</tbody>
</table>

OR* - Odds Ratio; CI^ - 95% Confidence Interval; p - p Value
Discussion

Women are significant contributors to the growing economy of a nation and children are the assets of the future. Unfortunately, they also constitute more than 50% of the people living with HIV worldwide. HIV infection rate in women aged 15 to 45 years is two times the infection rate in young men [11]. Furthermore, HIV has been determined to be the leading cause of death of women especially during their reproductive years. According to UNAIDS estimates, maternal mortality rates would have been lower by 20% in the absence of HIV [11]. These facts gravely highlight the impact of HIV infection on women's health and the need to categorically study the epidemic in this demographic. While the recent NACO report identifies female sex workers as the main driver of the epidemic in India, there are reports of an emerging epidemic in low prevalence states and other populations [3]. This is attributed to the migrant population that is bridging the prevalence gap. As a result of this, higher prevalence is being observed in pregnant women with migrant spouses [3]. These data make it imperative to address the issue of HIV infection in specifically in women and adolescent girls. This study aimed to understand the nature of the epidemic in women by gathering information about the putative factors predisposing women to HIV and record the behavioral and societal responses to a seropositive status. Anonymous data were gathered at the ICTC at AIIMS, a large tertiary care center in North India, and comprised of participant responses to a structured questionnaire, counseling sessions and test results. Analyses were done to specifically address the three questions identified.

Factors Predisposing Women to HIV

Age and Literacy: Maximum participants were of 15-45 years, highlighting the fact that they are at a greater risk of exposure to HIV during their reproductive age. Similar findings have been observed worldwide [11]. Also, illiterate women were found to be more vulnerable to HIV infection than the literate population, suggesting that formal education is directly correlated with better awareness of AIDS as seen in other studies [8]. However, astonishingly among married women, literate women were found to be at a greater risk of HIV/AIDS than the illiterate, suggesting a mismatch between formal education and AIDS awareness. This finding potentially also alludes to the preference of marriage over education of women in many communities in India.

Employment: Another vulnerability factor associated with HIV was the employment status of participants. Major chunks of this sector were found to be housewives who are economically dependent on their husbands. Previous studies have indicated that such economically vulnerable women are less likely to have access to information regarding HIV/AIDS. In these circumstances, women may exchange sex for money, security, food and other favors [12].

High risk to HIV was estimated for participants who were below 15 years of age and were unemployed. This is because most of these are children who might have acquired the infection from their parent and are in school. However, contrary to this situation, employed children were found to be prone to contracting HIV. Although child labor is a criminal offence in India, it is present in many sectors. Many of our participants reported dropping out of school to support their family. Also, the lack of awareness and early onset of sexual activities place them at a greater risk of HIV/AIDS. Studies on street children have shown that children do little to protect themselves because the pressure for survival far outweighs the need to avoid HIV/AIDS [13].

Risk Groups: According to NACO's recent statistics [14], 87.1% of HIV infections occur through heterosexual transmission. Our analysis supports these figures and further highlights the role of unprotected sex as emphasized by other studies on inconsistent use of condoms by serodiscordant couples [15]. Furthermore, in many cases due to the lack of equity, women are unable to negotiate condom use even with known risks of HIV/STI [16]. In case of group I, children with seropositive parents had a very high risk of being HIV sero positive. This could be attributed to the fact that a large section of pregnant women who take antiretrovirals often discontinue their course. On questioning one such participant, she said: “I took the medicine for the first three months and then stopped it. It used to make me feel sick, vomit often.” Other studies have also reported the similar results [17].

Marital Status: In India where the HIV epidemic is considered to be a gendered one, marriage is seen as the main ‘risk factor’ for infection in women [18]. Our study showed that many participants had seropositive spouses and could have possibly gotten infected by them without their knowledge. While a lot of them were oblivious to their husbands’ serostatus, some participants refused to answer questions fearing a confidentiality breach, an exposure of their pre/extra marital affairs or a disturbance to their marital life. Also, epidemiological studies suggest that 30-60% of Indian men reporting same-sex behaviors are married to women [19]. This coupled with the fact that men who have sex with men still account for 4.43% of HIV prevalence in India greatly increases the risk of HIV infection in their spouses [3]. Moreover, the desire to have a child, often reinforced by perceived social pressure, force some women in serodiscordant marriages to have unprotected sex thus making marriage a potential risk determinant for HIV infection [15].

Gender Based Violence: In some cases our participants reported violence and the inability to negotiate protected sex. Furthermore, some participants reported forced sexual intercourse during the third trimester of their pregnancy indicating violence. Similar findings were reported in other studies where violence was found to increase during pregnancy, thereby increasing risk of HIV infection for the woman and her unborn child [18,19].
Implications of a Seropositive Status on Physical, Social and Mental Well-Being of Women

Discrimination: The two most important factors that fuel the spread of HIV/AIDS are indeed discrimination and gender based violence as revealed by study participants. Through their interactions, counselors observed that participants had been discriminated against at various levels such as familial, social, professional and healthcare sectors. Majority of the women interviewed and counseled reported psychological, physical violence by their male partners. Pregnant women reported forced sexual intercourse by their husbands even in nine month of pregnancy.

