

## Knowledge and Risk Behavior on Hepatitis C Virus Infection Among Laboratory Technicians in A Selected Army Medical Unit

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### ABSTRACT

**Background:** Hepatitis C virus (HCV) is a new virus identified in the year 1989. Regarding the morbidity & mortality and also for disease burden HCV infection is now an important disease phenomenon worldwide especially among the health care professionals. Laboratory technicians are at increased risk for acquiring blood-borne infections as they have to collect blood samples to find out the disease pathology. The aim of this study is to assess the knowledge and risk behavior on HCV infection among laboratory technicians in a selected army medical unit.

**Methods:** A descriptive cross sectional study was conducted among laboratory technician in a selected army medical unit from 01September 2015 to 31 December 2016. Total 105 participants were interviewed by pretested structured questionnaire.

**Results:** This study explored that 44.8% respondents were in between 31-40 years and 63.8% were educated up to HSC level. All the respondents had overall knowledge about the cause, high risk group and prevention of HCV infection and 20.95% were not aware that water did not transmit HCV infection, 55.24% had no information of vaccination for prevention of HCV infection. This knowledge was gained by majority (62%) of participants from their existing course curriculum. Use of disposable syringe, sterilize instruments, practice of recapping after using needles and their proper disposal were found among all of the respondents and 61% did not habit to use gloves during sample collection due to negligence and lack of time. This study showed that there is an association between level of education and risk behavior (use of gloves) ( $P < .005$ ).

**Conclusion:** Adequate program on updating knowledge, strict use of gloves, sterile instrument during sample collection will be helpful in minimizing transmission of HCV infection.

**Key Words:** Hepatitis C virus, Risk behavior, Laboratory technicians.

### Introduction

Hepatitis C virus (HCV) is identified as a new virus in 1989.<sup>1</sup> Screening assay for antibody to HCV became available late in 1990 and their use has subsequently become widespread. The genomes of hepatitis C virus display significant sequence heterogeneity. Six types (1 to 6) and many subtypes have been identified.<sup>2</sup> Presence of various genotypes has epidemiologic and therapeutic implications. Persons who develop acute HCV infection rarely recover completely; more than 80% of them remain

HCV infected eventually leading to chronic hepatitis and or hepatocellular carcinoma. The incidence of HCV on a global scale is not well known, because acute infection is generally asymptomatic.<sup>3</sup> There is no vaccine against this virus till today. WHO estimates that about 3% of the world's population has been infected with HCV and that there are more than 170 million chronic carriers who are at risk of developing liver cirrhosis and/or liver cancer.<sup>4</sup> Worldwide HCV infects nearly 200 million people

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and 4 million in USA.<sup>5</sup> A survey was conducted in California showed prevalence of up to 40% among prison inmates.<sup>6</sup> 82% of subjects diagnosed with hepatitis C have previously been in jail.<sup>7</sup> Prevalence is higher in some countries in Africa and Asia. Egypt has the highest sero prevalence for HCV, up to 20% in some areas. There is a hypothesis that the high prevalence is linked to a now-discontinued mass-treatment campaign for schistosomiasis, which is endemic in that country.<sup>8</sup>

There is no population based data on HCV prevalence in Bangladesh. In 1993, Khan et al have reported zero prevalence of HCV among blood donors in Bangladesh.<sup>9</sup> However, this was contradicted when Akbar et al reported that about 5% apparently healthy subjects of Bangladesh were harboring HCV RNA.<sup>10</sup> Recently a study conducted in rural Bangladesh has shown that 0.5% apparently healthy subjects were infected with HCV.<sup>11</sup> The major known routes of transmission are parenteral, intravenous drug abuse, contaminated injection devices and receipt of unscreened blood or blood products.<sup>12</sup>

