

# **Original Research Paper**

Microbiology

# BURDEN OF HEPATITIS 'C' AMONG HIGH RISK PEOPLE OF HIV/IV DRUG USERS: A COMMUNITY BASED STUDY FROM EASTERN NEPAL

Dr Deepak Kumar Yadav*	Additional Professor, SPHCM, BPKIHS, Dharan *Corresponding Author
Mrs Sabita Yadav	Instructor, SPHCM, BPKIHS
Dr Nilambar Jha	Professor, SPHCM, BPKIHS
Dr Nimesh Poudyal	Associate Professor, Microbiology, BPKIHS

## ABSTRACT

Introduction: Hepatitis C is a single stranded RNA flavivirus, it is estimated that 170 million people worldwide are infected with it. Although only a small proportion of acute HCV infections are symptomatic, HCV progresses to chronic infection in approximately 80% of cases and is an important cause of chronic liver disease worldwide.

Aims and Objective: To determine the prevalence of Hepatitis Camong high risk people HIV/IV Drug users of Eastern Nepal.

Methodology: The study design was descriptive cross sectional. A total of 300 samples were selected randomly from six different places along with east west high way, of Jhapa, Morang and Sunsari district. Structured questionnaires were used to collect demographic & behavioral data. Venus blood was collected after taking informed consent. Rapid Immunochromatography diagnostic kit (HCV-Tridot) was used for detection of against antibody "hepatitis C".

Result: Out of total 95% were male and mean age was 23 years. Majority of the respondents (39%) were from 20-24 yrs followed by 27.7% (15-19yrs), 18% (25-29yrs), and 13% (30-40yrs). Socio-economic status, 62% were unemployed, 23.3% laborer, 7% had different kind of business, 1.7% migrant labor. Around 18% participants were below poverty line.

Conclusion: Hepatitis "C" was found to be 49% among risk group people of HIV/IV drug users. This is an alarming situation in our community; authorities of public health should take quick action to control HCV transmission as well as further prevention and treatment for HCV positives.

# **KEYWORDS**:

#### Introduction

It is estimated that 170 million people worldwide are infected with the hepatitis C virus (HCV).<sup>1</sup> HCV is a single stranded RNA flavivirus, originally identified in 1989 as the major cause of non-A and non-B hepatitis<sup>2</sup>. Screening assay for antibody to HCV became available late in 1990 and their use has subsequently become widespread. According to WHO estimations, about 3% of the world population may be infected with the hepatitis C virus<sup>1</sup>. The relative prevalence of subtypes of this virus varies in different geographic areas.

People don't feel sick when they are first infected with hepatitis 'C'. Instead, the virus stays in their liver and causes chronic liver inflammation. Most of the people infected by hepatitis C virus are asymptomatic at the beginning. Although only a small proportion of acute HCV infections are symptomatic, HCV progresses to chronic infection in approximately 80% of cases and is an important cause of chronic liver disease worldwide.<sup>3,4</sup> Approximately 15 to 20% of persons who acquire HCV infection progress to potentially serious cirrhosis and end-stage liver disease⁵.

The virus can stay in the body for many years, eventually leading to chronic hepatitis, hepatic failure and in 0.7-1.3% of the cases hepatocellular carcinoma (HCC) after 20-30 years<sup>6</sup>. There is no vaccine against this virus till today.

The main known routes of transmission for HCV are parenteral, intravenous drug abuse, contaminated injection devices and receipt of unscreened blood or blood products<sup>5</sup>. Intravenous drug use is by far the most important mode of transmission of HCV. It affects an estimated 170 million people worldwide.

Prior to the virus 'discovery, transfusion of blood or blood products was a major mode of transmission. Since testing of blood supplies began, new cases of transfusion-transmitted hepatitis 'C' has been virtually eliminated. Sexual transmission of HCV appears to be inefficient as most sexual risk behaviors have not been shown to be associated with HCV infection<sup>4-7</sup>. Nosocomial transmission of HCV is

possible if infection control measures are inadequate, such as the use of multidose vials, dialysis, and colonoscopy<sup>8</sup>.

