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SEROPREVALENCE OF TRANSFUSION TRANSMITTED DISEASES IN VOLUNTARY DONORS IN A TERTIARY CARE CENTRE

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ABSTRACT: INTRODUCTION: In India testing for Human Immunodeficiency Virus, Hepatitis-B Virus, Hepatitis-C Virus and Syphilis is mandatory for all blood donors. Transmission of HIV, HBV, HCV and Syphilis through blood and blood products can be reduced to a great extent by efficient and reliable screening of the blood to be transfused. This study was aimed to find out the seroprevalence of the transfusion transmitted diseases. **OBJECTIVES:** The present study was conducted to estimate the prevalence of transfusion transmitted infections in voluntary blood donors in Victoria hospital blood bank in Bangalore in India. **MATERIALS AND METHODS:** A retrospective study was conducted with 3910 voluntary blood donors of which 3505 donors were from voluntary blood donation camps and 405 voluntary blood donors donated in blood bank. All donors met the standard inclusion and exclusion criteria followed in India.¹ The donors had donated blood to Victoria hospital, Bangalore from 1st January 2013 to 31st December 2013. All voluntary donor's blood sample were tested for HIV, HBV, HCV and Syphilis by HIV-ELISA (Enzyme Linked Immuno-Sorbent Assay), HBSAg-ELISA, HCV-ELISA and Venereal Disease Research Laboratory tests respectively by standard procedures. **RESULTS:** Out of the total 3910 blood samples tested only 1 donor (0.025%) was HIV positive, 28 donors (0.7%) were HBSAg reactive, none of the samples were HCV reactive, 1 donor (0.025%) was VDRL reactive. **CONCLUSION:** Though prevalence of HIV, HBV, HCV and Syphilis have reduced over the years. Blood is still one of the main sources of transmission of infections. HIV, hepatitis B, hepatitis C viruses and syphilis are prevalent even among voluntary blood donors. **KEYWORDS:** Voluntary blood donors, Human Immunodeficiency Virus, Hepatitis-B Virus, Hepatitis-C Virus, Syphilis, Enzyme linked immune sorbent assay and Venereal Disease Research Laboratory.

INTRODUCTION: Blood transfusion is a life-saving measure in various medical and surgical emergencies. It can be life-threatening as well, if it is not tested for transfusion transmitted diseases. Blood transfusion, apart from being important for the treatment of patients, also has great public health importance. Blood should be taken only from donors who meet the standard inclusion and exclusion criteria followed in India.¹ Transmission of transfusion transmitted diseases through blood and blood products can be reduced to a great extent by efficient and reliable screening of the blood to be transfused.

An ideal screening test should be highly sensitive, specific, cost-effective, easy to perform and does not require sophisticated instruments.² Due to the currently prevalent stringent screening practices, the prevalence of HIV cases attributable to blood transfusion has decreased considerably from 8% in mid-nineties to 1% in 2009.³ There is still a need for improved screening and diagnostic methods for HIV so as to reduce the window period transmission. Transfusion transmitted diseases are dominant among male blood donors compared to female blood donors.⁴

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Gupta N et al⁵ have presented interesting data on sero-prevalence of HIV, HBV, HCV and syphilis in blood donors. They have studied the correlation between HIV and syphilis. HCV, HIV, HBV and syphilis have similar route (sexual) of transmission, but while there is correlation between HIV and syphilis, there is no correlation between syphilis and HCV or HBV. Gupta et al during a six year study of 60780 donors prevalence of HCV, HIV and HBsAg was reported to be 0.78%, 0.26% and 1.7% respectively.

MATERIALS AND METHODS: A descriptive retrospective cross-sectional study was carried out with 3910 voluntary blood donors, to see the trend of HIV, HBV, HCV and Syphilis Sero-positivity and associated socio-demographic factors. Of these 3910 voluntary donors, 3505 had donated blood in blood donation camps and 405 donors donated blood in the blood bank voluntarily. As per Drugs and Cosmetics Act 1940(3rd amendment 2001),⁶ Government of India, all blood units were tested for HIV, HBV and HCV using ELISA. Syphilis was tested using VDRL test.

The data was taken from records of voluntary blood donors who donated blood during the period of 1st January 2013 to 31st December 2013, at Victoria hospital, Bangalore. Data on socio-demographic variables and serologic status of the subjects were abstracted from their records using structured format.

All voluntary donor's blood sample were tested for HIV,HBV,HCV and syphilis by HIV-ELISA(Enzyme Linked Immuno-Sorbent Assay), HBSAg-ELISA,HCV-ELISA and Venereal Disease Research Laboratory tests respectively by standard procedure.⁷ Then Chi-Square (X²) Statistical test was used for testing associations and P value less or equal to five percent ($P < 0.05$) was considered significant.

