



Hepatitis B versus HIV in Blood Donors

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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, syphilis, malaria and infrequently toxoplasmosis.

Aims & Objectives: To find out the seroprevalence of hepatitis B virus and HIV virus in blood donors, to determine the incidence of transfusion related disease in blood donors, to find the incidence of spectrum of diseases in blood bank donation, to find the age & sex distribution of the cases studied.

Material & Methods: The present study was undertaken in the Department of Pathology MGM Medical College Indore. This is a retrospective study that was conducted, during the period 2008–2015. The screening for HIV & HBS Ag was done by ELISA.

Results: Out of total 137689 blood donations, majority of donors are voluntary donors 83.02 % as compared to replacement donors 17.05 %. Seroprevalence of HBV and HIV are 1.64 % and 0.13 % respectively. Seroprevalence is higher in the age group 26–35 year for HBV-0.93 % & HIV-0.065 %. Over all Seroprevalence in the years 2008–15 is 1.89 %. Seroprevalence is higher in voluntary donors 1.33 % as compared to replacement/relative 0.55 % donors.

Conclusion: voluntary blood donation should be encouraged for prevention of transfusion-transmissible diseases. The time and cost involved in screening donated blood can be reduced by an effective donor education and selection program that promotes self-exclusion by donors at risk of transfusion-transmissible infections.

Keywords: Hepatitis B, HIV, Seroprevalence, Transfusion Transmitted Diseases, Voluntary Donors, Replacement Donors

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, syphilis, malaria and infrequently toxoplasmosis, Brucellosis and some viral infections like CMV, EBV and herpes.

With every unit of blood, there is 1% chance of transfusion-associated problems including transfusion-transmitted diseases. 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. Thereafter, many cases were reported all over the world in which transfusion of blood and its products was the only risk factor. The improved screening and testing of blood donors has significantly reduced transfusion-transmitted diseases in most developed countries. This has not been so in developing nations. Poor health education and lack of awareness result in the reservoir of infections in the population.

Material and Methods

The present study is being undertaken in the Department of Pathology MGM Medical College Indore. This is a retrospective study that will be conducted, during the period 2008–2015.

1. To find out the seroprevalence of hepatitis B virus and HIV in blood donors.
2. To determine the incidence of transfusion related disease in blood donors.
3. To find the incidence of spectrum of diseases in blood bank donation.
4. To find the age distribution of the cases studied.
5. To find the sex distribution of the cases studied.

Tests are routinely done on every blood unit to exclude HIV, HBV, HCV, syphilis and malaria. Donors were selected by the standard criteria for donor fitness. The screening for HIV was done by ELISA using kits. HBS Ag was detected by ELISA.

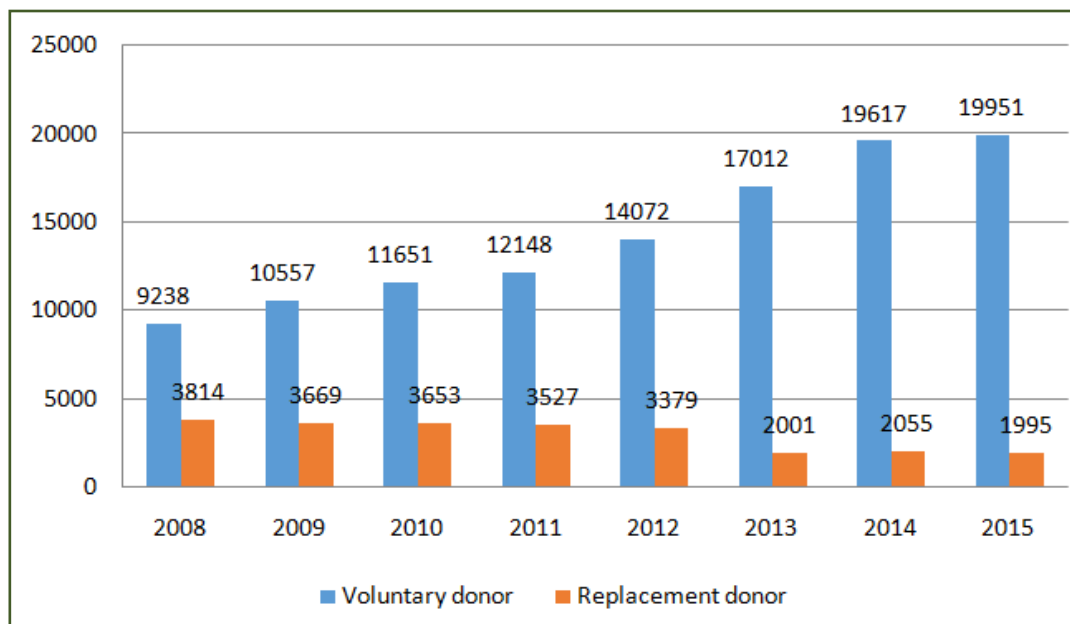
ABO and Rhesus (Rh) blood groups were determined using blood grouping antisera: anti-A, anti-B, anti-AB, and

