Original Article

# SEROPOSITIVITY OF HEPATITIS B AND C AMONG VOLUNTEER BLOOD DONORS AT TANDO MUHAMMAD KHAN

**Shahzad Ali Jiskani[1], Rizwan Ali Talpur[2], Kumayl Abbas Meghji[2], Qandeel Soomro [1]**

[1]Department of Pathology, Indus Medical College, Tando Muhammad Khan, Pakistan
[2]Isra University Hospital, Hyderabad, Pakistan

## ABSTRACT

**Objective:** To determine seropositivity of hepatitis B and C among voluntary blood donors.

**Material and Methods:** It was a prospective study, performed in Blood Bank Indus Medical College Hospital Tando Muhammad Khan for a period of 2 years (January 2017 to December 2018). Patients between 18 and 50 years, no history of hepatitis or any other comorbid conditions and weight more than 50 kg were included in the study. Both first time and repeat donors were also included. All donors were screened for hepatitis B, C and HIV with automated enzyme immunoassay analyzer MINDRAY C1000i**.**

**Results:** A total 3028 blood donors were included in the study. Out of 3028 donors, most were males i.e.3020 (99.7%) and only 8 (0.3%) were females. Among 3028 blood donors, 41 (1.38) were found to be positive for hepatitis B (HBsAg) and 65 (2.14 %) were positive for anti HCV.

**Conclusion:** Hepatitis C infection was found to be more commonly transmissible than hepatitis B infection. Blood donation is the major cause of transmission of life-threatening diseases e.g. Hepatitis B and C. The transmission of these infections can be prevented by employing proper donor screening using various serological diagnostic methods of high sensitivity and specificity.

**Key Words:** Blood transfusion, Hepatitis B, Hepatitis C, Infection, Seropositivity, Blood donor.

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## INTRODUCTION

Blood donation is an important process routinely done in health practices. Voluntary blood donation is defined as altruistic, non-remunerated act of donating blood [1,2]. Transfusion of blood plays an essential lifesaving role in medical and surgical emergencies [3]. Infections transmitted through transfusion of blood products are an important health issue in transfusion medicine. Among all transfusion transmitted infections (TTIs), hepatitis B virus and C virus are the most common infections [4]. Approximately 350 million people are infected with hepatitis B virus and 200 million people are affected with hepatitis C virus globally [5]. These viral infections are important cause of morbidity and mortality worldwide. These may lead to various liver diseases including cirrhosis of liver, hepatic failure, and carcinoma of liver. The prevalence of hepatitis B and C in Pakistan are 2.5 % and 4.8 % respectively [6]. World health organization (WHO) has recommended mandatory screening for hepatitis B, C, HIV and syphilis for all blood donations by quality methods e.g. ELISA etc. In Pakistan approximately 1.5 million blood components/products are transfused each year [7].

Risk factors which are major source of transmission of viral infections include poor, unhygienic and substandard techniques due to cost problems, utilization of unsterilized wares and instruments, tattoo piercing, transfusion of blood and intravenous drug abuse [8,9]. Various techniques are used for detection of transfusion transmissible infections including immune chromatographic techniques (ICT), enzyme linked immunosorbent assay (ELISA) and techniques based on nucleic acid testing (NAT) [10].

## MATERIAL AND METHODS

This was a prospective study conducted at Blood Bank Indus Medical College Hospital Tando Muhammad Khan from January 2017 to December 2018. Complete clinical history was taken and physical examination was performed for each patient. Inclusion criteria was donors of both genders, age more than 18 years and less than 50 years, no past history of hepatitis or any co-morbid condition/illness, weight more than 50kg. Both first time donor and repeat donor were also included.

Samples were collected from each patient and screening panel (e.g. HBsAg, Anti – HCV, Anti – HIV, syphilis and malaria parasite) was performed

**Correspondence: Dr Shahzad Ali Jiskani, Department of Pathology, Indus Medical College, Tando Muhammad Khan, Pakistan**

Email: **shahzadbaloach289@gmail.com**

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within 2 hours after sample collection. A 4cc blood sample was collected from each donor after full consent. Phlebotomy site was disinfected by alcohol swab. Blood samples were centrifuged at 8000 rpm for 5 minutes. Plasma was separated and screening panel was performed, including hepatitis HBsAg, Anti HCV, Anti HIV, syphilis and malaria. Hepatitis B, C and HIV was performed using automated enzyme immunoassay analyzer MINDRAY C1000i. All data was analyzed using SPSS version 21.0.

