



SEROPREVALENCE OF TRANSFUSION TRANSMITTED INFECTIONS AMONG BLOOD DONORS – A CROSS SECTIONAL STUDY

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ABSTRACT

Background: Transfusion of blood and blood components helps in saving millions of lives and also reduces morbidity. Blood transfusion is associated with transmission of infections and hence pre-transfusion screening of donors blood for presence of transfusion transmitted infections (TTI) is essential. Seroprevalence study of transfusion transmitted infections among blood donors is valuable not only in providing information regarding the safety of blood transfusion but also to assess the prevalence of these infections in the local community.

Aims and objectives: To study the Sero-prevalence of transfusion transmitted infections among blood donors at Department of Transfusion Medicine, Sree Balaji Medical College and hospital, Chennai for a period of about five years.

Materials and Methods: The study was approved by the institutional ethical committee. A retrospective review of donor records covering the period 2008 to 2012 at the Department of Transfusion medicine, Sree Balaji Medical College and hospital, Chennai was carried out. Both Voluntary and replacement blood donors of both the sexes and all age groups were included in the study. Demographic data and screening details for TTI (HIV, HBsAg, HCV, Syphilis and Malaria) were tabulated and analyzed.

Results: During the study period of five years from 2008-2012, a total of 2294 blood donors were screened. Among them 97.7% were males and only 2.22% were females. The number of voluntary donors (2203 donors) was found to be higher than that of replacement donors (91 donors). Sero positivity for HBs Ag was found to be higher compared to other transfusion transmitted infections. VDRL positivity was showing an increasing trend.

Conclusion: Our study showed that most of the donors were voluntary which is a welcome sign. Prevalence of Hepatitis B still ranked the highest among the donors indicating the need to increase the awareness of vaccination against this preventable TTI. The study also has prompted the recent rise in VDRL positivity among donors which could be an indirect indicator of unidentified HIV positivity; this mandates the need for strict donor selection criteria and more sensitive tests to screen for TTIs, particularly for HIV.

KEY WORDS: Blood donors, Sero prevalence, Transfusion transmitted infections, Voluntary donors.



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INTRODUCTION

Screening for prevalence of the transfusion transmitted infections (TTI'S) among blood donors gives us details regarding the safety of blood transfusion [1,2]. It also helps in assessing the epidemiology of these infections in the local community[3] as blood donors are generally considered as healthier segment of the community [3,4]. Moreover, such retrospective studies are easy to conduct[5]. Voluntary blood donors are motivated blood donors who gives blood at regular intervals and replacement donors are one time blood donors who donates blood only when a relative is in need of blood [6,7,8] . Paid donors are usually avoided in most of the blood banks as they are on the increased risk of developing TTI [9]. We conducted a cross sectional study in our blood bank to assess the prevalence of various transfusion transmitted infections among the various types of donors.

RESULTS

MATERIALS AND METHODS

The study was approved by our institutional ethical committee. A retrospective review of donors' records was done covering the period between 2008-2012 at the institutional blood bank, Sree Balaji Medical College and Hospital, Chennai for a period of 5 years.

INCLUSION CRITERIA

Both voluntary and replacement donors who had satisfied the blood bank donor selection criteria and from whom blood donation was accepted were included in the study. Demographic data and screening details of TTI were collected and tabulated.

STATISTICAL ANALYSIS

The data was collected, entered and analyzed using SPSS Version 15.0. We presented our data in the form of tables and bar diagrams. The descriptive statistics were determined in means of percentages.

Table 1
Total blood collection and sex distribution of donors (2008-2012)

YEAR	TOTAL DONORS	VOLUNTARY DONORS	REPLACEMENT DONORS	MALES	FEMALES
2008	416	385	31	412	4
2009	438	418	20	415	23
2010	460	440	20	438	22
2011	468	460	8	466	2
2012	512	500	12	512	-
TOTAL	2294	2203(96.03%)	91(3.96%)	2243(97.7%)	51(2.22%)

(Table 1) shows the total blood collection and sex distribution of blood donors. During the study period, a total of 2294 number of blood donors were screened. About 96% were voluntary donors and rest were replacement donors. None of them were paid donors. Most of them (97.7%) were males and only 2.22% were females. (Figure1) Displays a bar diagram showing the sex distribution of blood donors. Sero prevalence of various TTIs was shown in (Table2). (Table 3) represents the number of voluntary and replacement donors positive for TTI in our study. Sero prevalence of HIV and HCV were less (0.04%each), whereas Sero positivity of HBsAg is found to be the highest and also showing an increasing trend. VDRL positivity has slightly increased in the recent years and two malarial positive cases were detected among donors in 2011.

