

ORIGINAL RESEARCH

Prevalence of Transfusion Transmitted Infections among Donors in The Blood Bank of A Tertiary Care Centre and Comparison with General Population

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ABSTRACT

Aim: To analyse seroprevalence of HIV, HbsAg, HCV, syphilis and malaria in pretransfusion blood and comparison with general population.

Methodology: It was retrospective study, conducted at Osmania General Hospital, Telangana during the year from July 2016-June 2018. HIV, HBsAg, HCV tests were done by enzyme-linked immunosorbent assay (ELISA) procedure using the third generation kits. The donor questionnaire form with details of donor and results of serological tests are maintained in the blood bank. Venous blood so collected is screened for HIV, hepatitis B surface antigen (HBsAg), HCV, syphilis and malaria. HIV, HBsAg, HCV tests were done by enzyme-linked immunosorbent assay (ELISA) procedure using the third generation kits.

Results: The seropositivity among blood donors at our blood bank was 1.27% for HBV, 0.31% for HIV, 0.27% for HCV, 0.01% for syphilis, 0.00% for malaria. The seropositivity among general population was for 1.29% HBV, 2.49% for HIV, 0.10% for HCV & 0.13% for malaria. The prevalence was highest among sexually active age group. There was poor women participation in blood donation activities.

Conclusion: The seroprevalence of HBV, HIV, & HCV showed declining trend in this period and in most of the studies mentioned above. HIV, HBV, malaria was lower & HCV was slightly higher when compared with general population.

Keywords: HIV, HBV, Malaria, HCV, Seropositivity, Blood transfusion, ELISA.

INTRODUCTION

Transmission of infectious diseases through donated blood is of concern as it carries risk of transfusion induced transmissible infections. With every unit of blood transfusion there is 1% chance of transfusion related complications including these infections. Proper donor selection and screening of donors' blood for infectious agents are corner stones of transfusion medicine. Blood transfusion screening is thus to ensure safety, adequacy, accessibility and efficiency of blood supply at all levels. [1-2]

AIM

- To analyse seroprevalence of HIV, HbsAg, HCV, syphilis and malaria in pretransfusion blood and comparison with general population.

MATERIALS AND METHODS**STUDY DESIGN**

Retrospective study.

STUDY PERIOD

July 2016-June 2018.

INSTITUTE

Osmania General Hospital, Telangana.

Blood was collected from apparently healthy individuals after detail history and examination, aged 18–60 years with weight >50 kg with hemoglobin concentration >12.5gm%. The donor questionnaire form with details of donor and results of serological tests are maintained in the blood bank. Venous blood so collected is screened for HIV, hepatitis B surface antigen (HBsAg), HCV, syphilis and malaria.

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Archived results from our blood bank was used for this study with approval from hospital authorities and compared with positive cases of HBV, HIV, HCV & malaria of our hospital general population. We could not get proper data about syphilis as its screening is not routinely done here.

OBSERVATION AND RESULTS

A total no. of 11,018 units of blood collected from donors otherwise suitable. There were 10,802 males and 216 females with ratio of 50:1. TTI'S positive were 207/11018 over the study period. The percentage of seropositivity was 1.89% (205/10802) in males & 0.92% (2/216) in females. Total positive cases of HIV, HBV and HCV in general population were 1519/37,652 with 4.06% (1342/32996) in males & 3.80% (177/4656) in females.

Table 1. Year wise distribution of donors

Table-1. Year	Male Donors	Female Donors
JUL 2016-JUN 2017	5568	113
JUL 2017-JUN 2018	5234	103

