

# A Study of SERO Prevalence of Hepatitis B, Hepatitis C, Human Immuno Deficiency Virus and Psychiatric Co Morbidity in Patients of Substance Dependence Syndrome in Tertiary Care Centre

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## ABSTRACT

**Background:** Context: Substance abuse is rising at alarming rate. Due to the similar route of transmission of HIV, HBV and HCV, intravenous drug abusers are considered one of the leading high-risk groups. Substance use disorders are strongly correlated with comorbid psychiatric disorders. Aims: To study the sero prevalence of Hepatitis B, Hepatitis C, Human Immuno- deficiency Virus among patients of substance dependence syndrome and their related comorbidities. Setting and design: Cross-sectional study includes patients in both in-patient and out-patient setting. **Methods:** A total of 100 patients fulfilling the inclusion and exclusion criteria were recruited and subjected to semi-structured Psychiatric Thesis Performa, The Self Reporting Questionnaire (SRQ 20), Mini International Neuropsychiatric Interview (MINI). Statistical analysis used: Statistical analysis was performed using statistical package for social sciences (SPSS 20.0.0) software. The data was analysed using the chi-square test and Pearson's co-relational analysis. **Results & Conclusion:** The overall Sero-prevalence of Hepatitis B, Hepatitis C and HIV infection in 100 patients of substance dependence syndrome in our study were 4.0%, 13% and 3.0% respectively and among Injecting Drug Users were 12.5%, 40% and 2.5% respectively. The overall prevalence of Psychiatric co-morbidity in our study was 30% in 100 patients of substance dependence syndrome and 42.8% in Injecting Drug Users.

**Keywords:** Seroprevalence, substance dependence, comorbidity.

## INTRODUCTION

The Indian Vedic scriptures have documented the use of soma-sura (intoxicating beverages) as early as 2000-800 BC in India. Even the ancient Indian texts of Charaka and Sushruta (around AD 300) have documented distinctions between normal and excessive drinking.<sup>[1]</sup> Opium has been used for medicinal purposes for at least 3,500 years, references to cannabis (marijuana) as a medicine can be found in ancient Chinese herbals, wine is mentioned frequently in the Bible, and the indigenous people of the Western Hemisphere were smoking tobacco and chewing coca leaves from long time.<sup>[2]</sup>

According to WHO, a psychoactive drug is one that is capable of altering the mental functioning. According to ICD-10, Substance Dependence is 'A cluster of behavioural, cognitive & physiological phenomena that develop after repeated substance use & typically include a strong desire to take the drug, difficulties in controlling its use, persisting in its use

despite harmful consequences, a higher priority given to drug use than to other activities & obligations, increased tolerance & sometimes a physical withdrawal state.

The spread of human immunodeficiency virus (HIV), hepatitis B virus (HBV) and hepatitis C virus (HCV) continues at an alarming rate worldwide. Globally 2 billion people are infected with Hepatitis B Virus and 6 million die with Hepatitis B Virus related liver disease or hepato-cellular carcinoma and 170 million individuals are living with Hepatitis C Virus infection.<sup>[3-5]</sup> Due to the similar route of transmission of HIV, HBV and HCV, intravenous drug abusers are considered one of the leading high-risk groups. Viral transmission is primarily parenteral through sharing of contaminated injection equipments. Studies have shown that the prevalence rates of these blood- borne viral infections are higher among individuals with prolonged drug use.<sup>[6]</sup> Various studies have demonstrated sexual intercourse as mode of transmission of HBV.<sup>[7]</sup> At the same time other studies have failed to show any association of high risk sexual behaviour and HBV & HCV infection though in HIV infection, the sero-prevalence is associated with high-risk sexual behaviour.<sup>[8]</sup>

Co-morbidity of mental disorders and substance use disorders is common. It seems that substance misuse

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## *Kaur et al; SERO Prevalence of Hepatitis B, Hepatitis C, Human Immuno Deficiency Virus and Psychiatric Co Morbidity in Patients of Substance Dependence Syndrome*

can activate new psychiatric disorders and aggravate current disorders.<sup>[9]</sup>

There is paucity of published data to assess the extent of sero-prevalence of HBV, HCV AND HIV in patients of substance dependence syndrome other than Injecting drug users. Also there are limited numbers of studies to assess the prevalence of psychiatric co-morbidity in patients of substance use disorder locally in Punjab.