HCV is readily transmitted through micro transfusions of infected blood through the shared use of syringes and other injection paraphernalia used to inject illicit drugs. Currently, the major mode of HCV transmission worldwide is injection drug use<sup>8-9</sup>.

In the United States, at least two-thirds of new HCV infections are associated with injection drug use. Seroprevalence of anti HCV in general population of Nepal has been estimated to be from 0.1% -1.7%<sup>10-11</sup>.

Injection risk behaviors such as the multi-person use (sharing) of injection equipment (i.e., needles/syringes, cookers, cotton, rinsewater) can transmit HCV, and potentially HIV and other blood-borne pathogens.12

The average time from exposure to antibody to HCV (anti-HCV) seroconversion is 8–9 weeks, and anti-HCV can be detected in  $\!>\!\!97\%$ of persons by 6 months after exposure. Chronic HCV infection develops in 70%-85% of HCV-infected persons; 60%-70% of chronically infected persons have evidence of active liver disease. The majority of infected persons might not be aware of their infection because they are not clinically ill. However, infected persons serve as a source of transmission to others and are at risk for chronic liver disease or other HCV-related chronic diseases decades after infection<sup>13</sup>.

Since most HCV-infected persons are asymptomatic, serologic studies are needed to describe the epidemiology and develop interventions for HCV infection. Since HCV is about 10 times more infectious than HIV, and is usually the first infection to strike IDU populations<sup>14</sup>. The purpose of this study is to contribute to the epidemiological profile of HCV among IDUs in Eastern Nepal by estimating the HCV prevalence and describing risk behaviors among IDUs.

### VOLUME-7, ISSUE-1, JANUARY-2018 • PRINT ISSN No 2277 - 8160

#### Aims & Objectives:

To determine the prevalence of Hepatitis C among IV Drug users of Eastern Nepal To know the Socio-demographic factors and associated risk behaviors related with HIV and Hepatitis C among IDU's.

### Methodology

**Study Design:** Descriptive cross sectional study design was used to conduct this study.

**Study Population:** This study was conducted among IDUs who are considered as one of the 'core groups' for transmission of HCV infection in Nepal. Current IDUs from the six places along with east west high way, three districts of Jhapa, Morang and Sunsari were included in this study.

Sample Size & Sampling Techniques: A total of 300 subjects were selected randomly during one year data collection period(2011-2012); reprensetive sample was enrolled according to risk behavior population of ID Users of Dharan, Ithari, Biratnagar, Biratchowk, Damak & Birtamod. Subjects were enrolled using snowball sampling technique within above mentioned places during study period. A quantitative research approach was adopted for this study. Structured questionnaires were used to collect behavioral data relating to drug injection, syringe/needle sharing and sexual behavior among IDUs. Additionally, some demographic and social characteristics were collected.

**Diagnosis Algorithm for "Hepatitis C":** Venus blood was collected after counseling and informed consent of the study subjects. Rapid Immunochromatography diagnostic kit (HCV-Tridot) was used for detection of against antibody "hepatitis C".

**Case Definition:** New diagnose during study or Known case of "hep -C" among IDU's reconfirmed again.

**Inclusion Criteria:** Male or Female both who had history of risk behavior intra Venus drug use at present/past and another group known case of HIV positive.

**Exclusion Criteria:** Subjects under influence of drugs or not willing to participate in the study and similarly oral drug users (alcohol, Phencidyl, Nitrogen tab etc) were excluded.

**Data Management and Analysis:** The collected questionnaires were thoroughly checked for any inconsistencies before the data was entered into a computer using Excel software. Later on the data file was transferred to SPSS version 16.0 for further analysis. Chi-squire test applied to find the association between dependent and independent variables.

