



PREVALENCE OF HEPATITIS-C VIRAL INFECTION AMONG OPIOID DEPENDENT INJECTABLE DRUG USERS

Ajaz A Suhaff	Senior Resident, Department of Psychiatry SKIMS Medical College Bemina, Srinagar, Jammu & Kashmir.
Abdul Majid	Prof. & Head, Department of Psychiatry SKIMS Medical College Bemina, Srinagar, Jammu & Kashmir.
Bilal A Teli*	Clinical Psychologist, Department of Psychiatry SKIMS Medical College Bemina, Srinagar, Jammu & Kashmir. *Corresponding Author
Nizam-ud-Din	Assistant Professor, Department of Psychiatry SKIMS Medical College Bemina, Srinagar, Jammu & Kashmir.
Kounsar S Pandit	Counselor, Drug De-addiction center SKIMS Medical College Bemina, Srinagar, Jammu & Kashmir.

ABSTRACT **Aims and Objectives:** To study the prevalence of Hepatitis-C Viral Infection among Opioid Dependent Injectable Drug Users. **Materials and Methods:** This cross-sectional study was conducted in Drug Treatment Centre in the Department of Psychiatry. The study included consecutive patients who availed the specialized services of drug de-addiction and fulfilled the diagnosis of opioid dependence as per ICD-10 criteria. Blood specimens were collected for HCV/HBAsg/HIV antibody screening. **Results:** The study included 802 patients, of whom 12.0% (n=100) of patients were found HCV Positive and 1.4% (n=12) patients were found to be positive for both hepatitis B and hepatitis C. Majority of the HCV positive substance abuse patients were males and younger in age. **Conclusion:** This study highlights that there is an urgent need to expand hepatitis counseling and testing for all substance abuse patients particularly IDUs.

KEYWORDS : Opioids, substance abuse, viral hepatitis, Drug treatment center, Injection drug users

INTRODUCTION

Worldwide 170 million people are infected with the hepatitis C virus (HCV). Hepatitis C is considered to be a major health issue globally. HCV is a single stranded RNA flavivirus, originally identified in 1989 as the major cause of non-A and non-B hepatitis. Injectable opioid drug users (IDU) are at relatively high-risk in terms of blood-borne infections with the human immunodeficiency virus (HIV), acquired immune deficiency syndrome (AIDS), and hepatitis [1-3]. IDUs are at high risk for blood-borne infections and high transmission risk is associated with the sharing of injection equipment and, high risk sexual behavior, as the viruses circulates quickly through the reuse of contaminated drug injection equipment.[4]

The prevalence of antibodies to HCV in most studies of IDUs has been reported to be 80% to 90%, and incidence rates generally range from 10% to 20% per year. [5] HCV progresses to chronic infection in approximately 80% of cases and approximately 15 to 20% population who acquire HCV infection progress to potentially serious end-stage liver diseases. Results of global systematic review, the epidemiology of viral hepatitis among people who inject drugs showed that the prevalence of HCV is higher than 50% in most countries of the world, between 60% and 80% in 25 countries, and above 80% in a further 12 countries.[6-12]

In Indian studies HCV seropositivity in IDUs to be in the range of 20 to 90 per cent; some regions in India found very high HCV seroprevalence, otherwise the range is moderate (30-50%) compared to western studies (40 -90%).[13] Various other studies from India have shown a very high prevalence (90.4-98%) of HCV in IDUs. [14-16]. There is a paucity of published data on seroprevalence of hepatitis viral infection among opioid users in Kashmir, so we intended to take up this study.

Aims and Objectives

- To study the Prevalence of Hepatitis-C Viral Infection among Opioid Dependent Injectable Drug Users.

MATERIALS AND METHODS

This cross-sectional study was conducted in Drug Treatment Centre in the department of psychiatry. The study was approved by the Institutional Ethical Committee. Written informed consent was taken from all the patients. The study was focused on those patients who availed the specialized services of drug de-addiction started by the Department of Psychiatry. The data was collected during the period of April 2020 to March 2021.

Consecutive patients attending psychiatric OPD with substance use disorders diagnosed as per ICD-10 criteria were recruited. Additionally the study participants were required to be aged 16 or more. Patients with comorbid organic brain disorders and did not consent were excluded.