The present study aims to assess the prevalence of HIV, HBV, HCV infection and Psychiatric Co-morbidity among patients of substance use disorder and thus would further help in formulation of appropriate intervention programs to prevent transmission and address appropriate measures against HIV, HBV, HCV and psychiatric illness among this population.

### **Aims and Objectives**

- To study the sero-prevalence of Hepatitis B, Hepatitis C, Human Immuno- deficiency Virus among patients of substance dependence syndrome.
- To study the prevalence of co morbid psychiatric disorders among patients of substance dependence syndrome.

## **MATERIALS AND METHODS**

**Study Design:** Present study was a cross-sectional study carried at Adesh Institute of Medical Sciences and Research, Bathinda, a tertiary care hospital in which all conservative psychiatric indoor as well as outdoor patients were examined for the sero-prevalence of anti-HCV antibodies, anti-HIV antibodies and HBsAg antigen along with Psychiatric Co-morbidity among consenting patients of Substance Dependence Syndrome. This study had the approval of the Institutional Research Ethics Committee. A total of 100 patients (both outdoor and indoor) of Substance Dependence Syndrome who came to OPD of Psychiatry Department of Adesh Hospital were recruited for study.

### **Inclusion Criteria:**

1. Meeting the ICD 10 Criteria for Substance Use Disorder currently using the substance.
2. Age between 18-65 years.
3. Written informed consent.

### **Exclusion Criteria:**

1. Organic Brain Syndrome.
2. Severe Medical Ailment.
3. Mental retardation.

### **Requirements and Procedure would be as follows:-**

#### **A. Instruments:**

##### **1. Psychiatric Thesis Proforma:**

Psychiatric Thesis / Interview Proforma made by Department of Psychiatry was applied to find out the

substance abused, duration of use, duration of dependence and sexual history of the patients.

##### **2. The Self Reporting Questionnaire (SRQ 20):**

The Self Reporting Questionnaire (SRQ) has been developed by WHO as an instrument designed to screen for psychiatric disturbances, especially in developing countries. It consists of 20 questions which have to be answered by yes or no. It may be used either as a self-administered or as an interviewer administered questionnaire.

##### **3. Mini International Neuropsychiatric Interview (MINI). Diagnostic assessment:**

The MINI was designed as a brief structured interview for the major axis I psychiatric disorders in DSM-IV and ICD-10. Validation and reliability studies have been done comparing the MINI to the SCID-P for DSM-III-ARE and the CIDI. The results of these studies showed that the MINI has acceptably high validation and reliability scores, but can be administered in much shorter period of time.

### **Statistical Analysis**

The data thus generated was subjected to appropriate statistical analysis to answer the aims and objectives. To represent the data both tables and bar diagrams/Pie charts were used. Descriptive statistics in terms of percentage was used to describe the categorical variable.

## **RESULTS**

- 1) As regarding the Socio-demographic profile [Table 1] of the subjects obtained from Psychiatric thesis proforma, it was observed that:-
  - a. In our study, 100% patients were male.
  - b. 25% of our patients were of age group 25-30 years.
  - c. 85% of our patients were educated with 41% out of them got education upto matric or higher secondary pass.
  - d. 45.0% were farmer.
  - e. 69.9% had monthly income >8000 per month.
  - f. 69.0% were from rural background.
  - g. 52% were living in nuclear families.
- 2) In relation to the information regarding pattern of drug abuse as per Psychiatric Thesis Proforma, it was seen that:
  - a. 55% of our patients had single substance dependence, followed by 35% of patients with two substance dependence and 10% each with three and four substance dependence respectively.
  - b. Among the patients with single substance dependence, 82.2% had opioid dependence.
  - c. Among the patients with two substance dependence, 43.3% were consuming combination of opioid and alcohol.
  - d. Among three substance dependence, 60.5% were consuming combination of opioid + alcohol + tobacco.

- e. Among four substance dependence 40.8% were consuming combination of opioid + cannabis + sedative + alcohol.
- f. 27.5% of patients in our study had duration of dependence between 5-10 years. [Table 4]
- g. Among 100 patients of substance dependence syndrome, 40% were Injecting Drug Users. [Table 4].