### Results

The result of the study is presented in two segments, First descriptive findings of the study showing socio-demographic characteristics of the respondents. Secondly it shows the analytical study, showing the association of the socio-demographic characteristics of the respondents with the dependent variables. Chi square test was applied in order to know the significance of the relationship.

# Descriptive Findings: Socio-demographic characteristics of the respondents

A Socio-demographic characteristic of the respondents includes the age, sex, religion, ethnicity, level of education, occupation. It also includes per capita income, risk behavior practices. The mean age of the respondent was 22.98 years. The younger one and older was 13 yrs and 40 years respectively. Majority of the respondents(39%) were from 20-24 yrs followed by 27.7% were 15-19 yrs, 18% were 25-29 yrs, 13% were 30-40 yrs and small group 2.3% were less than 15 years. Ninety five percent were male rest were female. Regarding religion of the respondents majority of the respondents (97.3%) were Hindu followed by Muslim & others 2.7%, similarly cast wise distribution of the respondents majority (25.7%) were Rai, followed by 17.6% Llimbu, 12% Tamang, 9.4% Newar, rest were Brahmin chetri and others. In terms of place of residence of the respondents, 38.7% were from Dharan, followed by different place of Sunsari district (23.3%), from Biratnagar(12%), East west highway area of Morang district(14.3%) and rest from Jhapa 11.7%. Regarding Family status, 70.3 % were member of joint family where as 29.7% from nuclear family. Similarly 33.7% were married, 4% either divorced/separated/widow/widower. Educational status of the respondent, 59.3% were completed their education SLC and above, 40.7% below SLC level.

In terms of Socio-economic status, 62% had no any job, they were unemployed, 23.3% were laborer, Seven percent had different kind of business, and 1.7% was foreign (Migrant) labor, 6% were student. Most of the respondent (34.3%) had income NRs- 5,000- 8,000/around 18% participants were below poverty line.

# Table 1. Socio-demographic characteristics of the study population:

Characteristics	Frequency (n = 300)	Percentage (%)		
	Sex			
Male	285	95.0		
Female	15	5.0		
Age	group (in Years)			
0- 14	7	2.3		
15-19	83	27.7		
20- 24	117	39.0		
25-29	54	18.0		
30 - 40	39	13.0		
	Religion			
Hindu	292	97.3		
Muslim	8	2.7		
Ту	pe of Family			
Nuclear	89	29.7		
Joint	211	70.3		
M	larital status			
Married	101	33.7		
Unmarried	187	62.3		
Divorced/Widow/Widower	12	4.0		
Education				
Up to SLC	122	40.7		
More than SLC	178	59.3		
Occupation				
Unemployed	186	62.0		
Student	18	6.0		
Business	21	7.0		
Daily laborer	70	23.3		
Foreign(Migrant) worker	5	1.7		
Family Income in NRs				
Less than 5,000	53	17.7		
5,001 - 8,000	103	34.3		
8001 - 12,000	56	18.7		
12,001-20,000	47	15.7		
> 20.000	41	62.0		
Table 2. Distribution of Risk behavior of the study population:				

able 2. Distribution of Risk behavior of the study population

Characteristics	Frequency (n = 300)	Percentage (%)	
Status of Drug use			
New User	3	1.0	
0- 2 yrs	104	34.7	
1- 5 yrs	70	23.3	
5- 10 yrs	65	21.7	
>10 yrs	58	19.3	
Type of Drug use			
I D use	77	25.7	
Oral & IDU's	223	74.3	
Needle sharing practice			

Yes	196	65.0	
No	104	34.7	
Sexual relationship			
Single partner	85	28.3	
More than Two	41	13.7	
Multiple partner	103	34.3	
CSW's	14	4.7	
NA	57	19.0	

### Analytical Findings:

Prevalence of Hepatitis "C" (HCV) found to be 49% among IV Drug users of Eastern Nepal (Fig one). Among the HCV positive population majority were male 146(99.3%) in comparison to Female 1(0.7%) where as among HCV negative population (Fig. 2) male were 139(90.8%), female 14(9.2%) which was statistically significant (p=0.000).