A detailed history of socio-demographic and clinical profile was taken as per the proforma. The questionnaire comprised mainly close-ended questions covering demographic characteristics, drug use history, drug use trends, criminal justice records and health behaviour. Consecutive patients attending the drug deaddiction services, fulfilling the ICD-10 criteria of opioid dependence syndrome were inducted.[17] Patients were informed about the procedures and each of the subjects who consented to the study underwent a blood-draw and an interview with the clinician. Blood specimens collected for HCV/HBAsg/HIV antibody screening were sent to the hospital's laboratory.

Descriptive statistics (frequency and percentage) were used to analyse the characteristics of participants.

RESULTS

Table 1: Demographic profile of the patients (N=830).

Demographic variables		Frequency	Percent
Gender	Male	825	99.4%
	Female	5	0.6%
Residence	Urban	461	55.5%
	Rural	369	44.5%
Age	Below 18Years	17	2.0%
	18-24 years	381	45.9%
	25-34 years	347	41.8%
	35-44 years	77	9.3%
	45 years & Above	8	1.0%
Marital Status	Married	420	28.9%
	Unmarried	582	70.1%
	Divorced	6	0.7%
	Separated	1	0.1%
	Widower	1	0.1%
Job Profile	Student	53	6.4%
	Skilled Worker	130	15.7%
	Unskilled Worker	387	46.6%
	Employed	55	6.6%
	Unemployed	101	12.2%
	Business	104	12.5%

Table 2: Description of frequency and percentage of family and patients income (N=830).

Variable	Income	Frequency	Percent
Family Income	Nil	129	15.5%
	Below & 10000 Rupees	141	17.0%
	10001- 20000 Rupees	384	46.3%
	20001- 30000 Rupees	122	14.7%
	30001- 40000 Rupees	26	3.1%
	40001-50000 Rupees	24	2.9%
Patients Income	50001 & Above	4	0.5%
	Nil	152	18.3%
	Below & 10000 Rupees	45	5.4%
	10001- 20000 Rupees	413	49.8%
	20001- 30000 Rupees	155	18.7%
	30001- 40000 Rupees	45	5.4%
	40001-50000 Rupees	15	1.8%
	50001 & Above	5	0.6%

The above table 1 & 2 shows the description of frequency and percentage regarding the demographic profile of the patients. The tables reported that study included 830 participants, majority of whom were males 99.4% (n=825), belonged to urban setting (55.5%), were aged 18-24 years (45.9%), unmarried (70.1%), were unskilled workers (46.6%). Majority of the patients 46.3% (n=384) had family income of rupees 10001-20000. Moreover most of the substance abuse patients 49.8% (n=413) had income of rupees 10001-20000 income.

Table 3: Frequency and percentage of psychiatric illness comorbid in substance abuse patients.

Psychiatric Illness Comorbid	Frequency	Percent
No	810	97.6%
Personality Disorder	4	0.50%
Bipolar Disorder	7	0.84%
Obsessive compulsive disorder	2	0.24%
Anxiety disorders	3	0.36%
Depression	4	0.50%

The above table no. 3 shows psychiatric illness comorbid and reported that only a small proportion (2.4%) of the patients had comorbid psychiatric disorder.

Table 4: Shows the diagnosis for substance abuse for patients (N=830)

Diagnosis for Substance Abuse	Frequency	Percent
Mental and behavioral disorders due to use of alcohol (F10)	1	0.1
Mental and behavioral disorders due to use of alcohol, opioids and tobacco (F10, F11 & F17)	2	0.2
Mental and behavioral disorders due to use of alcohol and tobacco (F10 & F17)	1	0.1
Mental and behavioral disorders due to use of opioids (F11)	1	0.1
Mental and behavioral disorders due to use of opioids and cannabinoids (F11 & F12)	1	0.1
Mental and behavioral disorders due to use of opioids and tobacco (F11 & F17)	525	63.3
Mental and behavioral disorders due to use of cannabinoids and tobacco (F12 & F17)	5	0.6
Mental and behavioral disorders due to use of sedatives or hypnotics and tobacco (F13 & F17)	1	0.1
Mental and behavioral disorders due to multiple-drug use and use of other psychoactive substances (F19)	293	35.30