Fig 1. Seroprevalence of TTI'S in JUL 2016-JUN 2017

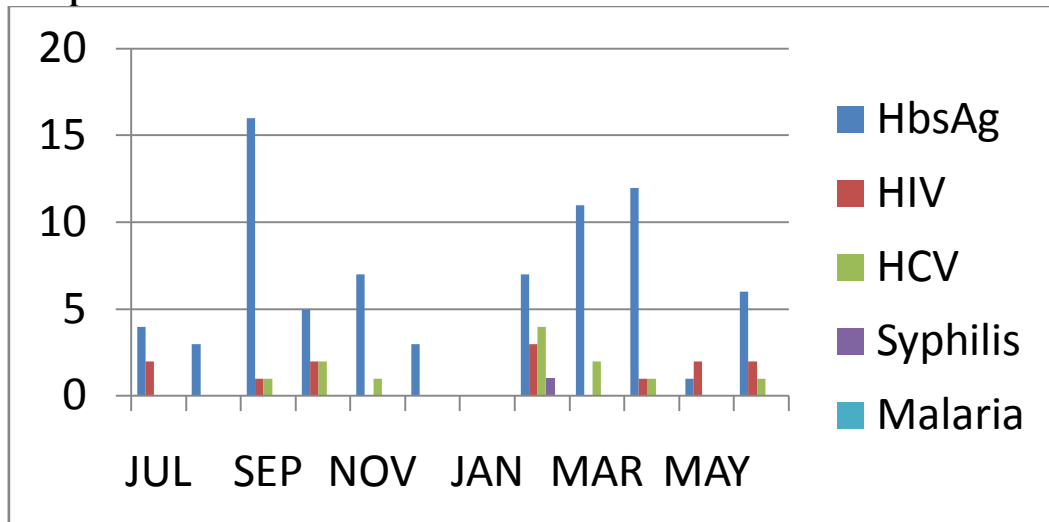


Fig 2. Seroprevalence of TTI'S in JUL 2017-JUN 2018

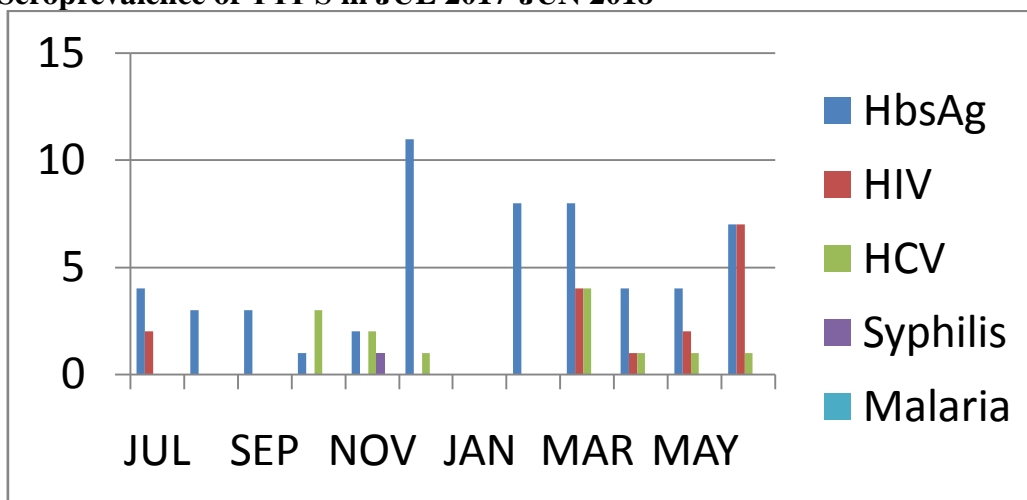


Fig 3. MALE-FEMALE RATIO OF TTI'S AMONG TOTAL SEROPOSITIVE DONORS

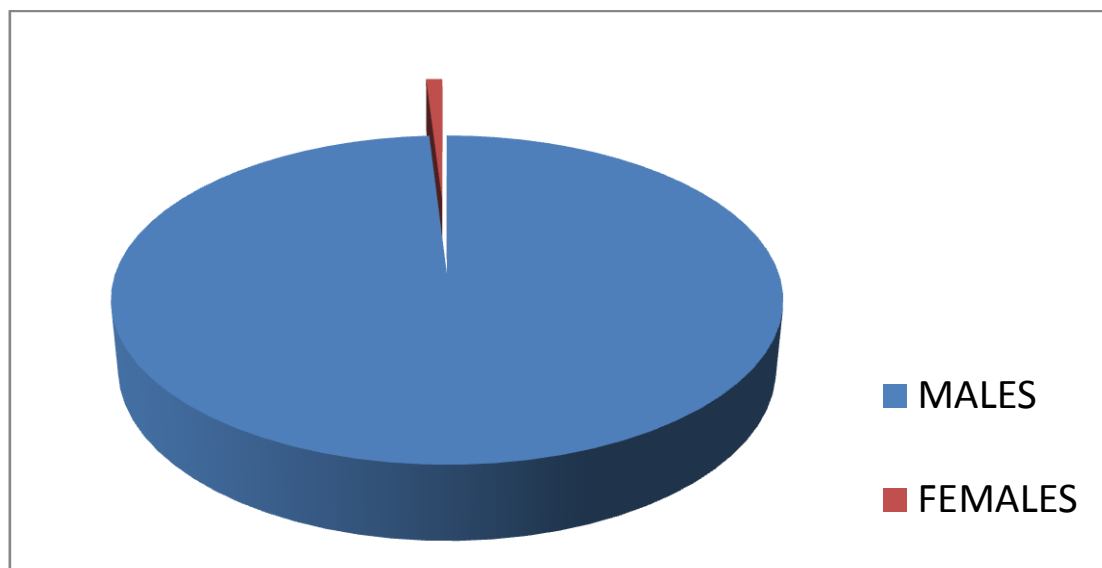


Table 2. Frequency Of Seropositivity of TTI'S in blood donors & in general population

S.NO	Type of infection	No.ofseropositi--ve donors	% out of total donors
1	HbsAg	140	1.27%
2	HIV	35	0.31%
3	HCV	30	0.27%
4	Syphilis	02	0.01%
5	Malaria	00	0.00%

Table 3. Frequency Of Seropositivity of cases in general population

S.No	Type of infection	No. Of Seropo-sitive cases	% out of total General Populati-on
1	HbsAg	489	1.29%
2	HIV	940	2.49%
3	HCV	40	0.10%
4	Malaria	50	0.13%

