


ORIGINAL ARTICLE**TRANSFUSION TRANSMITTED INFECTIONS AMONG BLOOD DONORS: A RETROSPECTIVE STUDY**Manisha Bhargava¹, Charu Chandra²¹Associate Professor, Department of General Pathology, Integral Institute of Medical Sciences and Research, Lucknow, U.P.²Associate Professor, Department of General Pathology, Mayo Institute of Medical Sciences, Barabanki, Lucknow, U.P.**ABSTRACT:**

Background: Blood donation is considered to be the best donation in India. A single drop can save one's life. Hence efforts have been taken to provide as much as blood required to the needy as possible. The present study was conducted to find the prevalence of Transfusion Transmitted Infectious markers and their trends among the blood donors. **Materials & Methods:** The study was conducted in from year 2009 to year 2012 to determine the prevalence of TTIs among blood donors. This study consisted of 5010 voluntary blood donor. 4520 (90.3%) was males and 490 (9.7%) was females. For detection of HIV infection, 3rd generation Microlisa was used to detect the HIV Antigen and antibody in donor serum. For detection of Hepatitis B infection, 4th generation Hepalisa was used for detection of Hepatitis B Surface Antigen and for detection of Hepatitis C virus infection, 4th generation HCV Microlisa was used for detection of HCV Antibody in serum or plasma of donor. For detection of syphilis infection, Sero-Max RPR (slide agglutination method) was used for VDRL screening. For screening of malarial infection, Pan Malaria Rapid and Qualisa ELISA (Tulip Group) were used. **Results:** Out of 5010 voluntary blood donor, 4520 (90.3%) was males and 490 (9.7%) was females. The difference was significant (P<0.01). The mean age of males was 38 years and in females 35 years. The difference was non significant (P>0.1). Overall prevalence of HIV (0.1%), HBsAg (1.3%), HCV (0.5), syphilis (0.07) and malaria (1%). The difference was significant (P<0.05). Yearly prevalence of HIV, HBsAg, syphilis, malaria and HCV. The prevalence of HIV reported in year 2009 was 0.1%, 2010 (0.2%), 2011 (0.1%) and 2012 (0.2%). The prevalence of HBsAg reported in year 2009 was 1.5%, 2010 (1.2%), 2011 (1.3%) and 2012 (1.4%). The prevalence of syphilis reported in year 2009 was 0.08, 2010 (0.01%), 2011 (0.09%) and 2012 (0.07%). The prevalence of malaria reported in year 2009 was 1%, 2010 (2.0%), 2011 (0.5%) and 2012 (0.5%). The prevalence of HCV reported in year 2009 was 0.6%, 2010 (0.9%), 2011 (0.7%) and 2012 (0.0%). **Conclusion:** The prevalence rate of TTIs reported from year 2009 to 2012 found to be decreased. This shows effective screening and availability of various tests for these pathogens.

Key words: Blood donor, syphilis, transfusion transmitted infections

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This article may be cited as: Bhargava M, Chandra C. Transfusion transmitted infections among blood donors: A retrospective study. J Adv Med Dent Sci Res 2016;4(6):157-159.

Access this article online	
Quick Response Code 	Website: www.jamdsr.com
	DOI: 10.21276/jamdsr.2016.4.6.37

INTRODUCTION

Blood donation is considered to be the best donation in India. A single drop can save one's life. Hence efforts have been taken to provide as much as blood required to the needy as possible. More than million blood units are collected from donor every year. Worldwide more than 81 million units of blood are donated every year.¹