Health care workers who have occupational exposure to blood are at increased risk for acquiring blood-borne infections. The level of risk depends on the number of patients with that infection in the health care facility and the precautions the health care workers observe while dealing these patients. There are more than 20 blood-borne diseases, but those of primary significance to health care workers are hepatitis due to either the hepatitis B virus (HBV) or hepatitis C virus (HCV) and acquired immunodeficiency syndrome (AIDS) due to human immunodeficiency virus (HIV).<sup>13</sup>

Laboratory technicians are more vulnerable to infectious diseases as they have to collect blood samples, biopsy specimens and others to find out the pathology. As vital members of the health care team among the army personal, medical laboratory professionals play a critical role in collecting the information needed to give the best care to an ill or injured patient. So to kept reserve skilled manpower and also reduce the disease burden in armed forces, laboratory technicians must acquire the exact knowledge and risk behavior about HCV infection for safeguard themselves as well as others.

In Bangladesh no significant study has been done about the knowledge and risk behavior on HCV infection among laboratory technicians. The purpose of the study was to assess the knowledge and risk behavior on HCV infection among laboratory technicians and focused to address its prevention strategy. It will also help the policy maker to develop and implement effective programs to combat the situation for conserve the manpower both in peace and war time.

### Materials and Methods

A descriptive cross sectional study was undertaken in selected army medical unit from 01 September 2015 to 31 December 2016. A group of 105 laboratory technicians were selected who were permanently posted and were grades into strata basing on their age, education and salary structure. Then purposive sampling method was used to select the participants to collect data and information. Confidentiality was duly ensured to all participants and informed consent was obtained. Self-administered structured questionnaire were used keeping focus on organizational supportive activities. Likert scale were re-categorized into three grade-point option for the purpose of data analysis regarding acquiring of knowledge. Focus group discussion was done among 25 of the participants in an organized place to collect the direct views and statements about the topics. The discussion was held by direct observing and interviewing the participants about the knowledge and risk behavior of HCV infection as well as of its prevention. After pretesting, the questionnaire was finalized and used for data collection. Level of significance assumed at 5% level ( $\alpha=0.05$ ). Ethical approval of the study was taken from the concerning authority. Before collection of data, an explanation was made to all respondents about the purpose of the study and the questionnaire. Data were analyzed with the help of SPSS windows program version 20.

### RESULTS

Around half of the respondents (44.8%) age group were in between 31-40 years and the highest number

of respondents (63.8%) were educated up to HSC (TABLE-1). All of the respondents (100%) knew the cause, high risk group and prevention of HCV infection, (47.61%) of respondents were not aware that water did not transmit HCV infection and 55.24% of respondents were not aware of vaccination for prevention of HCV infection (TABLE-II). Most of the respondents (62%) opined course curriculum was the main source to know about HCV infection (TABLE-III). Use of disposable syringe and sterilize instruments, practice of recapping after using needle and syringe and proper disposal of used needles were found among all of the respondents and 61.0% of respondents did not habit of use of gloves during sample collection procedure (TABLE-IV). The association between level of education and risk behavior (use of gloves) was found statistically highly significant among the respondents (P, .005).

Focus group discussion was held among 25 of the participants in an organized place by direct observing and interviewing the participants about the knowledge and risk behavior of HCV infection as well as of its prevention. It was revealed that most of the participants were confident about HCV infection as the main source of infection and aware of the mode of transmission, risk group, risk behavior of HCV infection. Respondents opined the approaches on improvement of unsafe behavior by using gloves during sample collection, not sharing of needles and proper disposing of syringe.

**Table-I:** Distribution of respondents by socio-demographic characteristics (n=105)

Character	Group	Frequency	Percentage
Age in years	20-30	40	38.1%
	31-40	47	44.8%
	40	18	17.1%
Educational level	SSC/equivalent	32	30.5%
	HSC/equivalent	67	63.8%
	Graduate and above	6	5.7%

