

# Prevalence of Viral Hepatitis & HIV Infections among Blood Donors at Amna Thalassemia Center Multan

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## ABSTRACT

**Aim:** To know the screening pattern of Hepatitis B, Hepatitis C and human immunodeficiency virus in blood donors at Amna Thalassemia Center Multan

**Study design:** Cross sectional study

**Methods:** This study was carried out in Amna Thalassemia Center Multan from November 2016 to December 2016.

**Results:** Hepatitis C, Hepatitis B and HIV infection is commonly transmitted via blood, blood products and unsafe sex from one person to another in the community. 1014 blood donors were screened for Hepatitis B, Hepatitis C and HIV antigen and 79 were found reactive for HBV, 37 reactive for HCV and HIV reactive was found none. The recipients of Hepatitis C and Hepatitis B reactive blood are 20 times more likely to have evidence of post transfusion Hepatitis C and Hepatitis B infection than recipient of Hepatitis C and Hepatitis B non reactive blood. This study was carried out with the aims to see incidence of Hepatitis C, Hepatitis B and HIV infection in blood donors, Hepatitis B Hepatitis C and HIV infection association with parenteral therapies, etc. Blood donors record for HBV, HCV and HIV was collected from blood bank of Amna Thalassemia Center Multan. Among 79 Hepatitis B reactive blood donors 30 (37.97%) had history of previous blood transfusion, 7 (8.86%) had parental therapy, 2(2.53%) had history of drug addiction, 2(2.53%) had history of sexual contact while 37 Hepatitis C reactive blood donors 5 (13.51%) had history of previous blood transfusion and 20 (54.05%) had history of parental therapy.

**Conclusion:** The study reveals the most frequent use of unsterilized syringes and needles by the medical practitioners in the past.

**Keywords:** Hepatitis B, Hepatitis C, Human Immune deficient Virus

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## INTRODUCTION

Hepatitis is widespread in all parts of the world irrespective of the socioeconomic status. It is less in countries with high standards of living e.g. Australia and North Europe etc. It is high in magnitude in poor countries like Africa, Southeast Asia and China<sup>1</sup>. Infection with Hepatitis-C virus (HCV) has become an issue of global significance with 170 million cases worldwide<sup>2</sup>. More than 2 billion people have been infected with Hepatitis-B virus (HBV) globally<sup>3</sup>. Out of 350 million carriers of HBV, 60 million have been died from liver cancer, and about 45 million died from cirrhosis<sup>4</sup>. Human immunodeficiency virus (HIV) infection causing acquired immune deficiency syndrome (AIDS) is a fatal illness, which breaks down the body's immune system, leaving the victim vulnerable to a host of life threatening opportunistic infections, neurological disorders or unusual malignancies<sup>5</sup>. About 29.5 million men, women and children living with HIV/AIDS including 21.8 million adults and 830000 children. Since the start of the epidemic, an estimated 5 million adults and 1.4 million children have been died<sup>2</sup>. Hepatitis C and B virus is transmitted parenterally mainly as a result HCV and HBV infective to blood contacts including injury with contaminated sharp instruments, needles, sexual contact and through perinatal transmission from mother to child<sup>6</sup>. While HIV infection is transmitted to unprotected sexual course, mother to child transmission, sharing HIV infected injection and equipment by drug abusers and transfusion of HIV infected blood and blood products<sup>2</sup>. There is very alarming situation in Pakistan and it is estimated that Hepatitis B is prevalent with magnitude of 10% of the general population<sup>7</sup>. The incidence rate of

Hepatitis-C and HIV infection is not definitely yet clearly<sup>8</sup>. As the main path of the transmission is through blood or blood products, it is very adverse that still in Pakistan there are few canters, which provide the facilities for screening regarding these lethal infections. Because of the grave cost of the disease, there is need to study the incidence of Hepatitis-C, Hepatitis-B and HIV infection among blood donors for the creation of proper screening programme at blood transfusion centers.

## METHODS AND MATERIAL

A cross sectional epidemiological descriptive study was conducted on all blood donors to determine the incidence of HBV, HCV and HIV infection coming to blood bank of Amna Thalassemia Center Multan. The study was conducted at Amna Thalassemia Center Multan, which was comprised of study universe from November 2016 to December 2016. All the males and females blood donors coming to Amna Thalassemia Center Multan. A non-probability convenience sampling technique was adopted for the current study.

**Data Collection:** A semi-structured questionnaire to collect the relevant informations from the respondents was constructed which was pre-tested and was modified in the light of pre-testing. A programme has made on EPI Info 6.02 and SPSS, all the responses were entered in the concerned programme. Same programme was used for data entry and data analysis.

