

Original Research Article

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## Seroprevalence of HIV, HBV, HCV and VDRL among Voluntary Donors in a Tertiary Care Hospital

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### ABSTRACT

#### Keywords

Transfusion transmitted infections, Seroprevalence, Human Immunodeficiency Virus, Hepatitis C Virus, Hepatitis B Virus.

#### Article Info

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This is a retrospective study to know the seroprevalence of HIV, HBV, HCV, Syphilis and malaria among voluntary donors in a tertiary care hospital. This study helps in increasing the awareness among clinicians about transfusion transmitted infections. A total of 7836 blood donors were screened during a period from June 2013 to December 2016, at Malla Reddy Medical College for Women, Jeedimetla, Hyderabad, Telangana state. Among 7836 donors, 6660 (85%) were replacement donors and 1176(15%) were voluntary donors. Seropositivity for HIV was (0.5%), HBV (1.2%), HCV (0.85%) Rapid Plasma Reagin method for syphilis and thick smear examination for malaria were negative in all the donors. Our study showed that there is a gradual increase in the Transfusion Transmitted infections in blood donors in our region.

### Introduction

Although blood transfusion has been proven to be treatment of choice to save the patients with hemolytic anemia, post partum hemorrhage, surgical patients, accident cases and DIC, there is a 1% chance of Transfusion Transmitted Infections in them. It is mandatory to screen all donors for these diseases (Jasmin *et al.*, 2012) as they can also occur without any symptoms. Transfusion of infected blood leads to mortality and morbidity and to consequences for the

patients and their families, communities and ultimately to the society (WHO). Modern day Transfusion Medicine's biggest challenge is prevention of TTIs (Srikrishna *et al.*, 1999). The diseases which are transmitted by blood transfusion are HIV, HCV, HBV, Syphilis, Malaria, and in minority of cases Cytomegalovirus, Epstein Bar Virus, Parvo Virus, Brucellosis etc. As per the guidelines of ministry of Health, and Family Welfare (Government of India) under the Drugs and

cosmetics act 1945, all blood donors must be screened for five major infections –HIV1 and 2, HBV, Syphilis, and Malaria. With the advent of improved technological methods for detecting these diseases, strict donor screening and testing practices, the goal for safe blood free from TTIs seems achievable in near future. There are problems which have to be overcome –false negative results as the patient is in window period, asymptomatic carriers, technical errors, and emergence of highly variable genetic strains of the viruses (Gangadeep *et al.*, 2010). The present study was undertaken to assess the prevalence of TTIs among the voluntary and replacement blood donors in our hospital blood bank and compare it with other studies.

### **Materials and Methods**

This study was carried out in the blood bank of Mallareddy medical college for women Suraram, Jeedimetla, Hyderabad, Telangana. 7836 donors were analyzed for prevalence of TTIs, from June 2013 to December 2016. There were 6660 replacement donors and

1176 voluntary donors. A detailed pre donation questionnaire was included in the donor registration form. Information regarding occupation, previous surgery, hospitalization, blood transfusion tattoo marks and high risk behaviour was obtained. All the samples were screened for HIV, HCV HBV (ELISA and Rapid test,), RPR for syphilis and malaria by thick smear for both *P. Vivax* and *P. Falciparum*. All these tests were done as per the instructions of commercially available kits in the blood bank in the department of Pathology, Mallareddy medical college for women. The blood which was found to be positive for any of the TTIs was discarded immediately.

### **Results and Discussion**

7836 donors were screened in a period of two and half years. The number of donations decreased in 2014, but increased in 2016 (Table 1). Table 2 shows the results of seropositive samples for HIV, HBV and HCV.

**Table.1** Year wise incidence of blood donors

Year	Donors	%
2013	1240	1.58
2014	2187	2.79
2015	1948	1.48
2016	2461	3.14
Total	7836	

**Table.2** Seropositivity for HIV, HBV and HCV among the donors

TTI	HIV	HBV	HCV
2013	3	25	16
2014	8	30	20
2015	16	18	14
2016	13	22	16
TOTAL	40(0.5%)	95(1.2%)	66(0.85%)

The major threat for blood transfusion is TTIs. With every unit of blood transfused there is 1% possibility of transfusion associated risk including TTIs (Garg *et al.*, 2001) Professional donors, and those with high risk behaviour such as drug addicts, homosexuals and prostitutes constitute the major risk segment. The HIV Seroprevalence is between 0.2% to 1% in India (Sharma *et al.*, 2004), the seroprevalence of HIV in our study was 0.5% which is similar to the National data. The prevalence of HBV in our study is 1.2%, which is similar to a study done by Choudary *et al.*, (2001). HBV prevalence ranges between 2% to 8% in different geographical areas of India. The reason for high prevalence of HBV may be due to reuse of needles by quacks and tattooing, and low socioeconomic status combined with illiteracy. It is a major source of transfusion transmitted hepatitis and is associated with carrier rate, chronic liver disease and Hepatocellular carcinoma.

Prevalence of HCV in our study was 0.85%, which is high when compared to other studies which gave a prevalence rate of 0.26 % to 0.35%. In a similar study done by Chetna *et al.*, (2013) in Rajasthan the seroprevalence of HIV, HBV, HCV was 0.034%, 1.57% and 0.04% respectively. Sensitive and specific tests like Nuclear amplification testing(NAT) for HCV, HIV, antihepatitis core antigen (HBcAg) and Ig M for Hepatitis B infection helps in identification during window period.

In conclusion implementation of strict criteria for donor selection as per the guidelines layed down by government of India for blood

banks, use of sensitive and specific laboratory tests for screening the blood can improve the blood product safety and help in decreasing the occurrence of Transfusion Transmitted Diseases.

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