**Table-II:** Distribution of respondents knowledge on HCV infection (n=105)

Statements	Strongly Agree/Agree%	Undecided%	Strongly Disagree/Disagree
Virus is the main cause	105(100%)	-	-
Transmits by water	22(20.95%)	33 (31.42%)	50(47.61%)
IV drug use is important mode of transmission	103(98.1%)	1(1%)	1(1%)
Main complication is Cirrhosis of liver	102(97.14%)	3(2.86%)	-
Laboratory technicians are in high risk group	105(100%)	-	-
HCV prevented by avoiding sharing needle	105(100%)	-	-
No vaccination for HCV infection	58(55.24%)	41(39.04%)	6 (5.72%)

**Table III:** Distribution of respondents knowledge on source of information of HCV infection (n=105).

Source	Frequency	Percentage
Course curriculum	65	62%
Campaign program	18	14.28%
Training	10	10%
TV and print media	12	11.42%
<b>Total</b>	<b>105</b>	<b>100%</b>

**Table -IV:** Distribution of respondents by information related to risk behavior (n=105).

Particulars of risk behavior related information	Yes%	No%
Use of gloves during sample collection	41(39.0%)	64(61.0)
Use of disposable syringe during sample collection	105(100)	-
Use of sterilize instruments during specimen collection	105(100)	-
Practice of recapping after using needle and syringe	105(100)	-
Proper disposal of used needles and	105(100)	-

**Table-V :** Distribution of respondents by association between educational status and risk behavior (n=105).

Education of the respondents	Use of gloves		Total	P
	Yes	No.		
SSC/equivalent	26(24.8%)	6 (5.7%)	32 (30.4%)	
HSC/ equivalent	9 (8.6%)	58 (55.2%)	67 (63.8%)	<0 .005
Graduate and above	6 (5.7%)	-	6 (5.7%)	
Total	41(39.0%)	64 (61.0%)	105 (100%)	

### Discussion

This descriptive study focused on to assess the prevailing knowledge and risk behaviors on HCV infection and also to the socio-demographic characteristics and nature of motivational exposure. Respondents (44.8%) were in between 31-40 years and 63.8% were educated up to HSC level. All of the respondents (100%) knew that virus was the main cause of HCV infection and laboratory technicians and intravenous drug users were high risk group which were nearly correlated (about 87% of respondents) with the study done by Prasad L (2009).<sup>14</sup> About 55.24% respondents were not aware of vaccination for prevention of HCV infection. Hussain S, Patrick N, Shams R, *et al.* (2010) shown that 42% of respondents were unaware about vaccination on HCV infection.<sup>15</sup> Knowledge on HCV infection by most of the respondents (62%) acquired from existing course curriculum and a similar findings was found in the study Prasad L (2009).<sup>14</sup> It was observed that use of disposable syringe, sterilize instruments, practice of recapping after using needle and syringe and proper disposal of used needles were found among 100% respondents. However regarding the use of gloves it was not practiced during sample collection among (61.0%) of respondents due to lack of time and negligence. Gurubacharya DL, KC Mathura, Karki DB *et al.* (2008) conducted a study which revealed that only 23% respondents were in the habit of using gloves.<sup>16</sup> The association between the level of education and risk behavior (use of gloves) was found statistically highly significant among the respondents having education level HSC classes due to lack of time and negligence. In a study conducted

by Prasad L (2009) revealed that there were no association between level of knowledge and risk behavior among the respondents due to that risk behavior is not only determined by the level of knowledge.<sup>14</sup>

It was revealed from the discussion in focus group on HCV virus infection that most of the participants were confident about HCV infection as the main source of infection. Moreover participants were aware of the mode of transmission, high risk health care professionals, unsafe and risk behavior of HCV infection. The respondents opined the approaches on improvement of unsafe behavior by use of gloves during sample collection, not sharing of needles, proper disposing of syringe.

### Conclusion

The overall general knowledge among the laboratory technicians on HCV infection was considered to be good and it was similar with the findings from focus group discussions as well. The study findings strongly support to take appropriate preventive measure against HCV infection. Adequate program on updating knowledge, strict use of gloves and sterile instrument during sample collection procedure will be helpful in minimizing transmission of HCV infection.

**Conflict of interest:** We have no conflict of interest

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