



## SEROPREVALENCE OF TRANSFUSION TRANSMITTED DISEASES IN A TERTIARY CARE HOSPITAL OF WESTERN UTTAR PRADESH A RETROSPECTIVE STUDY

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### ABSTRACT

**Background:** There is a risk of transfusion transmitted diseases with per unit of blood.

**Aims and Objectives:** To assess the seroprevalence of HIV, HBsAg, HCV, Syphilis and Malaria among the healthy donors in a tertiary care hospital of Western UP

**Material and Methods :-** This retrospective study was conducted over a period of 5 years in a tertiary care hospital of Western UP. A total of 10666 donors were screened for HIV, HBsAg, HCV, Syphilis and Malaria by Rapid Kit followed by ELISA.

**Results:** There were 608 voluntary donors and 10058 were replacement donors 483(4.52%) were seropositive. HIV positivity was least common (0.16%) followed by syphilis (0.73%), HBsAg (1.475) and HCV (2.16%). None of the donors was positive for Malaria.

**Conclusion:** Stringent donor screening sensitive and standard laboratory screening tests should be used to decrease the risk of TTIs. NAT should be done to reduce the risk of TTIs during "window period".

**KEYWORDS :** Blood Donor, Seroprevalence, HIV, HBsAg, HCV, VDRL, Malaria

### INTRODUCTION

Blood is an important treatment modality in many of the diseases. It is life saving on one hand but can transmit various diseases, in rare instances if the blood and its components are not tested properly. There is one percent chance of transfusion transmitted diseases (TTIs) with every unit of blood (Dhar G 2013)<sup>1</sup>. TTIs are caused by various microorganisms like Human immunodeficiency virus (HIV), Hepatitis B virus, Hepatitis C virus, Syphilis and Malaria.

Using sensitive screening tests against these infectious agents we can label blood and its components safe. In India National Aids Control Organisation (NACO) has recommended third and fourth generation Enzyme linked immunosorbant assay (ELISA) testing for antibodies to HIV I and HIV II.

However transmission of diseases can still occur because of inability of testing patients who are in "window period" and are immuno silent carriers.

The aim of our study was to find out seroprevalence of TTI in apparently healthy blood donors in a tertiary care hospital of UP.

### MATERIAL AND METHODS

This retrospective study was conducted over a period of 5 years in a tertiary care hospital of western Uttar Pradesh.

Data was collected from the records of blood bank of the hospital. All voluntary donors and replacement donors were included in the study.

Donors in the age group of 18-60 years with weight greater than 48 kg and Hemoglobin concentration greater than 12.5 gm/dl were included in the study. Donors with age group of less than 18 years, greater than 60 years and hemoglobin less than 12.5 gm/dl were excluded from the study.

Blood was allowed to clot manually at room temperature and then centrifuged at 2500 RPM for 5 minutes to obtain serum and then tested for Anti HCV, HBsAg, and HIV I & II and for syphilis.

All tests were performed by using NACO approved rapid kits and followed by fourth generation ELISA & serological screening for Malaria was done by MAL card Rapid visual antigen test

### RESULT

A total of 10666 donors were included in the study, out of these 608 were voluntary donors and 10058 were replacement donors, the ratio of replacement to voluntary donors was 16.54:1 (Table 1)

Demographic data showed 10527 were males and 139 were females with a ratio of 15.13:1 (Table 1)

Out of 10666 cases 483 (4.52%) were total seropositive cases (Table 2).

Out of total donations of 10666 the percentage of positivity was for HIV (0.16%), HBsAg (1.47%), HCV (2.16%) and VDRL was positive in (0.73%) table II

Most common age group to be seropositive was 20-29 years and least common age group was greater than 50 years.

