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### RESEARCH ARTICLE

## PREVALENCE OF TRANSFUSION TRANSMITTED INFECTIONS (TTI) IN OUR TERTIARY CARE HOSPITAL, KANCHIPURAM, TAMILNADU.

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#### Abstract

**Background:** Blood transfusion carries the major risk of transmitting infections such as hepatitis, HIV, syphilis, and malaria, which needs a proper and serious monitoring to provide safe blood for transfusion.

**Aim:** To determine the seroprevalence of Transfusion Transmitted Infections (TTIs) and to evaluate trends in TTIs among blood donors

**Materials and method:** The present study was carried out in Department of Transfusion medicine, Meenakshi Medical College Hospital, Kanchipuram. Study period was from January 2018 to December 2018. A total number of 1588 donors were screened for HIV, HBV, HCV, syphilis and malaria by ELISA method.

**Results:** Out of 1588 donors, 95.84 % were males 4.16 % were females. 1.008 % were reactive for transfusion transmitted infection. HBV 0.94%, and HCV 0.06% were the major infections in blood donors. None were positive for HIV, syphilis and malaria

**Conclusion:** Seropositivity of HBV, HCV, HIV, syphilis and malaria among the healthy donors indicates the risk or chance of acquisition of these infections during blood transfusion. Implementation of donor selection criteria should be strict and proper to minimize transfusion transmitted infections and provide safer blood and blood products and also higher generation kits and newer strategies are to be adopted.

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#### Introduction:-

In every health care system, Blood Banks are an essential part to provide blood transfusion services which is required for the medical conditions like Anemia, Thalassemia, and Hemophilia, etc., or in surgical conditions, gynecological problems and any kind of blood loss.<sup>1</sup> During the blood transfusion, transmission of infectious diseases through donated blood is an alarming situation and the causative agents can be virus, bacteria or protozoa. Globally, though blood transfusion saves the lives of millions of people, the transfusion transmitted infections (TTI) threaten the safety of patients for blood transfusion.<sup>1,2</sup>

Blood transfusion carries the risk of transmitting major infections such as hepatitis, HIV, syphilis, and malaria<sup>3</sup>. The World Health Organization (WHO) recommends all blood donations should be screened for evidence of infection prior to the release of blood and blood components for clinical or manufacturing use for the pursuit of global blood

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safety. After this routine serological screening implementation, the Transfusion-transmissible infections (TTIs) have been drastically reduced in many countries.<sup>4,5</sup>

Blood is one of the main sources of transmission of various TT pathogens. So donor selection is of paramount importance and the outcome of these infections range from subclinical asymptomatic to life-threatening manifestations. To prevent patients from acquiring TTIs, it is blood bank's responsibility and legal obligation by doing recommended testing before issuing blood and though these testing's are helpful to reduce TTIs, but not up to 100% as serological window period still poses a threat to blood safety.<sup>6</sup>

The aim of this study was to determine the prevalence of TTIs and to evaluate trends in TTIs among blood donors. This knowledge might give us an idea of burden of TTIs in blood donors and to know the basic epidemiology of these diseases in the community.

### Materials And Methods:-

The present study was carried out in department of Transfusion medicine, Meenakshi Medical College Hospital, Kanchipuram. This 1 year Study was conducted from January 2018 to December 2018. A total number of 1588 donors were analyzed for the seroprevalence of Transfusion Transmitted Diseases.

Basic information regarding age, sex, occupation, address, marital status, number of previous donations and other relevant data's were obtained using donor form. Consent form and Donor Questionnaire was given in bilingual language to know about the health status of donor. Physical examination was done for all the blood donors before screening and blood donation. Donors having age less than 18 years and more than 60 years, weight <45 Kg, anemic, pregnant women, lactating women and current history of medication, recent history of having undergone a surgical procedure, serious illness, previous blood donation within 3 months were excluded from the study. After obtaining informed consent, blood was screened for HIV, HBV, HCV, syphilis and malaria by ELISA according to manufactures instructions.

### Results:-

A total number of 1588 blood donations were taken during the period of January to December 2018 at department of Transfusion medicine at Meenakshi Medical College Hospital, Kanchipuram. In our study, Males outnumbered females with 1522 (95.84%) donations while only 66 (4.16 %) donors were females (Table=1). Male female ratio was 23:1 for blood donation. 16 (1.008 %) were reactive for blood transmitted infection. In our study, HBV and HCV were the major infections in blood donors and the seroprevalence were 0.94%, and 0.06% respectively. None were positive for HIV, syphilis and malaria. (Table-2) Most of the seropositive cases were between 20-30 years (Table-3)

**Table 1:-**Sex Distribution Of Donors

N=1588	Total number of donors	Percentage (%)
Male	1522	95.84
Female	66	4.16

**Table 2:-**Seroprevalence Of Tti

N=16	Number of positive cases	Percentage (%)
HBV	15	0.94
HCV	1	0.06
HIV	0	0
SYPHILIS	0	0
MALARIA	0	0

**Table 3:-**Distribution Of Tti According To Age Group

AGE IN YEARS (N=16)	HBV (n=15)		HCV (n=1)	
	NO	%	NO	%
Less than 20	0	0	0	0
<30	11	73.3	0	0

<40	2	13.3	0	0
<50	1	6.7	1	100
<60	1	6.7	0	0

### Discussion:-

Blood transfusion is a lifesaving procedure and plays an important role in the supportive care and inevitable part of medicine. But globally, TTIs threaten the safety in recipients and the community which is of real concern. Seropositivity of HBV, HCV, HIV, syphilis and malaria among the healthy donors indicates the risk or chance of acquisition of these infections during blood transfusion. Screening for TTI ensures safe blood and blood product transfusion.

