

# Seropositivity of Hepatitis B and C in Blood Donors at CMH Lahore, Pakistan

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## ABSTRACT

**Background:** There is high prevalence of Hepatitis B and C infections in Pakistan; especially Hepatitis C has adopted the shape of epidemic. Due to their mode of transmission through blood and blood products, it has made the provision of safe blood difficult and the screening of blood absolutely necessary. **Objective:** To find out the seroprevalence of Hepatitis B and C virus among the healthy blood donors at Combined Military Hospital (CMH) Lahore, Pakistan. **Subjects and Methods:** A cross-sectional study was carried out at Blood Bank of CMH Lahore Laboratory from 1<sup>st</sup> January 2011 to 31<sup>st</sup> April 2011. All healthy blood donors (n = 2155) reporting to blood bank during the above mentioned period were screened for Hepatitis B and C. Written records of blood bank of CMH Lahore laboratory were reviewed. Study Performa was designed for collection of data. Data was entered and analyzed by using Statistical Package for Social Sciences (SPSS) version 16.0.

**Results:** Total number of 2155 donors was screened. Out of these, 2041(92.7%) were males and 114(5.3%) were females. The results of the study showed higher prevalence of Hepatitis C in the blood donors constituting 77 (3.6%) donors. Out of 2155 donors, 21 (1.3%) were positive for Hepatitis B. Age group of 34-41 was most affected in both Hepatitis B and C positive blood donors. **Conclusions:** Prevalence of Hepatitis C is clearly on the rise. To control its further spread, public awareness programs and health education programs and proper selection of healthy blood donors, proper screening and discouraging professional donors should be done. **Policy message:** Media should be used by National Hepatitis Control Programme of Pakistan to educate the public about hazards of unscreened blood transfusion. Blood screening for Hepatitis B and C infections should be made mandatory at all blood banks. **Key Words:** Hepatitis B, Hepatitis C, blood donors.

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## INTRODUCTION

Infections with Hepatitis B virus (HBV) and Hepatitis C virus (HCV) are a worldwide public health problem. This is related to the continuing occurrence of new infections and the presence of a large reservoir of chronically infected persons. Approximately 350 million people are infected with HBV worldwide.<sup>1</sup> About 170 million people are infected with HCV worldwide.<sup>2</sup> Infected individuals remain asymptomatic for decades. However, more than 80% of them become

chronic carriers with the result an increased risk of liver cirrhosis, liver cancer and liver failure 20-30 years later.<sup>3</sup> A total of 7.4% of Pakistan's population is believed to be infected with HCV and HBV (including HBV 2.5% and HCV 4.9%) and this disease is constantly increasing.<sup>4</sup> Due to their mode of transmission through blood and blood products, it has made the provision of safe blood difficult and the screening of blood absolutely necessary.<sup>5</sup> About 92 million blood donations are collected worldwide each year. 39 countries are not able to screen all blood donations for one or more of the following transfusion-transmissible infections (TTIs): HIV, hepatitis B, hepatitis C and syphilis.<sup>6</sup> World Health Organization goal is for all countries to obtain all blood supplies

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from voluntary unpaid donors by 2020.<sup>7,8</sup> Blood donation from voluntary and non-remunerated blood donors and screening for HBsAg and anti HCV antibodies has significantly decreased the number of hepatitis B and C cases and also has reduced the significance of surrogate markers like ALT and hepatitis core antibody. World Health Organization (WHO) recommendation of safe blood transfusion is provision of compatible blood which are cross-matched and screened for five WHO recommended transfusion transmitted infections, human immunodeficiency virus (HIV), hepatitis C virus (HCV), hepatitis B (HBV), syphilis and malarial parasite.<sup>9</sup> Objectives of this study were to estimate frequency of Hepatitis B and C in blood donors of CMH Lahore teaching hospital and recommend measures for safe blood transfusion.