**Table 1 Type of donors and sex distribution**

Year	Total donors	Male Voluntary	Male Replacement	Female Voluntary	Female Replacement
2014	1676	139	1510	13	14
2015	1501	64	1410	05	22
2016	2189	85	2064	06	32
2017	2664	146	2496	12	12
2018	2636	132	2481	6	17
Total	10666	566	9961	42	97

**Table 2 Seroprevalence of various Transfusion Transmitted infections**

Year	Blood donation	Total positive	Total Percentage positive	HIV	Hbs Ag	HCV	Malaria	Syphilis
2014	1676	85	5.37	1	21	45	0	18
2015	1501	82	5.46	5	22	35	0	20
2016	2189	96	4.39	4	37	41	0	14
2017	2664	107	4.02	4	37	52	0	14
2018	2636	113	4.29	3	40	58	0	12
Total	10666	483	4.52	17	157	231	0	78

### DISCUSSION

In the present study a total of 10666 cases were analysed, majority of

them were males (10,527, 97, 4%). Females were less may be because of anemia and under weight, therefore unable to meet donor selection criteria. This gender difference in present study was in concordance with Giri PA et al<sup>2</sup>, Sharma DC et al<sup>3</sup>, kathpal N et al<sup>1</sup> and Niazkar HR, Dorgalaleh A, Rad F<sup>5</sup>.

Voluntary blood donor were 608/10666 which are little less as compared to replacement donors (10,058, 94.30%) Kakkar et al<sup>6</sup> also reported replacement donors continues to be higher in comparison to voluntary donors (94.7%). Our study showed 4.52% of seropositivity which is similar to that of study done by kulkarni et al<sup>7</sup>. This high prevalence can be attributed to the replacement donations. Sinha SK, Roy Choudhary S<sup>8</sup> reported seroprevalence of 5.80% and Kodandao K<sup>9</sup> reported seropositivity of 4.10% which is in agreement with our study.

Among the replacement donors, HCV was the most seroprevalent TTI at 2.16% may be because of multi mode transmission of HCV. The value of HCV positivity is in close proximity to that of Arya et al<sup>10</sup> (1.18%).

According to WHO, 71 million individuals are living with chronic HCV infection globally<sup>11</sup>. Seropositivity of HCV was (0.22%) by Deshpande et al<sup>12</sup>, Jasini et al (0.16%)<sup>13</sup>, NACO karnataka data<sup>14</sup>(0.22%). The above difference in prevalence of HCV may be due to different testing methods having different specificities and sensitivities.

Prevalence of HBV in our study was (1.47%) which is in concordance with study done by Bhawani et al<sup>15</sup> (1.41%). Worldwide hepatitis B is a life threatening disease caused by HBV. India occupies intermediate endemicity zone (2-7%) having prevalence of an average of 4.1% and with a disease burden of about 50 million.

The HIV seroprevalence in present study is less (0.16%) which is similar to Mathreyee et al<sup>16</sup>(0.19%). Whereas seropositivity reported by Jasani et al<sup>13</sup> and NACO Karnataka data for vijaypore district<sup>14</sup> was (0.25% and 0.24%) respectively. The reason for reduced seroprevalence of HIV among population may be due to improved pre-donation counseling of blood donors, stringent screening, deferral of donors with high risk behavior.

The seroprevalence of syphilis in our study was (0.75%) which is nearly equal to study done by Arya et al<sup>10</sup> (0.89%).

All blood donors were found to be negative for Malaria as presenting symptoms such as fever, weakness defers the patient in preliminary health check up. This finding was similar to various other studies done by Sastry JM et al<sup>17</sup>(0%), pallavi P et al<sup>18</sup>(0%) and NACO Karnataka data<sup>14</sup> (0%).

In western countries TTI has been reduced because of availability of techniques such as NAT (Nucleic acid amplification test). But in India cost effectiveness is the greatest hindrance so NAT is still not in routine.

## CONCLUSION

1. In the present study overall seroprevalence of TTI was (4.52%).
2. Replacement donors were more as compared to voluntary donors.
3. Therefore great efforts are required to create an awareness among people to come forward for voluntary donations.
4. This can be done by educating the general population about the benefits of blood donation.

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