## RESULTS

A total of 3028 individuals were included in this study, with 1245 donors in 2017 and 1783 in 2018. Among 3028 donors, 3020 (99.7 %) were males and 8 (0.3 %) were females (Table-1). Out of 3028 donors, 41(1.38 %) showed sero positivity for HBsAg and 65 (2.14 %) were positive for Anti HCV. In 2017, 13 out of 1245 (1.04 %) were positive for HBsAg, and 25 out of 1245 (2 %) were positive for Anti-HCV. In 2018, 28 out of 1783 (1.57 %) and 40 out of 1783 (2.24 %) were positive for Anti-HCV (Table-2).

**Table-1: Gender distribution year wise (n=3028).**

| Year | 2017 | 2018 |
|---|---|---|
| **Male** | 1240 (99.5%) | 1777 (99.6%) |
| **Female** | 5 (0.5% | 6 (0.4%) |

**Table-2: Seropositivity of hepatitis B and C year wise (n=3028).**

| Year | 2017 | 2018 | Total |
|---|---|---|---|
| **HBsAg** | 13 (1.04%) | 28 (1.57%) | 41 (1.38%) |
| **Anti-HCV** | 25 (2%) | 40 (2.24%) | 65 (2.14%) |

**Table-3: Comparison of seroprevalence with other studies.**

| Study | Year | No of blood donors | Hepatitis B positivity | Hepatitis C positivity |
|---|---|---|---|---|
| Mujeeb *et al* (16) | 2004-07 | 5,345 | 6.2% | 7.5% |
| Saghir *et al* (17) | 2008-10 | 1,483 | 2.35% | 0.79% |
| Abdullah *et al* (3) | 2004-09 | 29,949 | 3.8% | 0.41% |
| Marie *et al* (11) | 2009-16 | 69,862 | 7.28% | - |
| Harris *et al* (18) | 2009-13 | 706,575 | 2.04% | - |
| Ahmed *et al* (15) | 2014-15 | 8,439 | 1.1% | - |
| Nkrumah *et al* (19) | 2006-08 | 2,773 | 10.53% | 5.63% |
| Hussein *et al* (5) | 2014 | 7,900 | 0.78% | 0.2% |
| Mehr *et al* (20) | 2011-12 | 4,639 | 4.5% | 3% |
| Javed *et al* (21) | 2008-09 | 277 | 14.07% | - |
| Pervaiz *et al* (13) | 2007-09 | 5,894 | 3.8% | 17.6% |
| Tunio *et al* (12) | 2013 | 2,696 | 1.82% | 3.45% |
| This study | 2017-18 | 3,028 | 1.38% | 2.14% |

## DISCUSSION

Viral infections especially hepatitis B and C viruses are among the common causes of transfusion transmitted infections [6]. Prevalence of these infections usually vary among different regions and countries of the world. Various risk factors are considered in transmission including healthcare workers exposed to these infections, sexual activity, reuse of contaminated needles etc [11]. However, the data of this study is comparable with seropositivity of blood donors in other regions of the country.

Tunio SA *et al* demonstrated the prevalence of hepatitis B and C viruses in Hyderabad as 1.82 % and 3.45 % respectively. Their study included 2696 blood donors [12]. Pervaiz A *et al* showed the frequency of hepatitis B and C in 5894 prisoner blood donors. In their study, 3.8 % were positive for hepatitis B, while 14.5 % were positive for hepatitis C. The reason for higher seroprevalence was due to prison population, which includes majority of non-voluntary donors. Seropositivity of hepatitis C was much higher in these blood donors [13]. Humayun *et al* showed seroprevalence of hepatitis B and C in 340 university students, in which 1.17 % were positive for hepatitis B, and 2.35 % showed combined hepatitis B and C positivity [14]. Ahmed *et al* showed seropositivity of hepatitis B, C and HIV in various areas of Khyber Pukhtoonkhwa. Eight thousand four hundred and thirty-nine volunteer blood donors were included in their study. 1.1 % were positive for hepatitis B and 0.5 % were positive for hepatitis C. This study demonstrated decrease prevalence of hepatitis C among blood donors as compared to others [15].

Mujeed *et al.* showed seroprevalence of hepatitis B and C as 6.2 % and 7.2 % respectively in blood donors from interior Sindh [16]. High prevalence in this study suggests lack of proper diagnostic facilities in respective areas. Results of our study were similar to other studies, especially in areas of Sindh province. Prevalence of hepatitis B and C is increasing day by day, especially in people with high risk group.

## CONCLUSION

A high prevalence of hepatitis B and C was observed in this study. Hepatitis C was more prevalent as compared to Hepatitis B virus.