anti-D. Selection of cases for the study included the donors of MYH Blood Bank.

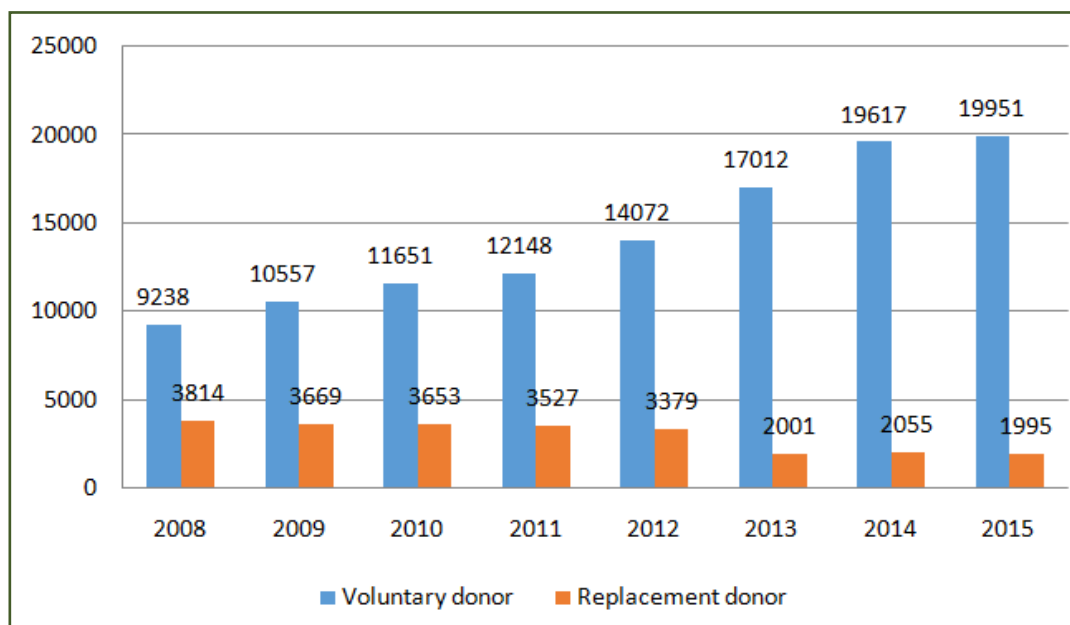
Results

The present study was conducted in the Department of Pathology MGM Medical College Indore and M. Y. Hospital blood bank. This is a retrospective study that was

