



ASSESSMENT OF RISK OF HIV INFECTION AMONG DRUG USERS VULNERABLE TO INJECTING AND SHADOW USERS BECOMING INJECTING DRUG USERS IN TWO HIGH BURDEN DISTRICTS OF HIMACHAL PRADESH

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ABSTRACT

Background: Acquired immunodeficiency syndrome (AIDS) is a chronic, potentially life-threatening condition caused by the human immunodeficiency virus (HIV). Injecting drug users are particularly vulnerable to HIV and other blood borne infections (such as hepatitis B and C) as a result of sharing contaminated injecting equipment. Present study is to calculate the risk of HIV among Non-Injecting drug users and percentage of shadow drug users converting to Injecting drug users. **Methods:** A mixed methodology study was conducted w.e.f 1st June, 2023 to 31st May, 2024, to assess the risk of HIV infection among drug users, across de-addiction centres, OST centre and ICTCs in Hamirpur and Una districts of Himachal Pradesh. **Results:** A total of 574 drug users were recruited for the study. Majority of drug users were using drugs through Intravenous route i.e., 52.43%. Most of the drug users were using Chitta i.e., 559 (97.4%) followed by Heroin i.e., 13 (2.3%). The prevalence of HIV among shadow users, IDU and Non IDU was found to be 1.80%, 2.33% and 1.10% respectively. The shadow users between 50 % to 70 % are likely to transition to injecting when the drug is available in injectable form after conducting the Key Informant Interviews and Focus Group Discussions. **Conclusion:** The prevalence of HIV among all drug users, IDUs and shadow users was found out to be 1.74%, 2.33% and 1.1% respectively. The content analysis of KIIs and FGDs indicate a 50 to 70% conversion from shadow drug users to Injecting drug users.

KEYWORDS : HIV/AIDS, IDU, OST, ICTC, HIC Risk, Shadow User, NACO, PWID

INTRODUCTION:

Acquired immunodeficiency syndrome (AIDS) is a chronic, potentially life-threatening condition caused by the human immunodeficiency virus (HIV). Today, with an estimated 2.4 million infections India is home to the second largest population of people living with HIV and AIDS.¹ In Himachal Pradesh there are 4606 PLHIVs who are alive and taking ART.² HIV can be transmitted via the exchange of a variety of body fluids from infected people, such as blood, breast milk, semen and vaginal secretions. HIV can also be transmitted from a mother to her child during pregnancy and delivery. There are some behaviour and conditions that put individual on risk to get HIV infection such as having condom less anal or vaginal sex, engaging in harmful use of alcohol and drugs in the context of sexual behaviour, sharing contaminated needles, syringes and other injecting equipment and drug solutions when injecting drugs, receiving unsafe injections, blood transfusions and tissue transplantation, and medical procedures that involve unsterile practices etc.³ Worldwide, more than 55 million people use opiates, cocaine and amphetamine-type stimulants, and an estimated 13.2 million people inject these drugs. Most (78%) injecting drug users live in developing and transitional countries.⁴ While the relationship between injecting drug use and HIV/AIDS is relatively well researched, little systematic epidemiological information is available on the extent and patterns of HIV transmission caused by non-injecting drug use. This is unfortunate because there is emerging evidence that the use of cocaine, crack and amphetamine-type stimulants increases sexual risk-taking behaviour related to HIV transmission. Injecting drug users are particularly vulnerable to HIV and other blood borne infections (such as hepatitis B and C) as a result of sharing contaminated injecting equipment.⁵ Present study was undertaken to assess the risk of HIV infection among drug users which include Non-Injecting Drug users, Injecting drug users and shadow drug users and also, to estimate percentage of shadow users converting to intravenous drug users.

METHODOLOGY:

1. Objective:

1(a) Primary Objective

To assess the risk of HIV infection among drug users who are vulnerable to injecting drugs.

1(b) Secondary Objective

To estimate the percentage of shadow users becoming intravenous drug users.

2. Study Type: Mixed Method Observational study

3. Study Design:

A convergent Parallel Mixed methods design was conducted including both quantitative and qualitative methods. To assess the risk of HIV infection among drug users who are vulnerable to injecting drugs, a cross-sectional study was conducted across de-addiction centres, OST centre and ICTCs in Hamirpur and Una. To estimate the percentage of shadow users becoming intravenous drug users, a convergent Parallel Mixed methods design was used.

4. Study Duration:

This study was conducted for a duration of 12 months w.e.f. 1st June, 2023 through 31st May, 2024.

5. Study Population:

Drug users, across de-addiction centres, OST centre and ICTCs in District Hamirpur and District Una of Himachal Pradesh.