## AUTHORS CONTRIBUTION

**Shahzad Ali Jiskani:** Conception/ Study Designing, Planning/ Experimentation/ Manuscript writing

**Rizwan Ali Talpur:** Experimentation/ Study Conduction

**Kumayl Abbas Meghji:** Analysis/ Interpretation/ Discussion

**Qandeel Soomro:** Discussion

## REFERENCES


1. Abril EP. Explaining Voluntary Blood Donation from a Communication Perspective. Cuodernos.info. 2016; 38: 17–33.
2. Onyango CG, Ogonda L, Guyah B, Okoth P, Shiluli C, Humwa F. Seroprevalence and determinants of transfusion transmissible infections among voluntary blood donors in Homabay, Kisumu and Siaya counties in western Kenya. BMC Res Notes. 2018; 11: 1–6.
3. Mohammed AS. Prevalence of Hepatitis B and C in Donated Blood from the Jazan Region of Saudi Arabia. Malays J Med Sci. 2013; 20(2): 41–6.
4. Alzoubi KH. The attitude of blood donors towards the use of their samples and information in biomedical. J Blood Med. 2018; 9: 145–51.
5. Hussein NR, Haj SM, Almizori LA, Taha AA. The Prevalence of Hepatitis B and C Viruses Among Blood Donors Attending Blood Bank in Duhok, Kurdistan Region, Iraq. Int J Infect. 2017; 4(1): 1–6.
6. Asad S, Donahue RMJ, Qureshi H, Vermund SH. Hepatitis B and hepatitis C in Pakistan: prevalence and risk factors. Int J Infect Dis. 2009; 13: 9–19.
7. Zaheer HA, Waheed U. Blood Safety System Reforms in Pakistan. Blood Transfus. 2014; 12:452–7.
8. Khan NU, Zalan A, Petruzziello A, Haq F. Determining the Actual Prevalence of Hepatitis B in Khyber Pakhtunkhwa-Pakistan: A Meta-Analysis Abstract: The Open Virology Journal. 2018; 12(Suppl-1): 33–41.
9. Alaei K, Sarwar M, Alaei A. The Urgency to Mitigate the Spread of Hepatitis C in Pakistan Through Blood Transfusion Reform. Int J Heal Policy Manag. 2018; 7(3): 207–9.
10. Farooq A, Waheed U, Zaheer HA, Aldakheel F. Detection of HBsAg mutants in the blood donor population of Pakistan. PLoS One. 2017; 12(11): 1–11.
11. Marie J, Mba E, Bisseye C, Mireille J, Ndong N, Mombo E, *et al*. Prevalent hepatitis B surface antigen among first-time blood donors in Gabon. PLoS One. 2018; 13(4): 1–10.
12. Ali TS, Shaista B, Ali LZ, Waqar A, Hira S, Urooj A. Seroprevalence of Hepatitis B and C Among Blood Donors in Hyderabad, Pakistan. Gomal Med J Sci. 2013; 11(2): 220–3.
13. Pervaiz A, Sipra FS, Rana TH, Qadeer I. Pre - Donation Screenign of Volunteer Prisnor Blood Donors for Hepatitis B and C in Prisons of Punjab, PakistanJ. J Ayub Med Coll Abottabad. 2015; 27(4): 794–7.
14. Ayesha H, Ameena A, Afsar S, Humayun SN, Humayun SF. Knowledge of hepatitis B and C infections and sero-prevalence among blood donor university students in District Lahore. Annals. 2011; 17(4): 371–8.
15. Ahmed T, Khattak NN, Khan F, Khan MS. Prevalence of Hepatitis B virus, Hepatitis C virus and HIV in blood donors of different areas of Khyber Pukhtoonkhwa, Pakistan. J Bio Env Sci. 2016; 9(1): 304-9.
16. Mujeeb SA, Pearce MS. Temporal trends in hepatitis B and C infection in family blood donors from interior Sindh, Pakistan. BMC Infect Dis. 2008;6(43):1–6.
17. Ayesha S, Saghir M, Muti F, Hassan A, Saeed O, Alsalahi A, *et al*. The frequency of hepatitis B and C among blood donors: a hospital- based study in Sana ' a , Yemen Frequencies of HBV , HCV , HIV , and Syphilis Markers Among Blood Donors : A Hospital-Based Study in. Trop J Pharm Res. 2017; 11(1): 132–6.
18. Harris BJ, Holzmayer V, Qureshi H, Khan MA, Khan A, Salamat N, *et al*. Hepatitis B genotypes and surface antigen mutants present in Pakistani blood donors. PLoS One. 2017; 12(6): 1–16.
19. Nkrumah B, Owusu M, Frempong HO, Averu P. Hepatitis B and C viral infections among blood donors from Rural Ghana. Ghana Med J. 2011;45(3):97–100.
20. Mehr MT, Khan H, Nisa QU, Iman NU. Frequency of Hepatitis B & C Infection in Newly Recruited Civil Servants in Khyber Pukhtunkhwa. Khyber Med Univ J. 2013; 5(2): 95–7.
21. Najma J, Sumera N. Prevalence of Hepatitis B Infection in Married Women of Child Bearing Age in District Islamanad. Gomal Med J Sci. 2013; 11(2): 216–9.