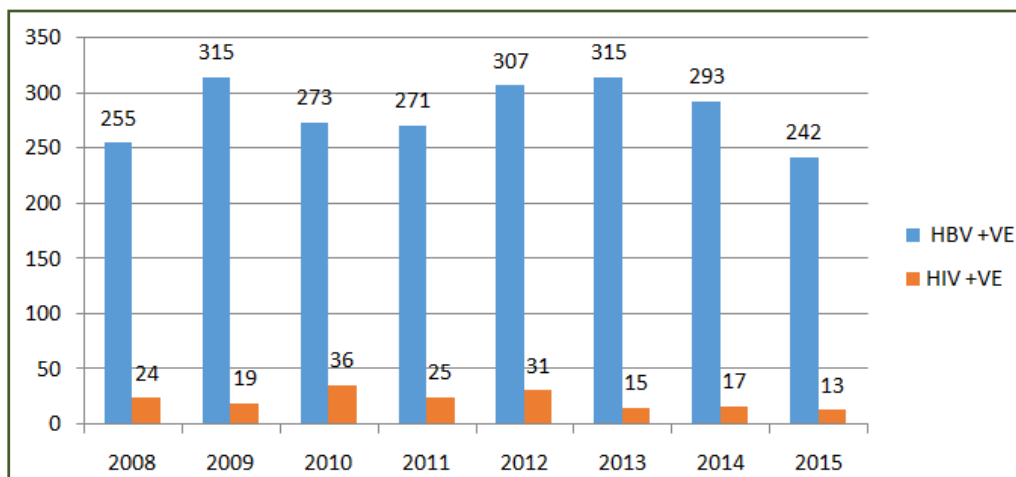
conducted, during the period 2008 –2015. In the present study, 137689 blood donors are observed in the year 2008-15 in the M. Y. Blood Bank. The data collected from donor register record book, donors form, master record book, HIV, & HBV positive bag number records. The results and observations studies are presented below:



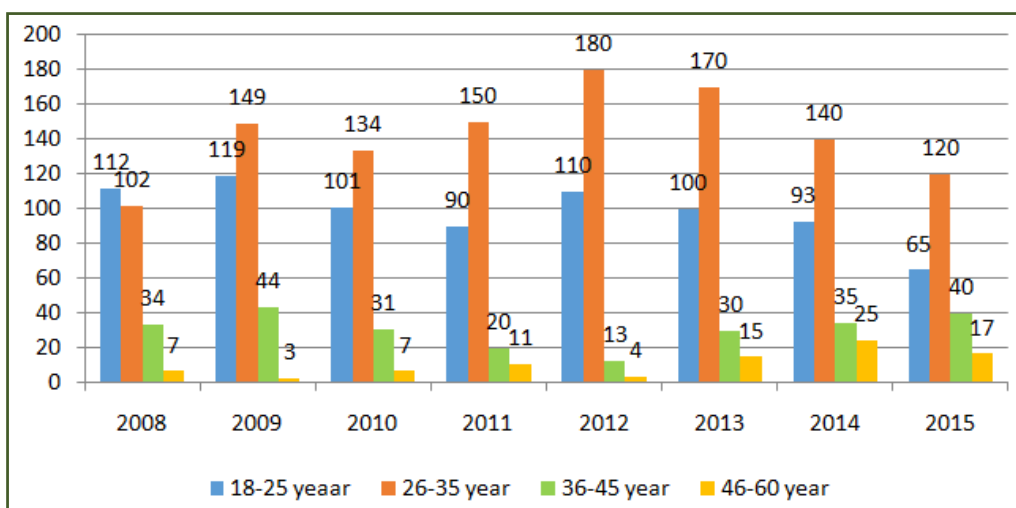
Graph 1: Number of blood units collected during the year 2008-15. Out of total 137689 blood donations, majority of donors are voluntary donors 83.02 % as compared to replacement/relative donors 17.05 %