In the past, risk for transmit of infections from blood transfusion was considered unavoidable but as transfusion medicine is now emerging field, this risk has greatly reduced. However, transfusion transmitted infection (TTIs) are infection that are being transmitted from donor to

receipt. TTIs can be caused by various microorganisms which may be present in the blood or blood component being transfused.² The major worldwide prevalent TTIs are caused by human immunodeficiency virus (HIV), hepatitis B virus (HBV), hepatitis C virus (HCV), Treponema pallidum and malaria parasite. The majorities of the problems are due to the prevalence of asymptomatic carriers in the society, as well as blood donations during the window period of infections. There is 1% chance of transfusion associated problems with each unit of blood transfusion. Hence it is very important to protect oneself from getting infection either during blood donation or during receiving blood.³

Basically, three types of blood donors exist. 1. Voluntary unpaid; 2. family/replacement and 3. paid. Voluntary unpaid blood donors are vital for ensuring a sufficient, stable blood supply. A voluntary unpaid blood donor programme can contribute to a significant reduction in the risk for infections such as HIV, hepatitis B, hepatitis C and syphilis. The prevalence of TTIs in voluntary, non-remunerated blood donors is lower than among family/replacement and paid donors. Majority of the troubles are due to the prevalence of asymptomatic carriers in the society, as well as blood donations during the window phase of infections. These unsafe blood transfusions are very costly from both human and economic points of view.⁴

The present study was conducted to find the prevalence of Transfusion Transmitted Infectious markers and their trends among the blood donors.

MATERIALS & METHODS

The study was conducted in from year 2009 to year 2012 to determine the prevalence of TTIs among blood donors. Following inclusion and Exclusion criteria was used. Inclusion criteria: Physically fit blood donors aged (18 to 60 years). Exclusion Criteria: 1. Subjects with history of HIV, HBV, and HCV infection. 2. Subjects < 18 years weighted less than 45 kg, 3. Subjects having anemia and jaundice. For detection of HIV infection, 3rd generation Microlisa was used to detect the HIV Antigen and antibody in donor serum. For detection of Hepatitis B infection, 4th generation Hepalisa was used for detection of Hepatitis B Surface Antigen and for detection of Hepatitis C virus

infection, 4th generation HCV Microlisa was used for detection of HCV Antibody in serum or plasma of donor. For detection of syphilis infection, Sero-Max RPR (slide agglutination method) was used for VDRL screening. For screening of malarial infection, Pan Malaria Rapid and Qualisa ELISA (Tulip Group) were used. Results thus obtained were tabulated and subjected to statistical analysis using chi square test. P value < 0.05 was considered significant.

RESULTS

Table I shows that out of 5010 voluntary blood donor, 4520 (90.3%) was males and 490 (9.7%) was females. The difference was significant (P-0.01). Table II shows that the mean age of males was 38 years and in females 35 years. The difference was non significant (P-0.1). Graph I shows overall prevalence of HIV (0.1%), HBsAg (1.3%), HCV (0.5), syphilis (0.07) and malaria (1%). The difference was significant (P<0.05). Graph II shows yearly prevalence of HIV, HBsAg, syphilis, malaria and HCV. The prevalence of HIV reported in year 2009 was 0.1%, 2010 (0.2%), 2011 (0.1%) and 2012 (0.2%). The prevalence of HBsAg reported in year 2009 was 1.5%, 2010 (1.2%), 2011 (1.3%) and 2012 (1.4%). The prevalence of syphilis reported in year 2009 was 0.08, 2010 (0.01%), 2011 (0.09%) and 2012 (0.07%). The prevalence of malaria reported in year 2009 was 1%, 2010 (2.0%), 2011 (0.5%) and 2012 (0.5%). The prevalence of HCV reported in year 2009 was 0.6%, 2010 (0.9%), 2011 (0.7%) and 2012 (0.0%).