### SUBJECTS AND METHODS

Donation records and serum of all blood donors who reported to Combined Military Hospital Lahore from 1<sup>st</sup> January 2011 to 31<sup>st</sup> April 2011 were included in the study. A total of 2155 blood donors who were declared physically fit for screening were screened for Hepatitis B and C. Selection criteria followed in CMH Lahore laboratory is, age between 18 and 60 years, weight more than 50kg and Haemoglobin more than 12g/dl. Donors are evaluated carefully by medical officer by detailed medical history and examination. Exclusion criteria is, previous history of viral hepatitis, drug abuse, body tattooing/piercing, previous blood or blood component transfusion in last one year and any evidence of renal, cardiac, pulmonary or hepatic disease. Written records of blood bank of CMH Lahore laboratory were reviewed for donor age, gender, and the presence of HBsAg and anti-HCV. Archived results from the hospital blood bank were used for this study with the approval of hospital authorities. Data was entered and analyzed by using Statistical Package for Social Sciences (SPSS) version 16.0. The prevalence of each viral infection (HBV and HCV) was determined from the proportion of seropositive individuals in the total population under consideration and expressed as percentage. The chi-square test was employed to determine the relationships between gender, age with HBV and HCV infection. P-value of <0.05 was considered to be statistically significant.

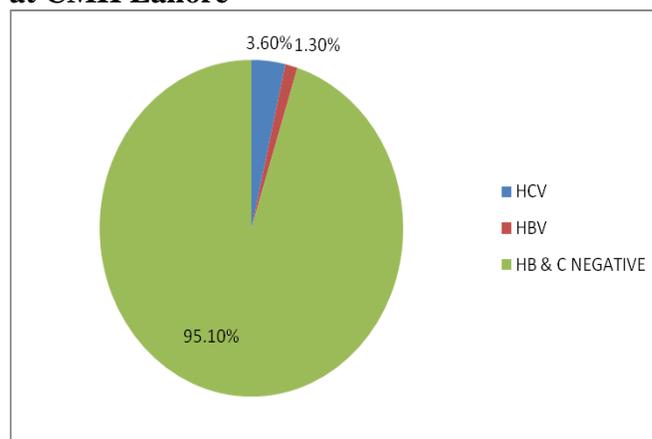
### RESULTS

This cross-sectional study was conducted in 2155 blood donors who came to Blood Bank of CMH Lahore during January 1, 2011 to April 31, 2011. Out of these, 2041(92.7%) were males and 114(5.3%) were females. All of these were voluntary blood donors and none of them was a paid donor. These donors were screened for HBV and HCV according to WHO set criteria. Out of total 2155 blood donors, 106 (4.9%) turned to be positive for either Hepatitis B or C. Out of these positive cases, 77 (3.6%) were positive for HCV and 29 (1.3%) for HBV (table 1). Prevalence of HCV (3.6%) turned to be considerably greater than HBV (1.3%) in the study population (Figure 1) but this difference was not significant statistically (p=0.97). Out of 21 hepatitis B positive donors, 29(1.3%) were males and 0(0.00%) were females and this difference was not significant statistically (p=0.2) (table 2). Out of total HCV positive blood donors, 73(3.4%) were males and 4 (0.2%) were females and this difference was not significant statistically (p=0.9). Age group of 34-41 was most affected in both hepatitis B and C positive donors (0.9% and 1.7% respectively) (table 3) but this difference was not significant statistically (p = 0.6).

**Table-1**  
**Hepatitis B and C positive cases in blood donors at CMH Lahore**

Result	HBsAg +ve (n=2155)	Anti-HCV +ve (n=2155)	Total
Positive cases	29	77	106
Percentage	1.3	3.6	4.9

**Figure-1**  
**Seropositivity of HBV & HCV in Blood Donors at CMH Lahore**



**Table-2**  
**Gender distribution of HBV and HCV positive blood donors at CMH Lahore**

Results	Sex		P-value
	Male (n=2041)	Female (n=114)	
HBV +ve	29 (1.3%)	0 (0.00%)	0.2
HCV +ve	73 (3.4%)	4 (0.2%)	0.9
Total	102	4	