Among the donors, 95.84% were males and 4.16 % were females. Male female ratio was 23:1 for blood donation in our hospital.

In line with our study, Male preponderance were reported in various Indian studies. In India, Garg *Set al*, Patelet *al*, and Bhagwan Singh Yadav *et al*, reported the percentages of 61.2%, 93.1%, and 98% respectively<sup>7, 6, 3</sup>. The similar rates were observed with the studies of Muhammad *et al*, Arshad *et al*, Yan Song *et al* and Bedoya JAPet *al*, in other countries<sup>1, 2, 5, and 8</sup>. Effort should be put to increase the number of female donors by various awareness programme.

In our study most of our positive donors were between 20 to 30 years. The same has been observed with Asif N *et al*, Arshad *et al*, and Bhagwan Singh Yadav *et al*,<sup>9, 2, 3</sup>

The percentage of donor varies with place to place and time to time. 61.2% were voluntary donors 38.8% were replacement donors in the study of Fernandes *et al*, and 84 % & 16% were voluntary and replacement donors with Patel *et al*.<sup>10, 6</sup> The increase in voluntary donation could be attributed to education and the implementation of camps to raise awareness and to promote voluntary donation, carried out by blood bank staffs and National AIDS Control Organization (NACO) and other organizations.

The predominance of replacement donors was noted in the studies of Pahuja *et al*. (99.48%), Bhagwan Singh Yadav *et al*, (92%), Kakkar *et al*. (94.7%) and Singh *et al*. (82.4%)<sup>11, 3, 12, and 13</sup>. According to the Pan-American Health Organization (PHO), 67.78% were replacement donations recorded in Latin America in 2009.<sup>14</sup>

The seroprevalence of TTI for the year 2018, was 1.008 % in our study. Slightly lower seropositivity was reported by Fernandes *et al*, (0.6%) and Patel *et al* (0.72%)<sup>10, 6</sup>. With the studies of Bhagwan Singh Yadav *et al*, (2.05%), Yan Song *et al* (2.67%), Bedoya JAPet *al* (3.3%), and Aisha Arshad *et al* (5.8%)<sup>3, 5, 8, 2</sup> reported high prevalence compared to our study. Prevalence of these TTI varies from place to place due variation in medical practices.

We observed 0.94% of Hepatitis B Viral (HBV) and 0.06% of Hepatitis C Viral (HCV) infections in our study. None of our donor showed seropositivity to HIV, syphilis and malaria.

In our study, the HBV seroprevalence is 0.94%. Similar observation was made with the study of Shah *Net al*, at Ahmedabad (0.97%).<sup>15</sup> 0.06% of donors had Hepatitis C Viral (HCV) infections in our study. Patel *et al* at Gujarat, reported the similar seroprevalence of HCV (0.06%), which is concordant with our study.<sup>6</sup>

Though none were positive for HIV in this one year study, very low prevalence [0.08%] has been reported with Chandra *Tet al*, at Lucknow. In a study conducted at Chennai, only one case was detected in HIV out of 25,000 donors in the past ten years.<sup>16, 17</sup>

With many Indian studies, the seroprevalence of Syphilis range from 0.3–0.82%<sup>18</sup>. But very lower percentage of syphilis was reported by Chandra T *et al*, [0.008%] at Lucknow, Sethi B S *et al*, [0.02%] at Uttarakhand. None of our samples were reactive for syphilis.<sup>16, 19</sup>

In India, strategies followed to prevent the transmission of transfusion transmitted malaria are (a) Donors with fever (presumably malaria) in the last 3 months. (b) To screen the donated blood for presence of malarial markers<sup>20</sup> In

accordance with the study of Bhagwan Singh Yadav *et al*, S.T.Radhiga *et al* and Srikrishna *et al*, in our immunological screening test, all were negative for malaria<sup>3,17,21</sup>.

A low prevalence rate in our study may be attributed to strict screening criteria maintained in our blood bank.

### Conclusion:-

To conclude, 1% of healthy donors are seropositive for TTI in this study and reveal the danger of transmitting through blood transfusion. HBV is the commonest TTI among apparently healthy blood donors, which is followed by HCV. Implementation of donor selection criteria should be strict and proper. To minimize transfusion transmitted infections and provide safer blood and blood products, highly generation kits and newer strategies are to be adopted.

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