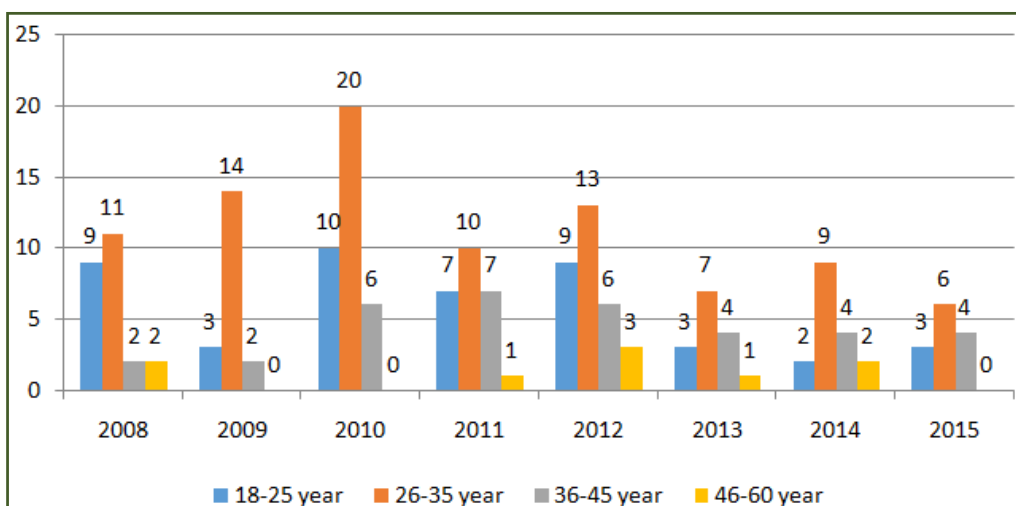
Graph 2: Number of male and female donors during the year 2008-15. Out of total 137689 blood donations, majority of donors are male donors 95.59 % as compared to female donors 4.40%.



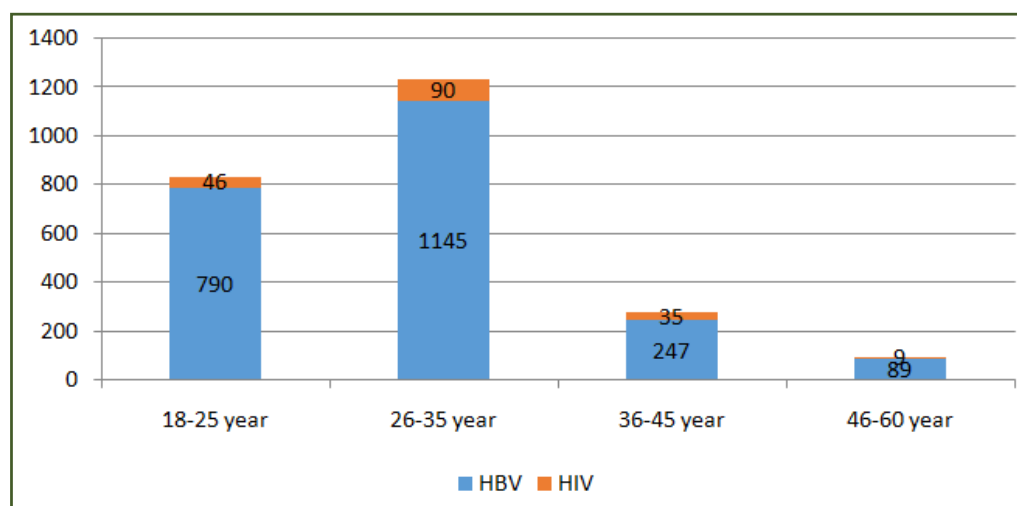
Graph 3: Seropositive donors for HBV and HIV in 2008-15 Seroprevalence of HBV and HIV are 1.64 % and 0.13 % respectively.



Graph 4: Age wise distribution of HBV in the year 2008-15. Seroprevalence is higher in the age group 26-35 year



Graph 5 : Age wise distribution of seroprevalence of HIV in the year 2008-15.



Graph 6: Overall age distribution of seroprevalence of HBV and HIV in 2008-2015. HBV & HIV are more prevalent in age group 26-35 years

Discussion

Voluntary or Replacement/Relative Donor -In our study, out of total 137689 blood donations, majority of donors are voluntary donors 83.02 % as compared to replacement/relative donors 17.05 % (Graph 1) Similarly majority of donors are voluntary in another study out of 19135 blood donors, 11165 (58%) were voluntary and 7970 (42%) were replacement donors by Nagarekha Kulkarni⁸ Associate Professor, Department of Pathology, Vijayanagara Institute of Medical Sciences, Bellary - 583104, Karnataka, India.