RESULTS: Out of the 3910 samples of voluntary blood donors tested, 342 were females and 3568 were males. The rates of positivity in males for HIV were 0.03%, for HBV was 0.7%, and for syphilis was 0.03%. No positive cases of HCV were detected either in males or females. In females only one case of HBV was detected in 342 donors and accounted to 0.3%. Number of Male donors and number of female donors were statistically dissimilar. All HIV, HBV, HCV and Syphilis positive cases were sent for further confirmatory tests.

The donor with VDRL was tested with Treponema pallidum Immobilization (TPI) tests which yielded a negative result. The donor had donated previously a year back and had a reactive VDRL. The HIV positive case was also Individual donor- Nucleic acid tested and was found to be positive. All the HBV reactive cases were referred to the Department of Gastroenterology where further investigations were carried out. The HIV positive person in-fact knew that he was suffering from the disease, but he wanted to get his disease confirmed.

	HIV	HBV	HCV	Syphilis
Male	01	27	00	01
Female	00	01	00	00

Table 1: Positive/reactive cases in males compared with females

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	HIV	HBV	HCV	Syphilis
Voluntary donors in camps	00(0%)	23(0.6%)	0(0%)	01(0.03%)
Voluntary donors in blood bank	01(0.24%)	05(1.23%)	0(0%)	00(0%)

Table 2: Comparison of Positive/Reactive cases in Voluntary blood donors donating in camps and voluntary donors donating in blood bank

	Total positives/Reactives	Percentage positive /Reactive
HIV	01	0.025%
HBV	28	0.7%
HCV	00	0%
Syphilis	01	0.025%

Table 3: Seroprevalence of HIV, HBV, HCV and Syphilis in voluntary donors

DISCUSSION: In our present study only 8.7 % of the total blood donated was from females which complies with the WHO fact sheet of 9%.⁸ In the present study the prevalence of HIV was 0.025%, HBV was 0.7%, Syphilis was 0.025% and no cases of HCV were found. In the study conducted by Agarwal et al⁹ the overall seroprevalence of HBV and HCV were 1.5% and 0.8% respectively; for HIV and syphilis the seroprevalence was estimated to be 0.1% and 0.07% respectively.

This was much higher than that of our study. Pahuja et al.¹⁰ also reported a decreasing trend in the HIV prevalence in blood donors between 2002 and 2005. As the other studies conducted were done in 2000, this could also explain the low seroprevalence in the present study. Prevalence of HBV and HCV in our study was low compared to the study conducted by Basavaraj et al¹¹ because we strictly adhered to voluntary donors. The reduced prevalence in our study could be due to a number of factors. Firstly, in our blood donation camps we are counseling the donors twice before they are donating blood. Secondly we also avoided camps being held by people with less knowledge regarding high risk behavior.

CONCLUSION: Blood is still one of the main sources of transmission of infections. HIV, hepatitis B, hepatitis C viruses and syphilis are prevalent among voluntary donors. Better counseling leads to less number of positive cases donating blood and hence reduced sero-prevalence. Blood donation of females' accounts to less than 10% of the total blood collected.

REFERENCES:

1. Blood donor selection. Guidelines on assessing donor suitability for blood donation. Annex 3. Geneva, World Health Organization, 2012.
2. Sharma RR, Cheema R, Vajpayee M, Rao U, Kumar S, Marwaha N, et al. Prevalence of markers of transfusion transmissible diseases in voluntary and replacement blood donors. *Natl Med J Ind.* 2004; 17: 19–21.
3. National AIDS Control Organization. Annual Report NACO 20010-11. [Online] [Last cited on 2012 Jan 12]. Available from: URL:<http://www.nacoonline.org>.

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4. Shrestha A, Ghimire P, Tiwari B, Rajkarnikar M. Transfusion-transmissible infections among blood donors in Kathmandu, Nepal. *The Journal of Infection in Developing Countries, North America*, 3, Nov. 2009.
5. Gupta N, Kumar V, Kaur A. Seroprevalence of HIV, HBV, HCV and syphilis in voluntary blood donors. *Indian J Med Sci* 2004; 58: 255-6.
6. Mallik V. *Laws related to Drugs and Cosmetics Act 1940*. 16th ed. Lucknow: Eastern Book Company; 2003: 279-303.
7. Nayak S, Achariya B. VDRL Test and its Interpretation. *Indian J Dermatol*. 2012 Jan-Feb; 57 (1): 3-8.
8. WHO fact sheet on Blood safety and donation, 2008.
9. Agrawal VK, Sharma VP, Agrawal P, Gupta D. Sero-prevalence of transfusion transmissible infections among blood donors in urban area. *Asian J Med Res*. 2012; 1 (3): 112-114.
10. Singh B, Verma M, Verma K. Markers of transfusion associated hepatitis is north Indian blood donors: Prevalence and trends. *Jpn J Infect Dis*. 2004; 57: 49-51.
11. Basavaraj Bommanahalli, Rudramma Javali, Mallikarjuna Swamy CM, Kavita Gouda, Siddartha K, Shashikala KP. Seroprevalence of hepatitis B and hepatitis C viral infections among blood donors of Central Karnataka, India. *Int J Med Sci Public Health*. 2014; 3 (3): 285-288.

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