Table -4: Age wise distribution of seropositivity of tti's in blood donors

Infection	18-30 years	31-45 years	46-60 years	Total
HbsAg	91	39	10	140
HIV	21	11	03	35
HCV	18	09	03	30
Syphilis	02	-	-	02
Malaria	-	-	-	-

Total No. of seropositive donors	132	59	16	207
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Table -5: Age wise distribution of seropositivity OF HbsAg, HIV & HCV in general population

Infection	18-30 years	31-45 years	46-60 years	Total
HbsAg	106	248	135	489
HIV	232	599	109	940
HCV	05	25	10	40
Malaria	10	30	10	50
Total no.ofseropositivity among general population	353	902	264	1519

Fig 4 (a,b) Age &Sex distribution of HbsAg& HIV in general population

Figure: a

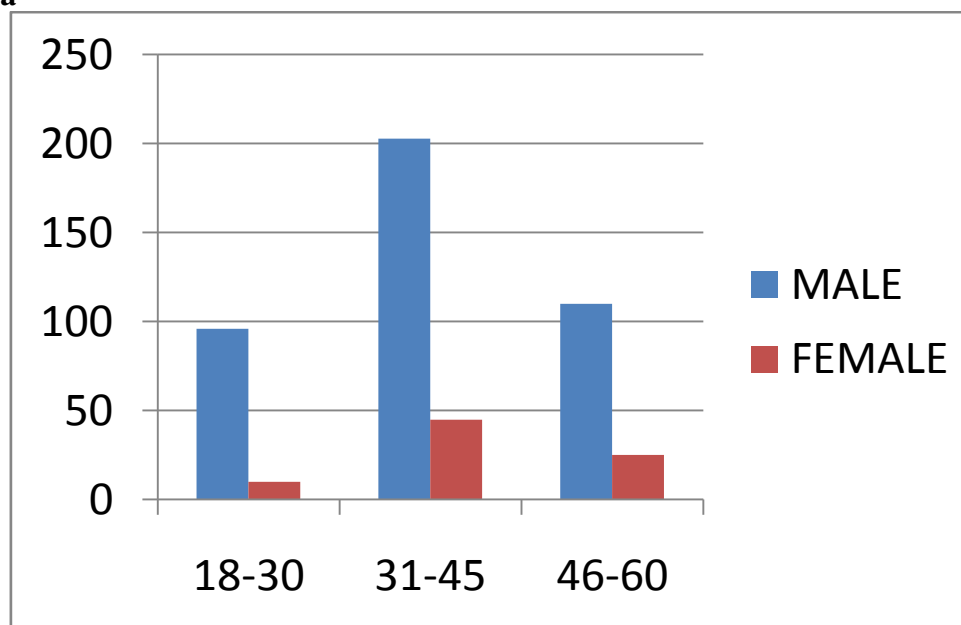
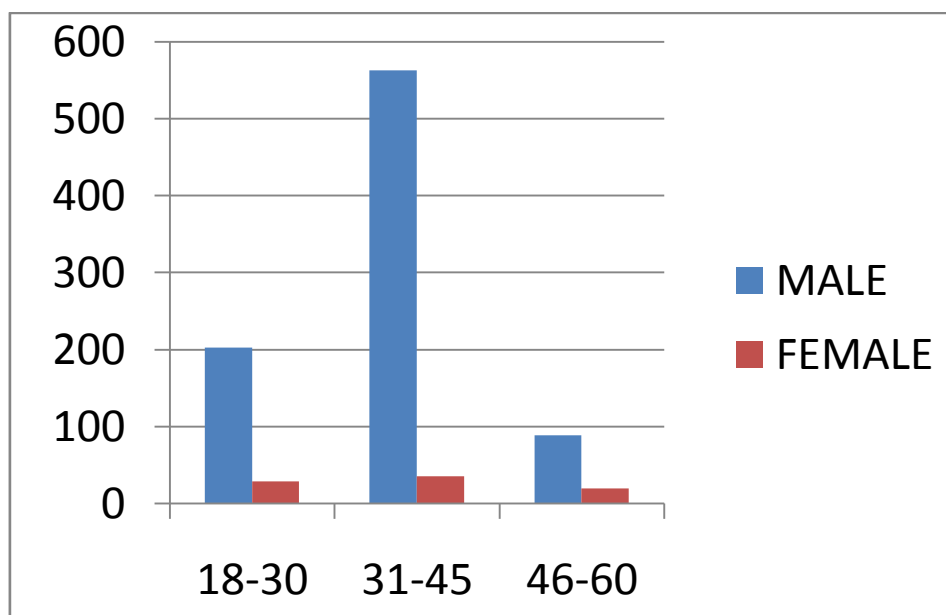