Table 2
Prevalence of Hiv, HBSAg, Hcv, Syphilis , Malaria in blood donors(2008-2012)

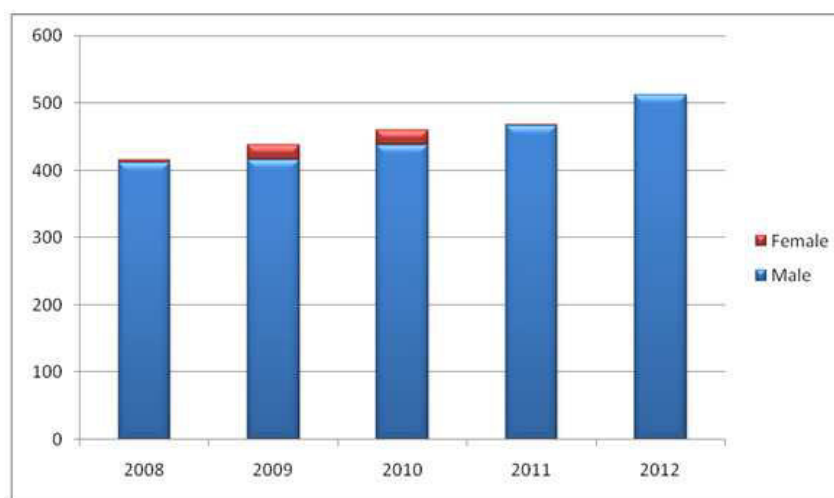
YEAR	TOTAL DONORS	HIV	HBsAg	HCV	VDRL	MP POSITIVE
2008	416	-	6(1.44%)	1(0.24%)	-	-
2009	438	-	4(0.91%)	-	-	-
2010	460	-	6(1.30%)	-	-	-
2011	468	1(0.21%)	7(1.495%)	-	1(0.21%)	2(0.42%)
2012	512	-	8(1.56%)	-	2(0.39%)	-
TOTAL	2294	1(0.04%)	31(1.35%)	1(0.04%)	3(0.13%)	2(0.08%)

Table 3
Number of voluntary and replacement donors positive for TTI (2008-2012)

YEAR	HIV		HBs Ag		HCV		VDRL		MP	
	V	R	V	R	V	R	V	R	V	R
2008	-	-	5	1	1	-	-	-	-	-
2009	-	-	3	1	-	-	-	-	-	-
2010	-	-	3	3	-	-	-	-	-	-
2011	1	-	6	1	-	-	1	-	2	-
2012	-	-	6	2	-	-	2	-	-	-

V- Voluntary donors, R- Replacement donors, TTI-Transfusion transmitted infections.

Figure 1
Bar diagram showing sex distribution of blood donors



DISCUSSION

Majority of donors were males in the current study (Table1 and Figure1). This is comparable to various other authors [11, 12, 13 , 14]. This scenario may be due to increased prevalence of anemia among Indian women and that would be the reason for deferral during donor selection (20). In the present study, there is a predominance of voluntary donors who constituted about 96%. This is comparable with other recent studies. [3, 15] Previously, the proportion of

replacement donors was higher particularly in India[(13,14,16]. The increase in voluntary donors in the recent years may be attributed to increase in the public awareness about voluntary blood donations, thanks to active propaganda by government bodies like NACO and other NGOs. A comparison of TTI sero prevalence between both types of donors was not done because of insignificant proportion of replacement donors in the study. HIV prevalence is 0.04% in the current study which

is less in comparison to other studies.[14,17] VDRL reactivity is 0.13% and is showing an increasing trend.[14,18] This can be considered as a warning signal because Syphilis screening can be a surrogate test for HIV infected donors. Increasing VDRL reactivity coupled with low HIV prevalence proves the necessity to have stricter donor selection criteria to identify donors with potentially high risk behaviour; at the same time, the importance of using more sensitive screening test to pick up early cases of HIV cannot be ignored. Our study showed no co-infection with HIV, We tested serology of syphilis using Rapid Plasma Reagin card test (RPR) and positive cases were further confirmed by TPHA. Our studied showed HCV prevalence of 0.04% showing decreasing trend which is comparable to other studies [18, 19, 20]. Prevalence of malaria is about 0.08% with 2 positive cases in recent years compared to a study [20] which showed a sero positivity of 0.01% Since malaria is endemic in our population more specific donor questioning such as recent history of fever and further detection of malarial antibodies and antigens by commercialized kits may improve the malarial risk management. Sero positivity of Hepatitis B is the highest among all TTIs in the study. Though, this is comparable with other studies [3, 17], there is an increasing trend which is seen with this infection which is of great concern. This

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observation has indicated the need to increase the awareness and to enforce mandatory vaccination against Hepatitis B not only for health workers [21] but also for common public.

CONCLUSION

Our study has shown that voluntary donors predominate and the proportion of replacement donors is very less which could be due to the awareness created by Governmental and Non-governmental organizations. There is a slight increase in VDRL positivity which raises the necessity for stricter donor selection criteria to avoid donors with high risk behaviour; this further suggests the need for a more sensitive screening test particularly for HIV. Hepatitis B is still on rise. Awareness programmes directed towards common public coupled with vaccination might decrease the prevalence of this vaccine preventable disease in our population in future.

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