Gender inequality and discrimination against women is still a major problem in India and major parts of the world only differing in degree and manifestation. Adding HIV/AIDS to this picture robs women of any remaining status and rights. It is crucial therefore to understand the nature of the discrimination, the levels at which it is being perceived and meted out and how it affects their daily activities. Our study exposed the different forms of discrimination endured by women with the most common being discrimination at home by relatives especially by in-laws. One of our participants revealed:

“I was never told about my husband’s seropositive status. Neither he nor did my in-laws tell me about it. I came to know about this, only when he was chronically ill and was going to die.”

On asking further about her children, she said:

“I have a 7 year old son. He is negative. But I did not know when he got tested. My in laws got him tested but only told me about him after my husband’s death”

In some parts of India, HIV seropositive children have been turned away from schools [20]. In our study, girls complained of being discriminated against by their school mates and teachers. A similar incident was reported where eight HIV positive children were on the verge of losing their right to education. These children were denied admission to a prominent school in Gurgaon on “medical grounds”[21].

In addition to this, in AIDS affected families, girls are likely to be pulled out of school to care for their ailing parents or siblings when the parents die (Lule, 2010). A lot of the young WLHA in India are subjected to discrimination by healthcare providers who refuse to touch them, withhold treatment, and deny confidentiality and hospital facilities [21]. We recorded numerous instances where our participants admitted to being ill-treated at healthcare centers. One such incident, where a woman was forced to give birth outside a hospital on the streets for being HIV positive, was reported recently [22].

Stigma: The impact of such discrimination is multi-layered in nature. Stigmatization attitudes in the general population intensify the marginalization of vulnerable women driving them further from the reach of health services. In fact studies have shown that stigma associated with HIV is more pronounced in some communities to the extent that PLHA perceive greater discrimination, prejudice and lesser sympathy than cancer patients, although both are terminal illnesses [23, 24]. Daily harassment and abuse also cause health problems and adversely affect mental health. This could lead to depression, social isolation, hopelessness, self-neglect and a decrease in care seeking behavior.

Reasons for those Exposed to High Risk but are Seronegative to not Attend Posttest Counseling

According to the Centre for Disease Control [25], window period is typically during the first 8–12 weeks following infection with HIV and if not recognized early, such cases can lead to further transmission of HIV, thereby increasing the number of new infections. Few of our participants had reported exposure to HIV in the past one month and yet tested seronegative, thus making them important for epidemiology. Previous studies [26] have written about fears and attitudes of the general population about the voluntary HIV testing. However, since there is no accurate information about low post test counseling rates in such participants we speculate that this could be due to concerns of breach in confidentiality, and discrimination from family. As the epidemic is associated with negative attitudes and strong prejudice against PLHA, existing national and state policies need to incorporate measures to address these issues. Based on our study findings, we suggest the need for reforms in legal, educational and healthcare sectors:

Legal Reforms: A protective legal environment involving laws, gender sensitive policies and programs should be drafted and established to cover both WLHA as well as those at high risk. Currently female sex workers are well studied and recognized as a risk group for HIV. However, women in general must be considered as an important target group especially with the emergence of bridging population like migrants and truckers.

Educational Reforms: A legal “umbrella” alone is not a sufficient intervention tool to bring about changes, women should be aware of when and how to exercise their rights. Communication of accurate HIV/AIDS information at school level by inclusion in academic curriculum as well as familial level is essential to break the culture of silence that sustains the HIV/AIDS epidemic in India.

Health reforms: A focused effort must be made to understand and promote the biological and reproductive needs of WLHA. Also family planning services can act as an effective strategy to avoid unintended pregnancies and prevent HIV among infants.

The findings of this study are valuable as the data about HIV epidemiology in women from India are scarce. While most of the available studies have examined the effect of HIV in pregnant women and the prevalence of other sexually transmitted diseases [27, 28], they are unable to provide an overview of the risk determinants that influence the probability of HIV
infection among women in the general Indian population. Furthermore, findings of this study elaborate on the social behaviors and prejudices experienced by HIV infected participants. However, despite the analysis of the above mentioned variables, our study has few limitations. One of the major lacunae observed in our study was that some of the participants seeking treatment services may go to other ICTCs out of convenience, where they are assigned a new identification number. So the same participant is registered twice and this may lead to inaccuracy in the national data. We suggest that each participant seeking the services of the ICTC be issued a unique identification number that can be shown at other centers and thus avoid erroneous generation of data.

Conclusion

In summary, WLHA and those at high risk are embattled by social and cultural pressures forcing them to remain behind the shroud of silence. Our study revealed that women in age group of 15-45yrs in particular were most at risk of HIV as well affected by their HIV serostatus. The evaluated risk determinants i.e. age, literacy, employment and marital status, illustrated the pressing need for HIV related education, and establishment of a protective legal environment. Women must be recognized as an important target population for designing and implementing gender directed policies to provide universal access to HIV prevention, treatment, care and support.

References

4. UNAIDS AIDS info.
6. CDC, HIV.
11. UNAIDS fact sheet.
21. The Times of India. HIV positive kids shunned, alleges NGO 2010.