5 (a) Inclusion Criteria:

All the drug users (New as well as old, injecting as well as vulnerable to injecting) attending De-addiction centres, OST Centre and ICTC centres in district Hamirpur and District Una during study period who consented for participation, were included in the study.

5 (b) Exclusion Criteria:

Following were excluded from the study –

1. Drug users who refused to participate in the study
2. Drug users without cognitive ability or with major psychiatric disorder
3. Women who were pregnant.

6. Sample Size:

A sample size of 550 was estimated to select the drug users attending De-addiction centres, OST Centre and ICTC centres.

7. Study Tool:

A self-structured pretested interview schedule was used to gather information from the participants. The schedule included questions on –

a) Socio-demographic profile: Age, Gender, Locality, Socio-economic status (Using Modified BG Prasad scale), occupation, education etc.

b) Drug use behaviour: History of drug use, type of drugs used, route of drug use, change of route of drug administration, injection behaviour, peers etc.

c) Knowledge of HIV, HBV, HCV and testing for these diseases. Qualitative component included open ended questions and quantitative component included close-ended questions.

8. Study Procedure:

8 (a) Data Source: The data was collected from drug users attending De-addiction centres (Private as well as run by NGOs and Tis), ICTC Una, ICTC Hamirpur, OST Una by the field investigators.

8 (b) Data Collection: One day sensitization cum training workshop of all field investigators was organized in the department for training regarding various aspects of Key informant Interviews (KII) interview and securing information while maintaining anonymity and confidentiality of participants on a pre-designed interview guide. These trained field investigators then collected data on the basis of guide from all stake holders. Before retrieval of any information a written informed consent was obtained from all the study participants and all stake holders were ensured about confidentiality and non-disclosure of personal identity and other sensitive information.

To assess the risk of HIV infection among drug users who are vulnerable to injecting drugs, a cross-sectional study was conducted across de-addiction centres, OST centre and ICTCs in Hamirpur and Una.

To estimate the percentage of shadow users becoming intravenous drug users, a convergent Parallel Mixed methods design was used. First the percentage was estimated through a follow-up cross-sectional study done on the shadow users. Then the resulting point estimate was compared with the rough estimates derived from qualitative study techniques including KII and FGD. Then a final estimate of the shadow users converting to injecting users was derived upon through triangulation of data. The key stakeholders for KII and FGD were drug users including IDUs and shadow users, DAPO, OST Counsellor, ART MO, Psychiatrist and TI counsellors. The data was collected from non-injecting drug users, intravenous drug users, shadow drug users (define), District AIDS Program Officers, Opioid substitution therapy Counsellor, Anti-retroviral therapy Medical Officers, Psychiatrists and Targeted Intervention counsellors. To estimate the conversion of shadow users to injectable drug users, two Focussed Group Discussions one in each district and a total of 26 Key Informant Interviews were conducted.

9. Data Preparation:

9 (a) Variable Transformation:

Various variables were converted to categories as applicable such as age, education level and socio-economic status for analysis.

9 (b) Data Cleaning:

Data collected for quantitative analysis was entered into Microsoft excel spreadsheet and was further cleaned through removal or imputation where appropriate, ensuring each case in the final dataset has complete information on the key variables.

10. Statistical Analysis:

The data which was cleaned in the Microsoft excel spreadsheet was analysed using the software Epi info version 7.2.6.

Age was expressed as both Mean $\pm$ standard deviation and frequency proportions.

Categorical variables (Gender, Education level, SES, type of drug, route of drug etc.) were expressed as frequency proportions.

Prevalence of HIV among the drug users was calculated and expressed as frequency proportion.

The qualitative part was analysed for estimating the percentage of shadow users converting to intravenous drug users using a descriptive verbatim and content analysis methods.

11. Operational Definitions:

a. Non-injecting Drug Users (NIDUs) are persons who do not inject drugs and are recognized to use substances with or without dependence or/and have entered any drug or rehabilitation programme and/or have any medical, legal or social problems due to drug or heavy alcohol use.

b. Injecting Drug Users (IDUs): Current IDUs were defined as those who used any drugs through injecting routes in last 12 months.

c. Shadow users: When injecting drugs, e.g. opioids, are not available, some IDUs switch over to oral or inhalation drugs or vice voce. Conversely oral or inhalation drugs are not available, some user shift temporarily to injectable. Drug users who have done so in the last 6 months were defined as shadow users.