# Fig.1. Distribution of the Hepatitis 'C' status of the study population.



### Fig 2. Gender wise distribution of the study subjects.





Characteristics	Total No	HCV +Ve	HCV -Ve	P Value
Sex				
Male	285	146(51.2%)	139(48.8%)	0.000
Female	15	1(6.7%)	14(93.7%)	
A	ge group	(in Years)		
0-14	7	1(14.3%)	6(85.7%)	0.000
15-19	83	29(34.9%)	54(65.1%)	
20- 24	117	51(43.6%)	66(56.4%)	
25- 29	54	38(70.4%)	16(29.6%)	
30 - 40	39	28(71.8%)	11(28.2%)	
	Religion			
Hindu	292	144(49.3%)	148(50.7%)	0.510
Muslim	8	3(37.5%)	5(62.5%)	
	Type of Family			
Nuclear	89	48(53.9%)	41(46.1%)	0.267
Joint	211	99(46.9%)	112(53.1%)	
Marital status				
Married	101	57(56.4%)	44(43.6%)	0.005
Unmarried	187	80(42.8%)	107(57.2%)	

## VOLUME-7, ISSUE-1, JANUARY-2018 • PRINT ISSN No 2277 - 8160

Divorced/Widow/Wido	12	10(83.3%)	2(16.7%)	
wer				
Education				
Up to SLC	122	71(58.2%)	51(41.8%)	0.008
More than SLC	178	76(42.7%)	102(57.3%)	
Occupation				
Unemployed	186	83(44.6%)	103(55.4%)	0.044
Student	18	7(38.9%)	11(61.1%)	
Business	21	12(57.1%)	9(42.9%)	
Daily laborer	70	44(62.9%)	26(37.1%)	
Foreign(Migrant)	5	1(20.0%)	4(80.0%)	
worker				
Family Income in NRs				
Less than 5,000	53	25(47.2%)	28(52.8%)	0.985
5,001- 8,000	103	52(50.5%)	51(49.5%)	
8001-12,000	56	27(48.2%)	29(51.8%)	
12,001- 20,000	47	24(51.1%)	23(48.9%)	
More than 20.000	41	19(46.3%)	22(53.7%)	

## Association of Hepatitis "C" with socio-demographic factors

Table 3. Presents the association of Hepatitis 'C' with sociodemographic factors age, sex, religion, marital status, education, and risk taking behaviors. The association of Hepatitis "C" with age, sex, education, marital status were highly significant (p<0.005).

The prevalence of Hepatitis 'C' among male was very high (51.2%) than female (6.7%).

Similarly prevalence of Hepatitis "C" very high among divorced/separated group (83.3%) than married (56.4%), unmarried (42.8%) subjects. Similarly prevalence of Hepatitis 'C' was found to be high among the group who had educated less than SLC (58.2%) where as group of people who had education more than SLC level found 42.7%.

Hepatitis 'C' was high among daily laborer (62.3%) followed by who had some kind business (57.1%) unemployed (44.3%), and student (38.9%), Foreign migrant worker (20%).

There was not significant association was found between people living with joint family and nuclear family similarly not significant association between Rich and poor economic status.

## Conclusion

This population based cross sectional study was conducted in Sunsari, Morang and Jhapa districts. This research was aimed to determine the prevalence of Hepatitis C among IV Drug users of Eastern Nepal and to know the Socio-demographic factors and associated risk behaviors related with HIV and Hepatitis 'C'.