**Table 1: Distribution of total sample according to the Socio-demographic variables (N=100)**

Variables		Number	Percentage
Age	15-20	6	6.0%
	20-25	22	22.0%
	25-30	25	25.0%
	30-35	16	16.0%
	35-40	7	7.0%
	40-45	10	10.0%
	45-50	5	5.0%
	50-55	4	4.0%
	55-60	3	3.0%
	60-65	2	2.0%
	Range	15-65 years	
	Mean Age ( $\pm$ SD)	33.44 $\pm$ 11.25 years	
Gender	Male	100	100%
	Female	0	0
Marital Status	Married	69	69.0%
	Unmarried	31	31.0%
Education	Illiterate	15	15.0%
	Primary Education	12	12.0%
	Middle	10	10.0%
	Matriculation/ Higher Secondary	41	41.0%
	Graduate	18	18.0%
	Post-Graduate	4	4.0%

Occupation	Farmer	45	45.0%
	Labourer	11	11.0%
	production & related works	6	6.0%
	service works	22	22.0%
	transport operator works	7	7.0%
	Unemployed	9	9.0%
Income	0-2000	12	12.0%
	2001-4000	6	6.0%
	4001-6000	3	3.0%
	6001-8000	10	10.0%
	>8000	69	69.0%
Region	Rural	69	69.0%
	Urban	31	31.0%
Type of family	Nuclear	52	52.0%
	Joint	48	48.0%

- 3) As regarding the sero-prevalence of viral markers as per reports of blood test for viral markers [Table 2& 5], it was observed that:-
- a. Sero-prevalence of anti-HCV antibodies was 13% among 100 patients of substance dependence syndrome and 40% among Injecting Drug Users and 3.33% among non - Injecting Drug Users.
  - b. Sero-prevalence of HBsAg was 4% among 100 patients of substance dependence syndrome,

12.5% among Injecting Drug Users and 3.33% among non-Injecting Drug Users.

- c. Sero-prevalence of anti-HIV antibodies was 3% among 100 patients of substance dependence syndrome, 2.5% among Injecting Drug Users and 1.66% among non-Injecting Drug Users.
- d. Sero-prevalence of combination of anti-HCV antibodies with HBsAg was 2.0% among 100 patients of substance dependence syndrome and 5.0% among Injecting Drug Users.
- e. Sero-prevalence of combination of anti-HCV antibodies with anti-HIV antibodies was 2.0% among 100 patients of substance dependence syndrome and 2.5% among Injecting Drug Users.

**Table 2: Distribution of total sample according to Sero-prevalence for any viral marker (HIV, HCV and HBsAg) (N=100)**

Variable	Viral Markers	Number of Patients/ Percentage (%)
Reactive	HIV	3 (3.0%)
	HCV	13 (13.0%)
	HBsAg	4 (4.0%)
	HIV & HCV	2 (2.0%)
	HIV & HBsAg	0
	HCV & HBsAg	2 (2.0%)
	HIV,HCV & HBsAg	0
	Total	24 (24.0%)
Non-Reactive		76 (76.0%)
	Grand Total	100 (100.0%)

**Table 3: Distribution of total sample according to Psychiatric illness present according to MINI Scale (N=100)**

MINI	Number of Patients/ Percentage (%)
Major Depressive episode	12 (12.0%)
Anxiety	6 (6.0%)
Major Depressive episode and Anxiety	2 (2.0%)
Mania	2 (2.0%)
Mood Disorder with Psychotic features	1 (1.0%)
Dysthymia	1 (1.0%)
Generalized anxiety Disorder	2 (2.0%)
Antisocial Personality Disorder	2 (2.0%)
Panic disorder	2 (2.0%)
Total	30 (30.0%)
No Psychiatric illness	70 (70.0%)
Grand Total	100 (100.0%)

**Table 4: Association between duration of substance used and Injecting Drug Users (N=100)**

Duration of substance used	IDUs		Total	chi Square value	Df	P value
	Yes	No				
<5 years	17	12	29	7.819	3	0.04
5-10 years	11	22	33			
10-15 years	09	13	22			
>15 years	03	13	16			
Total	40	60	100			

*Kaur et al; SERO Prevalence of Hepatitis B, Hepatitis C, Human Immuno Deficiency Virus and Psychiatric Co Morbidity in Patients of Substance Dependence Syndrome*

