# Seroprevelance of common transfusion transmitted infection among the blood donors

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## Abstract

Blood donation is responsible for saving large number of lives but associated with the risk of transfusion-transmissible infections (TTIs). Screening of TTIs among blood donors can be a cost-effective approach to monitor the prevalence, distribution, and trends of the infections among healthy-looking individuals. The present study was done to estimate the prevalence of infectious disease markers in the donor population of the blood bank of Azeezia Medical College Hospital, Kollam, Kerala.

A total of 1209 donors were screened over two years to assess the prevalence of infectious disease markers. On completion of blood donation, the units were screened for the five commonest TTIs namely HIV I & II, HBsAg, HCV syphilis and malaria. Out of 1209 blood donors, 1114 (92.14%) were voluntary donors and remaining 95 (7.85%) were replacement donors. 97.26% (1176) were male and only 2.72% (33) were female donors. Out of the total 1209 screened blood units 2 were seropositive for the transfusion transmitted infection and were of HCV.

Two blood units were seropositive for HCV (0.16%) and no other TTI were detected in the screened blood. It can be assumed from the present study that the incidence of the TTI have reduced after mandatory testing of blood units.

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## Introduction

Blood donation is responsible for saving large number of lives. Even though blood transfusion plays an important role in the management of medical and surgical patients, unsafe transfusion practices also put millions of people at risk of transfusion-transmissible infections (TTIs).[1] By implementing, improved donor selection, sensitive screening tests, and effective inactivation procedures can helpful in elimination, or at least reduction, of the risk of acquiring TTIs.[2] TTIs can exist as asymptomatic diseases in the donor, so donors must be screened for high-risk behaviour.[3] An unsafe blood transfusion is very costly from both human and economic points of view. Morbidity and mortality resulting from the transfusion of infected blood, not only affects the recipients themselves, but also for their families, their communities and the wider society.[4]

The prevalence of anti-human immunodeficiency virus (HIV), hepatitis B surface antigen (HBsAg), anti-hepatitis C virus (HCV) and syphilis positivity in Indian blood donors is 0.084-3.87%, 0.66-12%, 0.5-1.5% and 0.85-3% respectively.[5] The present study was done to estimate the prevalence of infectious disease markers in the donor population of the blood bank of Azeezia Medical College Hospital, Kollam, Kerala.

## Materials and Methods

This study was conducted from January 2012 to December 2013 at the Blood Bank, Department of pathology, Azeezia Medical College, Kollam, Kerala. In this retrospective study, we reviewed 1209 healthy blood donors over a period of two years. Trained personnel carefully selected the donors for donation after a complete physical examination and satisfactorily answering the donor's questionnaire. Donor's included both the voluntary and replacement donor. Donors were both new first-time donors and repeated donors. On completion of blood donation, the units were screened for the five commonest TTIs namely HIV I & II, HBsAg, HCV syphilis and malaria. The reactive sample was retested in duplicate before considering it seropositive. Seropositive blood bags were discarded.

## Result

The present study was conducted in Blood Bank, Department of Pathology, Azeezia Medical College, Meeyanoor, Kollam, Kerala. It was a twenty four month (January 2012 to December 2013) non-interventional retrospective study and the data was collected from the Blood Bank. During the study period total of 1209 donor's donated the blood.

Out of 1209 blood donors, 1114 (92.14%) were voluntary donors and remaining 95 (7.85%) were replacement donors.

| Total Donors | Voluntary Donors | Replacement Donors |
|---|---|---|
| 1209 | 1114(92.14%) | 95(7.85%) |
| **Sex** | **Voluntary Donor** | **Replacement Donor** |
| Male | 1086 (89.82%) | 90 (7.44%) |
| Female | 28 (2.31%) | 5 (0.41%) |

Out of the total 1209 screened blood units 2 were seropositive for the transfusion transmitted infection, giving the percentage of 0.16%.

| HIV | HCV | HbsAg | Malaria | Syphilis |
|---|---|---|---|---|
| 0 | 2 | 0 | 0 | 0 |

## Discussion

India is the second most populous country in the world. India has population of more than 1.2 billion with 5.7 HIV positive, 43 million HBV positive and 15 million HCV positive cases.[6] As mentioned above, India has the prevalence of anti-human immunodeficiency virus (HIV), hepatitis B surface antigen (HBsAg), anti- hepatitis C virus (HCV) and syphilis positivity in Indian blood donors is 0.084-3.87%, 0.66-12%, 0.5-1.5% and 0.85-3% respectively.[5]

In our study out of total 1209 donors, 97.26% (1176) were male and only 2.72% (33) were female donors. Similar results have been found in the other studies were male predominance in blood donation was noted.[6] The low prevalence of female donation may be attributed to Anemia and underweight. They are the two most leading cause of donor rejection and also these two accounts for more than half of the deferrals.[7]

In the present study the voluntary donors constituted for 92.13% (1114) and remaining 7.85% (95) were replacement donor. The similar results were noted in few studies[8] but the contrast, that is more number of replacement doors than the voluntary donors are also found in few studies.[5]

The safest blood donors are voluntary, non-remunerated blood donors from low risk population. Voluntary blood donors play a very important as they can be considered as corner stone for safe and adequate supply of blood and products.[9] In our country where comprehensive laboratory tests are neither possible nor pragmatic, for safe blood services, it is best to switch over to 100% voluntary donations.[10]

In our study out of the total blood units screened 2 were seropositive for the transfusion transmitted infection, giving the percentage of 0.16%. Seroprevalence of the TTI is less when compared to other studies.[11,12]

India is country with low HIV prevalence, it has third largest number of people living with HIV/AIDS. Our nation is still in the intermediate prevalence zone for HBsAg, despite of the availability of safe and effective vaccine, prevalence still remains high.[13] Seroprevalance of syphilis in India is 1.7% is general population.[14] In southern eastern Asia region of WHO of nearly 1.4 billion people living in 11 countries, 1.2 billion people are exposed to the risk of malaria, most of them live in India.[15] In our study, there were no blood units screened were found to be seropositive for HIV infection, HBsAg, syphilis and Malaria, which is desirable result with respect to safe blood transfusion.

Out of the total 1209 screened blood units 2 were seropositive for the transfusion transmitted infection and were of HCV. Hepatitis C is an emerging infection and important pathogen causing liver disease in India and also associated with hepatocellular carcinoma. Unsafe blood transfusion and infected needle are the two preventable modalities for the spread of hepatitis C infection. In India the prevalence of hepatitis C in blood donors has reported to be 0.12% to 2.5%,[6] in our study it accounted for 0.16%. The two seropositive cases of HCV were of males, showing the male predominance in HCV seropositivity in our study.

## Conclusion

Two blood units were seropositive for HCV (0.16%) and no other TTI were detected in the screened blood. It can be assumed from the present study that the incidence of the TTI have reduced after mandatory testing of blood units. It is not possible to completely eliminate the risk of TTI even after mandatory testing as there is always the risk associated with blood donation during window period.[16]

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