A total of 300 samples were selected for study. Pre-tested semi-structured questionnaire was used to record the available information. All the subjects were questioned about demographic profile, socio-economic profile. SPSS version 12.0 was used for data analysis, to calculate percentages, prevalence and rates. Univariate analysis was performed to explore the relationship of HCV and various risk factors. Among the study population of 300, majority (95%) of them were male. The mean age of the respondent was 22.98 years. The younger one and older was 13 yrs and 40 years respectively. Majority of the respondents(39%) were from 20-24 yrs followed by 27.7% were 15-19 yrs, 18% were 25-29 yrs, 13% were 30-40 yrs. In terms of Socio-economic status, 62% were jobless, 23.3% were laborer, 7% had different kind of business, and 1.7% was foreign (Migrant) labor. Most of the respondent (34.3%) had income NRs- 5,000- 8,000/- around 18% participants were below poverty line.

Prevalence of Hepatitis "C" found to be 49% among IV Drug users of Eastern Nepal. Among the HCV positive population majority were male 146(99.3%) in comparison to Female 1(0.7%) where as among HCV negative population male were 139(90.8%), female 14(9.2%)

which was statistically significant (p=0.000).

With this findings our special recommendation to conduct large scale of study representing all districts of Eastern region as well as country of Nepal so we can take any action to control measure of Hepatitis 'c' prevention.

#### References

- Global surveillance and control of hepatitis C. Report of a WHO Consultation organized in collaboration with the Viral Hepatitis Prevention Board, Antwerp, Belgium.JViralHepat1999;6:35-47.
- Choo QL, Kuo G, Weiner AJ, Overby LR, Bradley DW, Houghton M.Isolation of a c DNA clone derived from a blood-borne non-A, non-B viral hepatitis genome. Science 1989;244:359-362.
- Alter MJ. Hepatitis C virus infection in the United States. J Hepatol 1999;31 Suppl 1:88-91.
- Hagan H, Des Jarlais DC. HIV and HCV infection among injecting drug users. Mt Sinai J Med 2000; 67:423-428.
- Liang TJ, Rehermann B, Seeff LB, Hoofnagle JH: Pathogenesis, natural history, treatment, and prevention of hepatitis C. Ann Intern Med 2000;132:296-305.
   Poynard T, Bedossa P, Opolon P. Natural history of liver fibrosis progression in patients
- With chronic hepatitis C. Lancet 1997;349:85-32.
  Vivas-Arceo C, Benavides SA, De Jesus Trujilo J, Panduro A, Rivas-Estilla AM. Hepatitis
- vivas-Arceo c, benavices SA, De Jesus Irujilio J, Panduro A, Rivas-Estula AW. Repatitis C virus: prevalence and routes of infection among blood donors of West Mexico. Hepatol Res 2003;25:115-123.
- Recommendations for prevention and control of hepatitis C virus (HCV) infection and HCV-related chronic disease. Centers for Disease Control and Prevention. MMWR Recomm Rep 1998;47:1-39.
- 9. Alter MJ. Prevention of spread of hepatitis C. Hepatology 2002;36: S93-S98.
- 10. Sawayama Y et al: A ten year serological survey of hepatitis A,B and C viruses infection in Nepal. J Epidemiol 1999 Nov;9(5):350-4.
- Nakashima K et al: Human T-lymphotropic virus type-I, and hepatitis A, B and C viruses in Nepal: a serological survey. JTrop Med Hyg 1995 Oct;98(5):347-50
- Alter MJ, Moyer LA. The importance of preventing hepatitis C virus infection among injection drug users in the United States. J Acquir Immune Defic Syndr Hum Retrovirol 1998;18 Suppl 1:S6-S10.
- 13. http://familydoctor.org/online/famdocen/home/common/infections/hepatitis/ 071.html
- 14. Coppola RC, Manconi PE, Piro R, Di Martino ML, Masia G. HCV, HIV, HBV and HDV infections in intravenous drug addicts. Eur J Epidemiol 1994;10:279-283.
- Strathdee SA, Fraga WD, Case P, Firestone M, Brouwer KC, Perez SG, et al. Vivo para consumirla y la consumo para vivir [l live to inject and inject to live]: high-risk injection behaviors in Tijuana, Mexico, JUrban Health 2005;82:iv58-73.
- 16. UNAIDS. 2006 Report on the global AIDS epidemic.