The above results of the table 4 shows that majority of substance abuse patients 63.3% (n=525) were diagnosed with Mental and behavioral disorders due to use of opioids and tobacco, 35.30% (n=293) patients were diagnosed with Mental and behavioral disorders due to multiple-drug use and use of other psychoactive substances, 0.6% (n=5) patients had cannabinoids and tobacco disorders, 0.2% (n=2) patients had alcohol, opioids and tobacco use disorders, 0.1% (n=1) each patients had alcohol, alcohol & tobacco, opioids, opioids & cannabinoids and use of sedatives or hypnotics and tobacco disorders.

Table 5: Shows the Hepatitis status of substance abuse patients (N=830).

HCV Status of patients	Frequency	Percent
Negative	702	84.6
B Positive	16	1.9
C Positive	100	12.0
B & C Positive	12	1.4

The above results of the table 5 shows that the hepatitis B, and C were found negative in 84.6% (n=702) patients, 1.9% (n=16) patients were found B Positive, 12.0% (n=100) were found C Positive and 1.4% (n=12) patients were B & C Positive.

Table 6: Shows the Hepatitis infection status of substance abuse patients with age group.

Age group	Hepatitis infection			Total
	B Positive	C Positive	B & C Positive	
Below 18 years	1	3	0	4 (0.48%)
18-24 years	9	57	7	73 (8.80%)
25-34 years	5	34	3	42 (5.06%)
35-44 years	1	6	2	9 (1.08%)
45 years & Above	0	0	0	0 (0%)

The table 6 shows that majority of substance abuse patients with HCV positive were found in the age group of 18-24 years 8.80% (n=73) followed by 5.06% (n=42) 25-34 years of age group.

DISCUSSION

The results from the different studies found that the prevalence of HCV in substance abuse patients among IDUs is on the rise in India particularly in Kashmir.[18,19]

In our study majority of the patients 84.6% (n=702) were found negative for HCV which is consistent with the study by Mahajan et al, followed by 12.0% (n=100) of patients were found HCV Positive and 1.4% (n=12) patients were found both B & C Positive.[20] It was observed in our study that majority of the HCV positive substance abuse patients were males & younger in age, similar results were found in a study conducted by Mahajan et al.[20] This is worrisome as youths are the main force for any economy of family and society, the progress of the nation shall be hamper if they are lost in such a way. The current study revealed that majority of substance abuse patients had psychiatric comorbidity such as BPAD, Personality disorders, depression followed by OCD and anxiety disorder. Number population surveys had reported that 60% those who experience a mental illness had also comorbid substance use disorder or vice versa [21-24] consistent with our study, which found that patients with substance use disorders had anxiety disorders followed by Bipolar disorder and depression as comorbidity. Some other studies showed that antisocial and borderline personality disorders as common comorbidity.[25,26]

Majority of the substance abuse patients had positive family history of psychiatric illness/substance abuse such finding are consistent with the study by Mitchell et al. [27] The likely explanation for this is that addiction tends to run in families, likely due to the influence of genetic, cognitive, and environmental factors.[28-30]

In our study majority of the patients 63.3% (N=525) had diagnosis of mental and behavioral disorders due to use of opioids and tobacco followed by 35.30% (N=293) mental and behavioral disorders due to multiple-drug use and use of other psychoactive substances such findings are consistent with the study conducted the National Survey on Extent and Pattern of Substance Use in India, and Roma et.al s and Rather et.al.[31-33].

CONCLUSION

- This study highlights that there is an urgent need to expand HCV counseling and testing for all substance abuse patients particularly IDUs.
- We need to implement interventions that will decrease HCV associated injection risk.
- We need to counsel HCV positive patients for safer sexual practices.
- We need to strengthening policies for harm reduction.
- We need to collaborate with other departments like Gastroenterology, Gen. Surgery, and Haematology for early diagnosis and intervention to prevent long term life threatening

complications related to IDU.

- We need to prevent morbidity and mortality from hepatitis C in injection drug users by reducing exposure to HCV, reducing infection among those exposed, and reducing disease among those infected.

