

TRENDS OF TRANSFUSION TRANSMITTABLE INFECTIONS AMONG VOLUNTARY BLOOD DONORS IN A TERTIARY CARE HOSPITAL, MANDYAManjunath M. R¹, Mamatha P. Samaga², Muralidhar Bhat Y³, Shivakumar S⁴**HOW TO CITE THIS ARTICLE:**

Manjunath M. R, Mamatha P. Samaga, Muralidhar Bhat Y, Shivakumar S. "Trends of Transfusion Transmittable infections among Voluntary Blood Donors in a Tertiary Care Hospital, Mandya". *Journal of Evolution of Medical and Dental Sciences* 2014; Vol. 3, Issue 45, September 18; Page: 11040-11044, DOI: 10.14260/jemds/2014/3440

ABSTRACT: INTRODUCTION: Transmission of infectious diseases through donated blood is of concern to blood safety as transfusion forms an integral part of medical and surgical therapy. Blood transfusion carries the risk of transfusion-transmissible infections including HIV, hepatitis etc. Screening of voluntary donors who represent healthy population serves as a predictor for these dreadful diseases in healthy population. **MATERIALS AND METHODS:** This retrospective study was conducted at the blood bank of MIMS, Mandya. Data were analyzed for a period of 5 years from Jan 2009 to Dec 2013. All voluntary donors reporting to the blood bank were screened for hepatitis B (HBV), Hepatitis C Virus (HCV), HIV by using ELISA. The Rapid plasma regain test (RPR test) was used for estimation of syphilis infection. **RESULTS:** The most common infection was hepatitis B (1.2%) followed by HIV infection (0.27%) and HCV (0.09%) in our study. **CONCLUSION:** This study has shown a decrease in seroprevalence of HIV and increase in seroprevalence of HCV over the 5 year study period.

KEYWORDS: voluntary donors, HIV, HBV.

INTRODUCTION: India is the second most populous nation in the world. The Indian subcontinent is classified as an intermediate HBV endemic (HBsAg carriage 2-7%) zone and has the second largest global pool of chronic HBV infections.^[1]

HCV is a leading cause of chronic liver diseases, viz., hepatic fibrosis, cirrhosis, end-stage liver disease and hepatocellular carcinoma (HCC). In India, there are about 12-13 million HCV carriers and modeling data predict that the burden of disease could soon increase substantially.^[2]

Transmission of infectious diseases through donated blood is of concern to blood safety as transfusion forms an integral part of medical and surgical therapy. Blood transfusion carries the risk of transfusion-transmissible infections, including HIV, hepatitis, syphilis, malaria and infrequently toxoplasmosis.

With every unit of blood, there is 1% chance of transfusion-associated problems including transfusion-transmitted diseases.^[3] Among all infections HIV and hepatitis are the most dreadful. The first case of transfusion-associated AIDS was described in an infant given transfusion for erythroblastosis foetalis.^[4]

According to the National AIDS Control Organization (NACO) guidelines all blood sample must be tested for human immunodeficiency virus (HIV) 1 and 2, hepatitis B, hepatitis C, syphilis and malaria.^[5]

In spite of all these guidelines we still have cases of transfusion transmitted infections. Voluntary donors are screened as they represent healthy population at large. So indirectly we will be able to know the seroprevalence of these diseases in healthy population.

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This study was taken up to know the trends of HIV, HepB, and HepC among donors over a period of five years in Mandya.

MATERIAL AND METHODS: The objective of this study is to estimate the seroprevalence of HIV, HBV, HCV and their seroprevalence trends over 5 years among voluntary blood donors at a tertiary healthcare hospital in Mandya. This retrospective study was conducted at the blood bank of MIMS, Mandya. Data was collected for a period of 5 years from Jan 2009 to Dec 2013.

Tests were routinely done on every blood unit to exclude HIV, HBV, HCV, Syphilis and malaria. Donors were carefully selected for donation by trained personnel after a complete physical examination and satisfactorily answering the donor's questionnaire. The family members, friends or relatives of the patients were categorized as replacement donors. People who donate blood without expecting any favor in return or in voluntary blood donation camps were categorized as voluntary blood donors.

The eligibility criteria for the donors, i.e. age between 18 and 60 years, minimum weight 45 kg, hemoglobin 12g%, with no history of HIV, HBV & HCV or any other sexually transmitted infections, no h/o of jaundice in past 1 year was strictly adhered to for recruitment of blood donors. Care was taken to maintain confidentiality of data while conducting the study.

The screening for HIV was done by ELISA using kits (Pareekshak HIV ELISA HIV ELISA kit, India). HBsAg (Surface antigen) was detected by (Hep-scan, India). Anti HCV test was done by ELISA (Hep-scan, India). Manufacturer's instructions were followed.