**Table-3**  
**Age distribution of HBsAg positive and HCV positive in blood donors at CMH Lahore**

Age Group	HB+ve (NO. and Percentage)	HCV +ve (No. and Percentage)
18-25	0 (0.00%)	5(0.2%)
26-33	9(0.4%)	32(1.5%)
34-41	20(0.9%)	36(1.7%)
>41	0(0.00%)	4(0.2%)
Total	29(1.3%)	77(3.6%)

## DISCUSSION

HBV and HCV infections are common serious complications of blood transfusion. Prevention of transfusion-transmitted infections in developed countries has been achieved by reducing unnecessary transfusions, using only regular voluntary donors, excluding donors with specific risk factors and systematic screening of all donated blood for infection. By contrast, in many developing countries none of these interventions are applied uniformly and the risk of transfusion-transmitted infections remains high.<sup>10</sup>

Main source of blood donation in our country is the replacement donors and the majority of them are patient's relatives or friends.<sup>11</sup> Proper screening of blood and selection of donors is very important to ensure a safe blood supply. Prevalence of HBV and HCV is higher in hidden paid or professional donors.<sup>12</sup>

Our study was aimed at determining the Seroprevalence of HBV and HCV infection among voluntary blood donors. The best way of getting the safest blood for patients is proper donor selection and proper screening of blood.

Our study shows 1.3% prevalence for Hepatitis B which is lower as compared to other studies.<sup>13-14</sup> This

might be due to strict selection exclusion criteria practiced at blood bank of CMH Lahore laboratory. The Seroprevalence of anti-HCV antibodies is 3.6% in our study, which is almost comparable to other studies from other areas of Pakistan. Seroprevalence of HCV is reported 2.2% from Peshawar<sup>15</sup>, 5.14% from Islamabad<sup>16</sup>, 2.52% from Rawalpindi<sup>14</sup>, 5.34% from Lahore<sup>17</sup>, and 3.69% from Mardan<sup>17</sup>.

In our study the prevalence of HBV (1.3%) is less as compared to Hepatitis C (3.6%). This trend shows that prevalence rate of HBsAg appears to be declining. It probably reflects greater awareness, care not sharing razors, use of disposable syringes, and Hepatitis B vaccine and proper screening of blood and blood products. The epidemiology of HBV infection has changed widely with time as hepatitis B prevention programs have become effective. Many countries including Pakistan with successful vaccination programs have greatly reduced the incidence of HBV infection.

Seroprevalence rates of HBsAg and anti-HCV varies different countries. Prevalence of HBsAg was found 3.4% in Georgia, 1.5% in Kingdom of Saudi Arabia, 4.3% in Egypt, 1.38% in Turkey, 0.82% in Nepal and 3.3% in Brazil.<sup>18-19</sup>

In our study, prevalence of Hepatitis B among males (1.3%) was much higher than females (0%). This is similar from Thailand.<sup>20</sup> Similarly prevalence of Hepatitis C (3.4%) in males was also much higher than females (0.2%), although this difference was not statistically significant ( $p=0.97$ ).

As far as far age- distribution of HBV and HCV is concerned, the age group most affected in case of both HBV and HCV is 34-41 years (0.9% and 1.7% respectively) whereas age-group least affected is 18-25 years (0% and 0.2% respectively). Our finding of higher frequency with increasing age is in conformity with other data. This observation has been supported by the data collected by Murphy et al, they concluded that age specific HCV Seroprevalence rose from 0.5 per 1000 donors younger than 20 years to a maximum of 6.9 per 1000 in donors aged 30-31 years.<sup>21</sup>

Our study has one very important limitation. The selected blood donors were chosen according to certain

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exclusion criteria which probably reduced the prevalence of both HBsAg and anti-HCV antibodies.

## CONCLUSION

It is concluded from the study that seroprevalence of Hepatitis C is higher in donors than Hepatitis B infection. Blood is one of the main sources of transmission of Hepatitis B and C; hence donor selection is of paramount importance. With vigilant donor selection and discouraging professional donors, spread of Hepatitis B and C could be minimized.

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