Limitations

- Our study focused only on treatment seeking population. Hence the results may be limited as the study lacks the representation of prevalence and profile in the community.

REFERENCES:

1. Mathei C, Buntinx F, Damme van P. Seroprevalence of hepatitis C markers among intravenous drug users in western European countries: a systematic review. *Journal of Viral Hepatitis*. 2002;9(3):157–173. doi: 10.1046/j.1365-2893.2002.00339.
2. Murrill CS, Weeks H, Castrucci BC, Weinstock HS, Bell BP, Spruill C, Gwinn M. Age-Specific Seroprevalence of HIV, Hepatitis B Virus, and Hepatitis C Virus Infection Among Injection Drug Users Admitted to Drug Treatment in 6 US Cities. *American Journal of Public Health*. 2002;92(3):385–387. doi: 10.2105/AJPH.92.3.385.
3. Choo QL, Kuo G, Weiner AJ, Overby LR, Bradley DW, et al. (1989) □ŽŮŮ □Žn of a DNA clone derived from a blood-borne non-A, non-B viral ŜŮŮ □ŮŮ genome. *Science* 244: 359–362.
4. Centers for Disease Control and Prevention. Hepatitis C. Available at <https://www.cdc.gov/hepatitis/hcv/index.htm>. Accessed July 7, 2016.
5. Nelson PK et al. Global epidemiology of hepatitis B and hepatitis C in people who inject drugs: results of systematic reviews. *Lancet*, 2011, 378(9791):571-583.
6. Hagan H, Thiede H, Weiss NS, Hopkins SG, Duchin JS, Alexander ER. Sharing of Drug Preparation Equipment as a Risk Factor for Hepatitis C. *American Journal of Public Health*. 2001;91:1. doi: 10.2105/AJPH.91.9.1350.
7. Mathei C, Buntinx F, Damme van P. Seroprevalence of hepatitis C markers among intravenous drug users in western European countries: a systematic review. *Journal of Viral Hepatitis*. 2002;9(3):157–173. doi: 10.1046/j.1365-2893.2002.00339.
8. Murrill CS, Weeks H, Castrucci BC, Weinstock HS, Bell BP, Spruill C, Gwinn M. Age-Specific Seroprevalence of HIV, Hepatitis B Virus, and Hepatitis C Virus Infection Among Injection Drug Users Admitted to Drug Treatment in 6 US Cities. *American Journal of Public Health*. 2002;92(3):385–387. doi: 10.2105/AJPH.92.3.385.
9. Merkinaitė S. World Hepatitis Awareness Day (WHAD): October 1st 2007; Brussels. Eurasian Harm Reduction Network; 2007. HCV infection in Europe.
10. European Monitoring Centre for Drugs and Drug Addiction. HIV among IDUs in Europe: increasing trends in the East. EMCDDA, Lisbon; 2009.
11. Paintsil E, He H, Peters C, Lindenbach BD, Heimer R. Survival of hepatitis C virus in syringes: implication for transmission among injection drug users. *J Infect Dis*. 2010;202(7):984–990.
12. Thorpe LE, Ouellet LJ, Hershov R, et al. Risk of hepatitis C virus infection among young adult injection drug users who share injection equipment. *Am J Epidemiol*. 2002;155(7):645–653.
13. Basu D (2010) Overview of substance abuse and hepatitis C virus 5. infection and coinfections in India. *J Neuroimmune Pharmacol* 5: 496-506.
14. Devi KS, Singh NB, Mara J, Singh TB, Singh YM (2004) Seroprevalence of hepatitis B virus and hepatitis C virus among hepatic disorders and injecting drug users in Manipur- A preliminary report. *Indian J Med Microbiol* 22: 136-137.
15. Eicher AD, Crofts N, Benjamin S, Deutschmann P, Rodger AJ (2000) A certain fate: spread of HIV among young injection drug users in Manipur, north-east India. *AIDS Care* 12: 497-504.
16. Saha MK, Chakraborti S, Panda S, Naik TN, Manna B, et al. (2000) Prevalence of HCV & HBV infection amongst HIV seropositive intravenous drug users & their nŽn ŮnŮwives in Manipur, India. *Indian J Med Res* 111: 37-39.
17. World Health Organization (WHO). (1993). The ICD-10 classification of mental and behavioural disorders. World Health Organization.