**Data Analysis:** All data was entered into the computer. Final analysis was performed with the help of the same computer software. After describing the frequency

distribution of different variable studies, Chi Square Test (X<sup>2</sup>) test was performed to study the statistical relationship between different categorical variables. P < 0.05 was used as cutoff point for statistical significance

**RESULTS**

A total of 1014 blood donors, among them male were 980(96.6%) and female were 34(3.4%) were screened for Hepatitis C, B and HIV infection (Table 1).

Table-1: Frequency distribution of blood donors according to sex

Gender	Frequency	Percentage
Male	980	96.6
Female	34	3.4

Table-2: Frequency distribution of blood donors according to age:

Age	Frequency	Percentage
15-20	100	9.86
20-25	700	69.04
25-30	100	9.86
30-35	100	9.86
35-40	14	1.38

A total of 1014 blood donors, that were screened for Hepatitis C, B and HIV infection, majority belongs to age group 22-24 with range of 15-40 years (Table-2).

**Locality of Residence:** Out of 1014, majority of blood donors 700 (69.04%) lived in posh area, while 200 (19.72%) lived in urban area and 114 (11.24%) lived in rural area (Table-3).

Table-3: Frequency distribution of blood donors according to locality of their residences

Locality	Frequency	Percentage
Posh area	700	69.04
Urban	200	19.72
Rural	114	11.24

**Blood donor's Education:** Out of 1014 blood donors, 100 (9.86%) were graduate, 500 were (49.30%) were matric while 414 (40.84%) were under matric (Table-4).

Table-4: Frequency distribution of blood donors according to education level

Education Level	Frequency	Percentage
Graduate	100	09.86
Matric	500	49.30
Under Matric	414	40.84
Total	1014	100

**Blood Donor's Occupation:** Out of 1014 blood donors, 300 (29.58%) were businessman, 200 (19.72%) were in the government service, 400 (39.44%) were students while 114(11.26%) were doing different private services (Table-5).

Table-5: Frequency distribution of blood donors according to their occupation

Occupation	Frequency	Percentage
Businessman	300	29.53
Govt.Servants	200	19.72
Students	400	39.44
Private Service	114	11.24
Total	1014	100

Table-6: Frequency distribution of Hepatitis C, B and HIV infection reactive blood donors

Infection	Frequency	Percentage
Hepatitis B	79	7.79 %
Hepatitis C	37	3.64 %
HIV	-	-

Table-7: Frequency distribution of Hepatitis C, and B reactive blood donors according to their sex

Gender	Frequency	Percentage
<b>Hepatitis B Reactive</b>		
Male	77	97.46
Female	2	2.54
Total	79	100
<b>Hepatitis C Reactive</b>		
Male	35	94.59
Female	2	5.4
Total	37	100

**Incidence of Hepatitis C, B and HIV Infection among Blood Donor Persons Screened for Blood Donations.**

Out of 1014 persons screened for blood donation, 79(7.79%) were Hepatitis B reactive, 37(3.64%) were Hepatitis C reactive and none was HIV reactive (Table-6).

**Regarding Blood donors having Hepatitis C, B and HIV infection according to their gender:** There were 1014 blood donors, out of which 79 Hepatitis B reactive, 77 (97.46%) were male, and 2 (2.54%) were female. Out of 37 Hepatitis C reactive, 35 (94.59%) were male and 2 (5.41%) were female (Table-7).

**History of Previous Blood Transfusion:** While probing the history of previous blood transfusion in Hepatitis B and Hepatitis C reactive blood donors, it was found that 30 out of 79 (37.97%) HB reactive blood donors gave history of previous blood transfusion and 5 out to 37 gave (13.51%) history of previous blood transfusion in HC reactive blood donors (Table-8).

Table-8: Frequency distribution of blood donors with different infections according to their past history of blood transfusion

Past History of Blood Transfusion	Frequency	%age
Hepatitis B Reactive	30	37.97
Hepatitis C Reactive	5	13.51

Test of significance

X<sup>2</sup> = 7.16, df = 1, P = < 0.05 (significant)

**History of Previous Parenteral Therapy:** While considering the effect of parenteral therapy in Hepatitis B and Hepatitis C reactive blood donors, it was found than 20 out of 37 (54.05%) HC reactive blood donors gave history of previous parenteral therapy and 7 out of 79 (8.86%) gave history of previous parenteral therapy in HB reactive blood donors (Table-9).

Table-9: Frequency distribution of blood donors with different infections according to their past history of parenteral therapy

Past History of Parenteral Therapy	Frequency	%age
Hepatitis B Reactive	7	8.86
Hepatitis C Reactive	20	54.05

Test of significance

X<sup>2</sup> = 28.7, df = 1, P = < 0.0001 (significant)

**History of Drug Addiction:** While taking history of drug addiction in Hepatitis B and Hepatitis C reactive blood donors, it was found that 2 out of 79(2.53%) HB reactive blood donors gave history of drug addiction as compared to nil gave history of drug addiction in HC reactive blood donors (Table 10).