- 4) As regarding the prevalence of co-morbid Psychiatric illness in patients of substance dependence syndrome [Table 3] as per SRQ 20 and MINI Scale, we saw that:-
- Prevalence of psychiatric illness in cases of substance use disorder was 30%, in Injecting Drug Users was 66.6% and in Non-Injecting Drug Users was 33.3%.
  - Among the patients of substance dependence syndrome with co-morbid Psychiatric illness

majority 12 (40%) of patients had Major Depressive Episode, 3 (16.6%) had Anxiety, 2 (6.6%) had Major Depressive Episode with Anxiety, 1 (3.3%) had Mood Disorder with Psychotic features, 1 (3.3%) had Dysthymia and 2 (6.6%) of patients each had Mania, Generalized anxiety Disorder, Antisocial Personality Disorder and Panic disorder respectively.

**Table 5: Association between Sero-prevalence for any viral marker and Injecting Drug Users (IDUs) (N=60)**

Sero-prevalence	IDUs		Chi Square Value	Df	P Value
	Yes	No			
HBsAg	5	2	32.87	5	0.000004
HBsAg, HCV	2	1			
HCV	16	2			
HIV	1	1			
HIV, HCV	1	0			
Nil	15	54			
Total	40	60			

## DISCUSSION

The Present study was carried out in Adesh Institute of Medical Sciences and Research, Bathinda. It was conducted to determine the sero-prevalence of HIV, Hepatitis C and Hepatitis B along with psychiatric co-morbidity among 100 patients of substance dependence syndrome. An informed written consent was taken from all patients for participating in our study. The sero-prevalence of Hepatitis B, Hepatitis C, Human Immuno- deficiency Virus was determined from reports of blood test for viral markers which were analyzed by ELISA test in Microbiology Department of Adesh Hospital, Bathinda.

In our study, among 100 patients of substance dependence syndrome, 40% were Injecting Drug Users. This was in concordance with a study conducted by Tsui JI et al,<sup>[10]</sup> who estimated the effects of HCV sero-conversion coupled with post-test counseling on risk behaviors (alcohol use, Non Injecting and injection drug use, lending and sharing injecting equipment, and having sex without a condom) and depression symptoms. They found that HCV sero-conversion was independently associated with a decreased likelihood of consuming alcohol and using non injecting drugs immediately after disclosure.

In our study, sero-prevalence of anti-HCV antibodies was 13% among 100 patients of substance dependence syndrome and 27.5% among 40 patients of Injecting Drug Use. These were close to the findings of Basu D et al,<sup>[11]</sup> who carried out a study to determine the sero-prevalence of anti-HCV antibody in injecting drug users (IDUs) versus non-IDUs (NIDUs), and they found that almost one-third of the IDUs 31.8% were positive for anti-HCV antibody, as opposed to only 3.2% of the NIDUs. The four risk factors strongly associated with HCV

positivity in multivariate analysis were sharing syringe, reuse of injection accessories, blood transfusion and IDU status. But our finding was lower than that of 45.6 per cent found in an earlier study by Basu D.<sup>[12]</sup> This difference might be due to more number of Injecting Drug Users in his study. However, it was well within the range of 20-90 per cent reported from India.<sup>[13]</sup> The baseline community sero-prevalence of anti-HCV antibody as around 1–2%, the high figures in our study do raise concern and call for urgent medical, public health and policy-making attention in this area.

In our study, sero-prevalence of HBsAg antigen was 4% among 100 patients of substance dependence syndrome, 12.5% among Injecting Drug Users and 3.33% among non- Injecting Drug Users. Our finding was more than in study of Basu D et al,<sup>[11]</sup> in which 3.5% of IDUs and 0.9% of Non-IDUs tested positive for HBsAg. Prevalence of HBsAg antigen was 4% as compared to that of anti-HCV antibodies which was 13% among 100 patients of substance dependence syndrome and 27.5% among 40 patients of Injecting Drug Use. One of the reason why Hepatitis C was more common than Hepatitis B could be that HCV infection becomes chronic in 75%- 85% of cases whereas HBsAg infection becomes chronic in only 5%. Thus, people infected by HCV may transmit the infection over a long period.