Figure: b



DISCUSSION

TTI'S are a major challenge to blood transfusion service all over world. The problem of TTI is directly proportional to prevalence of infection in blood donor community. In our study, most prevalent age group was between 18-30yrs, i.e 132(63.76%) seropositive donors and among general population 31-45 yrs, 902(59.385%) were majority of seropositive cases. The peaking of infection rates in adulthood suggests close relationship in sexually active age groups and may include high risk behaviour population. In our study, seropositivity in females was much lower than that in males. Similar to studies done by Makroo et al, [4]&Karmakar et al [5]. Table 6. shows comparison of different studies of TTI and reveals that seroprevalence of HBV was highest among TTI in most of the studies. The seroprevalence of HIV was more and HCV was less than our study group when compared general population. [8]

Table-6. Comparison of seropositivity of blood donors in different studies

Sr.No.	Author	Area	Year	HBV (%)	HIV (%)	HCV (%)	Syphilis (%)
1	Kaaur et al [3]	Chandigarh India	2001-2005	1.7	0.6	0.8	0.7
2	Makroo et al [4]	New Delhi, India	2005-2013	1.18	0.24	9.87	0.43
3	Patil et al [6]	Mumbai, Maharashtra, India	2008-2014	1.48	0.40	0.37	0.11
4	Mandal et al [7]	West Bengal, India	2010-2012	1.24	0.42	0.62	0.65
6	NACO [9]	Maharashtra, India	2015	1.09	0.19	0.28	0.04
7	Our study	Hyderabad	2016-	1.27	0.31	0.27	0.01

		Telangana, India	2018				
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There were only two cases of syphilis and no cases of malaria in our study. This can be considered as a great achievement in our healthcare delivery system. There were two donors with coinfection over study period, one with HIV & HCV, the other with HIV & HBV. Kaur et al found 23 blood donors with coinfections, 11 of which are HIV seroreactive.

CONCLUSION

The seropositivity among blood donors at our blood bank was 1.27% for HBV, 0.31% for HIV, 0.27% for HCV, 0.01% for syphilis, 0.00% for malaria. The seropositivity among general population was for 1.29% HBV, 2.49% for HIV, 0.10% for HCV & 0.13% for malaria. The prevalence was highest among sexually active age group. There was poor women participation in blood donation activities. The seroprevalence of HBV, HIV, & HCV showed declining trend in this period and in most of the studies mentioned above. HIV, HBV, malaria was lower & HCV was slightly higher when compared with general population.

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