Table-10: Frequency distribution of blood donors with different infections according to their past history of drug addiction

Past History of drug addiction	Frequency	Percentage
Hepatitis B reactive	2	2.53
Hepatitis C reactive	-	-

Test of significance  
 $X^2 = 0.92$ ,  $df = 1$ ,  $P = 0.05$  (insignificant)

**History of Sexual Contact:** As far as history of sexual contact in Hepatitis B and Hepatitis C blood donors is concerned, it was found that 9 (24.32%) out of 37 HC reactive blood donors gave history of sexual contact and 2 (2.53%) out of 79 HB reactive blood donors gave history of sexual contact (Table-11).

Table-11: Frequency distribution of blood donors with different infections according to their sexual contact

Past History of sexual contact	Frequency	Percentage
Hepatitis B reactive	22	53
Hepatitis C reactive	9	24.32

Test of significance  
 $X^2 = 13.7$ ,  $df = 1$ ,  $P < 0.001$  (significant)

**DISCUSSION**

Hepatitis C, Hepatitis B and HIV infection is becoming a grave health hazard for the public. As we know that Hepatitis C, Hepatitis B and HIV infection are frequently transmitted by blood, blood products and unsafe sex, particularly an relationship exists between the infection and transfusion of blood and blood products. Hepatitis C, Hepatitis B and HIV infection antigen test are used for blood screening of Hepatitis C, Hepatitis B and HIV infection. The incidence Hepatitis B carrier in Pakistan has been reported to be 3-9% in different studies, while incidence of HBsAg among blood donors have revealed a incidence of 3.4-8%. In this study conducted, majority of blood donors (69.04%) belonged to a group 22-24 years, because most of them are students and are more enthusiastic, so, they are more volunteer for blood donation at this age. Secondly this might be one of the organizations of blood donor's camp being organized in their colleges from time to time. Therefore, they have got more access to the blood donation opportunities. This study also revealed that majority of blood donors (69.04%) lived in posh area because they have got all the modern facilities, like Internet access, computer facilities, T.V etc., therefore, they are more informed and aware of the importance of blood donation for saving life of other people. They might also be unaware of the harmful effects of blood donation. Majority of the persons interviewed in this study are educated up to the matriculation level. Therefore, this education level indicates their high motivation towards blood donation and their awareness for blood donation from various mass media means like newspapers, radio, T.V., going through various pamphlets and other health education material concerned with blood donation. The incidence of Hepatitis C and Hepatitis B among male blood donors has been found to be much higher as compared to female blood donors due to the fact that males are more exposed to these risk factors as stated above like sharing of razors for shaves etc. This may also be due to the heterogeneous of this sample due to very low participation of females for blood donation and social factors like not getting permission from the parents for blood donation or because of lack of separate facilities for female for blood donation.

This study also revealed that Hepatitis C is more transmissible via sexually as compared to Hepatitis B. Although Hepatitis B is transmitted well documentary by sexual route as compared to Hepatitis C but this finding in our study may be due to the sampling technique in which more persons with Hepatitis C may be included by chance and secondly that there is risk of 25% false positive test in Hepatitis C reactive cases during screening of blood donation which need to be confirmed by Enzyme Linked Immunosorbants Analysis (ELISA) or Genome technique, which might result in different situation as we observed in our study. It is very cheering that there was no case of HIV infection, detected. This might be due to the fact that people are becoming more aware of this lethal disease and secondly this may be due to the adaptation of our valuable Islamic teachings about marriage and other sexually related protections. While studying the relationship of various variables concerned with incidence of HBV and HCV, it has been found out that HBV is transmitted more by blood and blood products than HCV and this relationship is statistically significant ( $P = 0.005$ ), this may be because of more frequent testing for HBV as compared to HCV because of more expensive kits of HCV. Otherwise, it is likely that both infections may be transmitted equally by blood and blood products. Although, at present there is growing trust that Hepatitis C is less transmissible through the sexually route as compared to HBV, but in our study, it seems to be more transmitted through sexually route as compared to HBV and this is statistically significant ( $P = 0.001$ ). This may has due to by possibility inclusions of blood donors with HCV with history of sexually contact as compared to HB reactive blood donors with no history of sexual contact, though they are in high numbers as compared to HC reactive blood donors. Regarding the relationship of parenteral transmission of Hepatitis, it has been found that this way is more common in HC reactive blood donors as compared to HB reactive blood donors. This relationship seems to be statistically significant.

**CONCLUSIONS**

The study reveals the most frequent use of unsterilized syringes and needles by medical practitioners in the past.

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