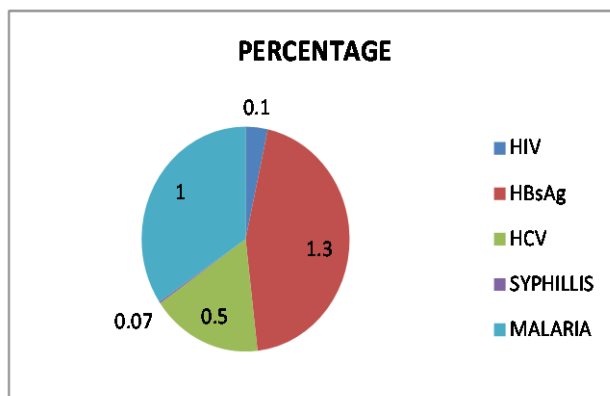
Table I Distribution of Subjects

Total- 5010		
Male	Female	P value
4520 (90.3%)	490 (9.7%)	0.01

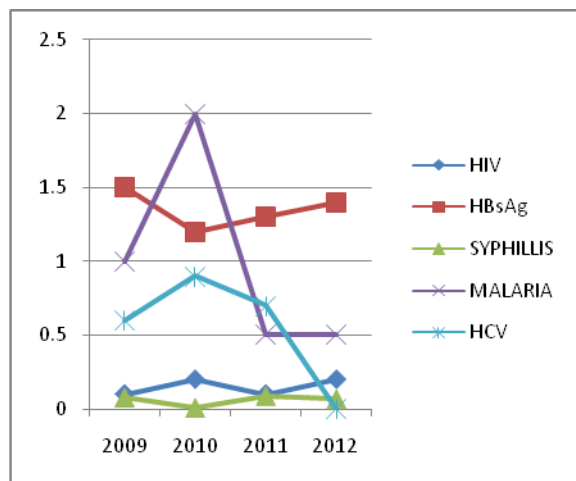
Table II Age wise distribution of Subjects

Total- 5010		
Male (mean age)	Female (mean age)	P value
38 years	35 years	0.1

Graph I Overall prevalence of TTIs among blood donors



Graph II Yearly prevalence of TTI among blood donors



DISCUSSION

In the past, the prevalence of TTIs has been reported to be high. The most common TTIs are HCV, HIV, HBsAg, malarial and syphilis. The HIV pandemic has focused particular attention on the importance of preventing transfusion-transmitted infections (TTIs). The transfusion of contaminated blood and blood products contribute upto to 3% of HIV infections worldwide. Many more recipients of blood products are infected by hepatitis B and C viruses, syphilis and other infectious agents.

Among all infections HIV and Hepatitis infection carries serious complications due to the potential serious clinical sequelae associated with these readily transmitted agents. There are second highest pool 5.7 million cases of HIV in India. Syphilis is less often transmitted by blood and the prevalence is low in most studies reported.⁵

This study was conducted to estimate the risk of TTIs among blood donors from 2009 to 2012. Out of 5010 voluntary blood donor from years 2009 to 2012, 4520 (90.3%) was males and 490 (9.7%) was females. Higher male prevalence has been seen in our study. This is in accordance to study conducted by Kaur R⁶ (2012) who also found male prevalence in her study. This can be due to the fact that blood donation has been considered to be brave step. Moreover it is one of the social act most commonly shown by males. Overall prevalence has been reported with HIV (0.1%), HBsAg (1.3%), HCV (0.5), syphilis (0.07) and malaria (1%). Our result is in agreement to Bhattacharya P et al⁷.

However, Singh R⁸ conducted a study to record the prevalence of HIV, HCV and HBsAg (viral markers) among all blood donors who donated blood in general hospital Sonapat in year 2013 and found that HBsAg was among the most commonly seen infection although prevalence recorded by him was low than reported by other studies.

We also reported the yearly prevalence of various TTIs among blood donors. The prevalence decreased from year 2009 to year 2012. There was no case of HCV in 2012. Sinha SK⁹ also reported decrease prevalence of TTIs in his study population.

CONCLUSION

The prevalence rate of TTIs reported from year 2009 to 2012 found to be decreased. This shows effective screening and availability of various tests for these pathogens.

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Source of support: Nil

Conflict of interest: None declared

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