12. Ethical Justifications:

According to the guidelines set up by ICMR (2017) and Helsinki declaration (modified 2000), the following was adhered to, in all the participant enrolled in the study:

- The participant involved in the research were informed participants and written informed consent was obtained from all the participant included in the study.
- Each participant was adequately informed of the aims, methods, the anticipated benefits and potential risks of the study and the discomfort it may entail to him/her and the remedies thereof.
- Every precaution was taken to respect the privacy of the participant, the confidentiality of the patient's information and to minimize the impact of the study on his/her physical and mental integrity and his/her personality.
- The participants were given the right to abstain from participation in the study or to withdraw consent to participate at any time of the study without reprisal.
- Due care and cautions were taken at all stages of the research to ensure that the participant is put to the minimum risk and, generally, benefit from and by the research.
- Study was carried out after taking due permission from Institutional Ethics Committee of Dr Radhakrishnan Government Medical College Hamirpur.

Observations:

1. Socio-Demographic Characteristics:

A total of 574 drug users were recruited for the study.

Gender distribution: Out of total 574 drug users, 565 (98.4%) were males, 7 were females and a total of 2 participants did not disclose their gender.

Age distribution: The mean age of participants was 24.52 ± 6.33 years. Most of the study participants or drug users (69%) were between the age of 20 – 25 years.

Residential, Educational and Socio-economic status: Out of all 541 (94.25%) were belonging to rural background. 104 (18.12%) out of all were educated up to matriculation level, 289 (50.35%) up to 12th standard, 123 (21.43%) up to graduation level and 58 (10.11%) were postgraduates. Most of the study participants i.e., 247 (43%) were belonging to Middle class followed by Lower Middle class i.e., 213 (37%).

Table 1: Socio-demographic profile of study participants

		Frequency (N)	Percentage (%)
Gender	Male	565	98.4
	Female	7	1.2
	Others	2	0.35
Age Group	Less than 20 years	69	12.02
	20-25 years	397	69.16
	More than 25 years	108	18.82
Marital status	Currently Married	113	19.7
	Never Married	425	74
	Divorced/Separated	36	6.3
Residence	Rural	541	94.25
	Urban	33	5.75
Education	Up-to matriculation	104	18.12
	Up-to 12th standard	289	50.35
	Graduates	123	21.42
	Post-graduates	58	10.11
Socio-economic status	Upper class	27	4.70
	Upper Middle class	73	12.72
	Middle class	247	43.03
	Lower middle class	213	37.11
	Lower class	14	2.44

2. Drug Use behaviour:

Most of the drug users were using Chitta i.e., 559 (97.4%) followed by Heroin i.e., 13 (2.3%). Majority of drug users were using drugs through Intravenous route i.e., 52.43%.

Table 2: Drug use profile of study participants

		Number	Percentage
Route of drug administration	Intravenous	301	52.43
	Shadow/smoke on foil	273	47.57
Type of drug used	Chitta	559	97.38
	Heroin	13	2.26
	Others	2	0.36

3. Drug Use Behaviour and HIV Status:

In De-addiction centre Una, HIV positivity among non-IDUs is very low, with only 1 out of 156 testing positive, and none of the 125 shadow users are HIV positive. Among 241 current IDUs, 4 are HIV positive. In OST RH Una, HIV positivity among non-IDUs was 1 out of 32 tested, and 1 of the 14 shadow user was HIV positive. Among 19 current IDUs, 2 were HIV positive. In ICTC Una, HIV positivity among non-IDUs was 1 out of 34 tested, and 1 of the 14 shadow user was HIV positive. Among 21 current IDUs, 2 are HIV positive.

Table 3: Details of drug users recruited for the study and HIV status:

District	Facility	Drug user					
		Non – IDU		Current IDU		Shadow users	
		Total	HIV +ve	Total	HIV +ve	Total	HIV +ve
Una	De-addiction centres in Una	156	1	241	1	125	0
	OST RH Una	32	1	19	2	14	1
	ICTC Una	34	1	21	2	14	1
Hamirpur	ICTC Hamirpur	27	0	12	1	8	1
	De-addiction centres Hamirpur	24	0	8	1	6	0
Total		273	3	301	7	167	3

In district Hamirpur, the rates are somewhat higher: 1 out of 12 current IDUs and 1 out of 8 shadow users test positive for HIV, with no HIV-positive among non-IDUs in ICTC Hamirpur. Overall, 7 out of 301 current IDUs and 3 out of 167 shadow users are HIV positive, reflecting a higher HIV prevalence of 2.3% among current IDUs compared to non-IDUs and shadow users. This highlights an association between being a current IDU and increased HIV risk.

The prevalence of HIV among shadow users, IDUs and Non IDUs were found to be 1.80% (3/167), 2.33% (7/301) and 1.10% (3/273)

respectively. Shadow users and IDU users both exhibit higher odds of HIV infection compared to non-IDU users. The results suggest that engagement in riskier behaviours (as seen in shadow and IDU users) is associated with a higher likelihood of HIV infection. However, the wide confidence intervals indicate that these findings should be interpreted with caution due to the potential for statistical uncertainty, likely due to the small sample sizes. The FGDs were conducted until the saturation of answers was achieved. The conversion of shadow users to injectable drug users was 50% in district Hamirpur and 60% in district Una. Study participants in district Hamirpur has a notably higher percentage (70%) of IDUs with a history of being shadow users compared to district Una (54.4%), suggesting that shadow drug use is more prevalent among IDUs in district Hamirpur.