Quality control: Internal quality controls were performed daily by using both positive and negative controls from the manufacturers.

RESULTS: A total of 32, 676 blood donors were for screened for HIV, HBV and HCV. Table 1 shows seroprevalence of transfusion transmittable infections.

The overall highest prevalence was seen for HBsAg (1.2%) followed by HIV (0.27%), syphilis (0.18%) and HCV (0.09%).there is a decreasing percentage of HIV from 2009 to 2013 that ranges from 0.33% to 0.22%.

Varying trends in seroprevalence of HBV has been seen & it ranges between 1.1% to 1.51%.

Increasing trends of HCV has been noted over 5 years that is in 2009 nil cases to 0.17% in 2013.

Year	Total No. of donors	HIV (%)	HBsAg (%)	HCV (%)	SYPHILIS (%)
2009	4164	14(0.33)	63(1.51)	NIL	27(0.64)
2010	5958	15(0.25)	66(1.10)	2(0.03)	8(0.13)
2011	7220	20(0.28)	81(1.12)	7(0.09)	7(0.09)
2012	7710	20(0.25)	98(1.27)	9(0.11)	15(0.19)
2013	7624	17(0.22)	85(1.11)	13(0.17)	3(0.03)
TOTAL	32676	86(0.27%)	393(1.2)	31(0.09)	60(0.18)

Table 1: Seroprevalence of transfusion transmittable infections among donor blood samples

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DISCUSSION: Blood transfusion is an integral and life-saving procedure of modern medicine but simultaneously it carries the risk of transmitting the life threatening transfusion transmissible infections.

Transmission of HCV is primarily through blood exposure, and majority progresses to chronic infection and chance of cirrhosis and hepatocellular carcinoma is more than HBV. In our study, HCV seroprevalence was 0.09% which is less than in different Indian studies where HCV seroprevalence ranged between 0.57 to 1.49%.^[6-10] But we observed an increasing prevalence of HCV over the 5 year study period, nil prevalence in 2009 and 0.17% prevalence in 2013. This might be because of unawareness about its mode of transmission and chronicity.

Meena et al.,^[11] revealed that the prevalence of HCV infection among blood donors showed a significant increasing trend from 0.18% in 2005 to 0.82% in 2009. Their study was based on the seroreactivity in anti HCV ELISA-based assay. This is significant because HCV is very infectious and also its way to chronicity. A healthy donor who is unaware of such infection is a definite threat to community in spreading this disease.

We observed that seroprevalence of HIV was 0.27%. Gupta et al.,^[10] and Tiwari et al.,^[12] reported 0.084% and 0.054% prevalence of HIV among blood donors. We found a decrease in seroprevalence of HIV, 0.33% in 2009 and 0.22% in 2013.

There can be many reasons for it. Over the years, awareness of spread of HIV might have improved among the population, making voluntary blood donors with risk behavior abstain from donating blood. Also, better training and awareness of health workers at blood banks may be effective in screening out those with high risk of HIV.

An increase in HIV incidence from 0.04 to 0.55% was shown in New Delhi between 1989 and 1995, whereas a decreasing trend of HIV incidence (0.81% in 2006, 0.32% in 2007, and 0.53% in 2008, overall 0.51%) was noted in blood donors of Bhopal.^{[8],[9]} Incidence of HIV (0.16-0.18%) in Kerala remained constant from 1990 to 1999.^[6]

The seroprevalence of HBsAg was 1.2% in our study. Voluntary blood donors of Chandigarh had 0.66% seropositivity of HBV.^[10] Even the rural population of Ambajogai, India, had very high prevalence of HBV (4.84%).^[13]

In study done by Fasola et al.,^[14] (2001-2006), Nigeria, it was observed that the most common infection was hepatitis B (13.2%) followed by HIV (7.6%), HCV (3.6%) and no donors had syphilis infection. HBV infection if it coinfects with HIV or HCV is a definitive risk factor. We have not noted any coinfections in our study.

If at all these infections appear in so called healthy population we have to educate people about the occurrence and the spread of these infections in the community.

For syphilis, the seroprevalence was found to be 0.18 % in our study, which was much lower than reported by other studies 0.85% and 1.2%.

Knowing the seroprevalence of HIV, HBV, and HCV among voluntary donors is valuable information which will help us to know the hidden percentage of infections that prevails in the community.

CONCLUSION: The highest prevalence was seen for HBsAg (1.2%) followed by HIV (0.27%) in our study. We found a decrease in seroprevalence of HIV and increase in seroprevalence of HCV over the 5 year study period.

Improvements must be made in donor selection criteria and screening for infectious diseases in order to provide a safe blood supply. Blood can save lives; however, it still carries the potential to transmit life-threatening infections.

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