In our study, sero-prevalence of anti-HIV antibodies was 3% among 100 patients of substance dependence syndrome and 2.5% among Injecting Drug Users whereas findings of Basu D et al,<sup>[11]</sup> showed that the sero-prevalence of anti-HIV antibodies among 420 drug abusers was 2.4% and in IDUS was 5.0%. This was less than the overall anti-HIV antibodies sero-prevalence 7.14% in IDU population in the country.<sup>[12]</sup> This disparity in the sero-prevalence of HIV could be due to the small

sample size in our study. According to Sanvisens A who conducted a prospective study in 2013,<sup>[14]</sup> in a cohort of patients admitted to substance abuse treatment programmes in three teaching hospitals between January 1997 and December 2006, to some extent, the incidence of HIV infection was low and the results shown here indicated that non-IDUs had a fivefold lower risk of HIV than the IDUs. The observed decline in the prevalence of HIV infection among IDUs was likely the result of harm-reduction interventions to reduce the impact of the HIV epidemic associated with heroin dependence included the access to opioid substitution therapy with methadone and the needle exchange programmes, among other interventions.

In our study, sero-prevalence of combination of anti-HCV antibodies with HBsAg antigen & anti-HCV antibodies with anti-HIV antibodies was 5.0% and 2.5% respectively among Injecting Drug Users. This dual infection might be due to same mode of transmission of all three infections. However no case positive with all three infections was found.

In our study, prevalence of psychiatric illness in cases of substance dependence syndrome, who were mainly opioid dependent individuals was 30%, among Injecting Drug Users was 66.6% and among non Injecting Drug Users was 33.3%. Among these majority of patients had co-morbid mood disorders. 12 (40%) patients had Major Depressive Episode, 6 (20%) had Anxiety, 2 (6.66%) had Major Depressive Episode with Anxiety and 1 (3.33%) had Dysthymia. These were close to the findings of Kumar V et al,<sup>[15]</sup> who conducted study in opioid dependent individuals and found that out of 25 patients 19 (76.0) were found to have co-morbid psychiatric illness. Axis I and Axis II co-morbidity was found in 76% and 20% of the samples, respectively. Axis I co-morbidity were psychoactive substance abuse in 88.0% of cases; mood disorder 36.0% and anxiety disorder 12.0%.

## CONCLUSION

In our study the overall Sero-prevalence of Hepatitis B, Hepatitis C and HIV infection in 100 patients of substance dependence syndrome were 4.0%, 13% and 3.0% respectively and among Injecting Drug Users were 12.5%, 40% and 2.5% respectively. We found that individuals with substance dependence syndrome were at increased risk of infections with Hepatitis B, C and HIV regardless of the main route of drug administration. Hence, the burden of positivity of these viral markers in individuals of substance dependence syndrome, especially IDUs had obvious implications for clinicians, patients and policy makers. It is advised to timely diagnose the infected people so that preventive measures and appropriate control may limit further transmission of these infections.

The prevalence of Psychiatric co-morbidity in our study was 30% in 100 patients of substance dependence syndrome and 42.8% in Injecting Drug Users. Amongst patients of substance dependence syndrome with co-morbid Psychiatric illness majority 40% of patients had Major Depressive Episode, 16.6% had Anxiety, 6.6% had Major Depressive Episode with Anxiety, 3.3% had Mood Disorder with Psychotic features, 3.3% had Dysthymia and 6.6% of patients each had Mania, Antisocial Personality Disorder, Generalized anxiety Disorder and Panic disorder. In our study psychiatric co-morbidity was very high. Number of co-morbid diagnosis in a person may be as high as three signifying poor outcome and implying that the clinician should not stop after making 1 or 2 diagnosis. The probability of having co-morbidity is increased by psychosocial stressor. Limited number of sample may limit the generalizability of the study and requires community based study to conclude more accurately.

### Limitations:-

However there were few shortcomings in this study:

- 1) The sample size was small.
- 2) Environmental factors for Injecting Drug Users were not assessed.
- 3) Molecular tests could not be done due to financial constraints and assessment was done only by serological tests.
- 4) The risk factors could have been studied in more details.

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## *Kaur et al; SERO Prevalence of Hepatitis B, Hepatitis C, Human Immuno Deficiency Virus and Psychiatric Co Morbidity in Patients of Substance Dependence Syndrome*

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