Under the findings of Qualitative in FGDs saturation of answers was achieved at a conversion rate of 50% and 60% in Hamirpur and Una respectively. A total of 26 Key Informants were interviewed till the saturation of answers was considered which was a conversion of 60% to 80% which was then considered as 70% conversion of shadow users to injecting ones.

As per the content analysis of Key informant interviews and Focused Group Discussions, a consensus was arrived that 50% to 70% of the shadow users usually convert to injecting route whenever the injecting form of drug is available to them.

DISCUSSION:

The findings from this study provide a comprehensive overview of socio-demographic patterns, drug use behaviour and HIV prevalence among the drug users.

1. Demographic Patterns:

This study comprised 574 drug users with a male predominance (98.4%) aligning with the findings published by NACO as HSS Plus 2021¹² (98.8% males) but are in contrast with the findings of JiaqiLv et al⁷ (84% Males) in China and Jenkins WD et al⁸ (58% Males). The age distribution analyses revealed that the majority of drug users (69%) fell within the 20-25 years age group. These findings are contrary to the findings published by NACO in HIV Sentinel Surveillance Plus Report 2021¹² which shows that majority of HIV positive drug users were in the age group of 25-34 years (50%) followed by the age group of 35-44 years and also to the findings of JiaqiLv et al⁷ (Mean age 38 Years) and Jenkins WD et al⁸ (Mean age 36 Years). This might indicate a shift in drug use history with early age of initiation of drug use. As per the marital status of drug users in our study, majority were never married (74%) similar to the findings of Jenkins WD et al⁸ (69% unpartnered). Similar findings were also published in the same report by NACO (59% unpartnered)¹².

In our study, nearly 50% of the drug users had studied up to secondary level (12th Standard), which is similar to the drug users reported by Pachau LN et al¹¹ (54%) and in contrast to the drug users group taken by JiaqiLv et al⁷ where only 21% were educated up to secondary level.

2. Drug Use Pattern:

Most of the drug users were using Chitta i.e., 559 (97.4%) followed by Heroin i.e., 13 (2.3%). Majority of drug users were using drugs through Intravenous route i.e., 52.43%. Pachau LN et al¹¹ reported the injecting drug users to be 94%, whereas most common drug used was Heroin (99%). JiaqiLv et al⁷ reported that the proportion of participants using traditional drugs was 35% and only 16% were injecting the drugs. The drug use pattern is swiftly changing in the study area and also the route preferred is being the injecting one.

3. HIV Risk among Drug Users:

The prevalence of HIV among shadow users, IDUs and Non IDUs were found to be 1.80% (3/167), 2.33% (7/301) and 1.10% (3/273) respectively. The HIV Estimation 2025 Technical Report¹³ estimated the HIV prevalence among IDUs to be 1% in Himachal Pradesh and up to 45% in Rajasthan. JiaqiLv et al⁷ reported the odds of HIV infection among injecting users to be 2.69 to that of non-injecting users. Also, Pachau LN et al¹¹ reported the HIV prevalence among PWID to be around 21%. The lower prevalence of HIV among PWIDs in our study can be attributed to recent surge in number of injecting drug users and it may take time to become infected with HIV or test positive for HIV in the new users. However, a large-scale study needs to be planned for precise estimation of Risk of HIV among PWID.

CONCLUSION:

The majority of drug users were males and using Chitta. The major infection among these drug users was found out to be Hepatitis C (HCV) i.e., 59 (10.28%) followed by Hepatitis B (HBV) i.e., 21 (3.65%) infection. The prevalence of HIV among shadow users, IDUs and Non IDUs were found to be 1.80% (3/167), 2.33% (7/301) and 1.10% (3/273) respectively. Shadow users and IDU users both exhibit higher odds of HIV infection compared to non-IDU users. As per the content analysis of Key informant interviews and Focused Group Discussions, a consensus was arrived that 50% to 70% of the shadow users usually convert to injecting route whenever the injecting form of drug is available to them.

Recommendations: Implement and expand needle exchange programs and encourage safer drug-use practices to reduce the risk of HIV transmission among IDUs. Introduce routine HIV testing for drug users, especially those who inject, in high-risk areas like Una and Hamirpur. Implement regular mental health screening in schools to identify early signs of substance abuse and provide counselling and support to at-risk youth. The government should prioritize drug control efforts, particularly in regions with high drug prevalence, such as the border areas of Himachal Pradesh and Punjab.

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