18. Pal D, Ojha SK (2004) Prevalence of HIV and HCV amongst intravenous drug users of Kolkata. *Indian Journal Medical Microbiology* 22: 138.
19. Baveja UK, Chattopadhyay D, Khera R, Joshi PM (2003) A cross sectional serological study of the co-infection of hepatitis B virus, hepatitis C virus and human immunodeficiency virus amongst a cohort of idus at Delhi. *Indian Journal Medical Microbiology* 21: 280-283.
20. Mahajan P, Singh M, Garg A, Garg PD, Singh G (2016) Prevalence of Hepatitis-C Viral Infection among opioid Dependent Injectable Drug Users: A Study Conducted at Swami Vivekananda Drug De-Addiction and Treatment Centre, Amritsar. *Dual Diagnosis Open Acc* 1:6. doi: 10.21767/2472-5048.100006.
21. Ross S, Peselow E. Co-occurring psychotic and addictive disorders: neurobiology and diagnosis. *Clinical Neuropharmacology*. 2012; 35(5):235-243. doi:10.1097/WNF.0b013e318261e193.
22. Kelly TM, Daley DC. Integrated Treatment of Substance Use and Psychiatric Disorders. *Social Work Public Health*. 2013;28(0):388-406. doi:10.1080/19371918.2013.774673
23. Brady KT, Haynes LF, Hartwell KJ, Killeen TK. Substance use disorders and anxiety: a treatment challenge for social workers. *Soc Work Public Health*. 2013;28(3-4):407-423.
24. Pettinati HM, O'Brien CP, Dundon WD. Current Status of Co-Occurring Mood and Substance Use Disorders: A New Therapeutic Target. *American Journal of Psychiatry*. 2013;170(1):23-30
25. Compton WM, Thomas YF, Stinson FS, Grant BF. Prevalence, correlates, disability, and comorbidity of DSM-IV drug abuse and dependence in the United States: results from the national epidemiologic survey on alcohol and related conditions. *Arch Gen Psychiatry*. 2007; 64(5):566-576.
26. Flórez-Salamanca L, Secades-Villa R, Budney AJ, García-Rodríguez O, Wang S, Blanco C. Probability and predictors of cannabis use disorders relapse: Results of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). *Drug Alcohol Depend*. 2013; 132(0):127-133.
27. Mitchell JE, Hatsukami D, Pyle R, Eckert E. Bulimia with and without a family history of drug abuse. *Addictive Behaviors*. 1988;13(3):245–251. doi: 10.1016/0306-4603(88)90051-2.
28. Huggett SB, Winiger EA, Corley RP, Hewitt JK, Stallings MC. Alcohol use, psychiatric disorders and gambling behaviors: A multi-sample study testing causal relationships via the co-twin control design. *Addictive Behaviors*. 2019;93:173–179.
29. Slutske WS, Ellingson JM, Richmond-Rakerd LS, Zhu G, Martin NG. Shared genetic vulnerability for disordered gambling and alcohol use disorder in men and women: evidence from a national community-based Australian Twin Study. *Twin Research and Human Genetics*. 2013;16(2):525–534. doi: 10.1017/thg.2013.11.
30. Lobo DS, Kennedy JL. Genetic aspects of pathological gambling: a complex disorder with shared genetic vulnerabilities. *Addiction*. 2009;104(9):1454–1465.
31. Ambekar A, Agrawal A, Rao R, Mishra AK, Khandelwal SK, Chadda RK on behalf of the group of investigators for the National Survey on Extent and Pattern of Substance

Use in India (2019). Magnitude of Substance Use in India. New Delhi: Ministry of Social Justice and Empowerment, Government of India.

32. Roma S, Dadwani, Tintu Thomas. Prevalence of substance abuse: a community based study. 2016; 3(3): 647-650.
33. Rather, Y. H., Bhat, F. R., Malla, A. A., Zahoor, M., Ali Massodi, P. A., & Yousuf, S. (2021). Pattern and prevalence of substance use and dependence in two districts of Union Territory of Jammu & Kashmir: Special focus on opioids. *Journal of family medicine and primary care*, 10(1), 414–420.