Male or Female Donors: In our study, out of total 137689 blood donations, majority of donors are male donors 95.59 % as compared to female donors 4.40 % (Graph 2) . Similarly another study is comparable for majority of donors are male 96.22 % by Dimple Arora and Bharti Arora et al⁹ in Haryana. In the another study, the percentage of male patients was 73% (860/1178) as compared with 27% (318/1178) for female patients by Manisha Jain et al¹⁰, conducted in New Delhi.

Seroprevalence of HBV: In our study, the seroprevalence of HBV is 1.64 % in total blood donations in the year 2008-15 (Graph 3). Seroprevalence of HBV is comparable to another study with seroprevalence of HBS Ag was 1.7 % by Dimple Arora and Bharti Arora et al⁹ conducted in Haryana. The seroprevalence of hepatitis B surface antigen was 0.87% noted in hospital-based population by Smita Sood and Shirish Malvankar et al¹¹ conducted in Rajasthan. In another study conducted among donors of interior Sindh (Pakistan) by Mujeeb et al¹², the seroprevalence of HBV was 6.2% .

Seroprevalence of HIV: In our study, the seroprevalence of HIV is 0.13 % in total blood donations in the year 2008-

15 (Graph 3). Seroprevalence of HIV is low as compared to another study 0.3% in total donors by Dimple Arora and Bharti Arora et al⁹ conducted in Haryana. In another study, the seroprevalence of antibodies to HIV in hospital population was 0.35% by Smita Sood and Shirish Malvankar et al¹¹ conducted in Rajasthan. This is in accordance with the 2006 estimates of NACO (National AIDS Control Organization), NIHWF (National Institute of Health and Family Welfare), and NMS (National Medical Statistics) which suggest that the national adult HIV prevalence in India is 0.36%. Our seroprevalence of HIV is very low as compared with another study, the overall seroprevalence of HIV was 2.21% by Marius Bolni Nagalo and Mahamoudou Sanou et al¹³ conducted in Koudougou. Seroprevalence of HIV is low as in another study seroprevalence of HIV was 0.91% Nagarekha Kulkarni⁸ in Karnataka. In our study seroprevalence is low as compared to overall seroprevalence of HIV (3.8%) by Belay Tessema and Gizachew Yismaw et al¹⁴ conducted in University of Gondar, Ethiopia .

Age Wise Distribution: In our study, Seroprevalence is higher in the age group 26-35 year for HBV (0.93 %) & HIV (0.065 %) (Graph 4,5 & 6). The seroprevalence of HBV was significantly higher donors in the group aged 20-29 years old than in the group 30-40 years old by Marius Bolni Nagalo and Mahamoudou Sanou et al¹³ conducted in Koudougou. The highest seroprevalence for anti-HIV was found in the age group 31-40 years by Smita Sood and Shirish Malvankar et al¹¹ conducted in Rajasthan.

Conclusion

The present study was conducted in the Department of Pathology MGM Medical College Indore and M. Y.

Hospital blood bank. This is a retrospective study that was conducted, during the period 2008 –2015. Tests are routinely done on every blood unit to exclude HIV, HBV and HCV. Donors were selected by the standard criteria for donor fitness. The data collected from donor register record book, donors form, master record book, HIV, HBV and HCV positive beg number records. Out of total 137689 blood donations, majority of donors are voluntary donors 83.02 % as compared to replacement/relative donors 17.05 %. Seroprevalence of HBV and HIV are 1.64 % and 0.13 % respectively. Seroprevalence of HBV is higher than HIV. Seroprevalence is higher in the age group 26-35 year for HBV-0.93 % & HIV-0.065 %. Over all Seroprevalence of transfusion transmitted disease in all donations in the year 2008-15 is 1.89%. Seroprevalence of transfusion transmitted disease is higher in voluntary donors 1.33 % as compared to replacement/relative 0.55 % donors. HBV and HIV are the most prevalent transfusion-transmissible diseases among blood donors in Indore. Screening and better selection of donors are necessary to improve blood safety in the regional blood transfusion centre of M. Y. Hospital. Therefore, it is concluded that voluntary blood donation should be encouraged for prevention of transfusion-transmissible diseases. The time and cost involved in screening donated blood can be reduced by an effective donor education and selection program that promotes self-exclusion by donors at risk of transfusion-transmissible infections.

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