ORIGINAL ARTICLE

HIV SEROPREVALENCE TREND AMONG VOLUNTARY DONORS: A SIX YEAR STUDY

Dheemantha P¹, Panchakshari Prasanna B. K², Sreelatha R³

HOW TO CITE THIS ARTICLE:

Dheemantha P, Panchakshari Prasanna B. K, Sreelatha R. "HIV Seroprevalence Trend among Voluntary Donors: A Six Year Study". Journal of Evolution of Medical and Dental Sciences 2014; Vol. 3, Issue 57, October 30; Page: 13009-13013, DOI: 10.14260/jemds/2014/3727

ABSTRACT: INTRODUCTION: HIV and AIDS are important public health problem and have lead to increase in mortality and morbidity throughout the world. The total number of cases in Karnataka was estimated to be 250,000 in 2009. Most encouraging factor is the decline of HIV prevalence among the young population (15-24 yrs) at national level and in Karnataka, both among men and women. This study was conducted to assess the sero-prevalence of HIV in voluntary blood donors. Transmission of HIV through blood and blood products can be reduced to a great extent by efficient and reliable screening of the blood to be transfused. With better counseling of the donors and by avoiding replacement donors we can further reduce the sero-prevalence of HIV among the blood donors. **MATERIALS AND METHODS:** A descriptive retrospective cross-sectional study was carried out for six years from January 2008 to December 2013. 8054 units were collected in 2008, 8394 units in 2009, 6308 units in 2010, 5437 units in 2011, 6034 units in 2012 and 7820 units in 2013 in blood bank. All the blood donors were voluntary donors and met the standard inclusion and exclusion criteria followed in India⁶. All the units were tested by Enzyme Linked Immuno-sorbent Assay (ELISA). Additionally the blood units were also tested by Individual Donor- Nucleic acid test (ID-NAT) using standard procedures. **RESULTS:** In the study of six years, a total of 42,047 blood units were screened. Out of them, 38,274 were males and 3773 were females. Only one female was found to be HIV positive, with males contributing to 47 HIV positive cases. Sero-prevalence of HIV in voluntary blood donors was 0.2%, 0.21%, 0.07%, 0.07%, 0.067% and 0.025% in the year 2008, 2009, 2010, 2011, 2012 and 2013 respectively. **CONCLUSION:** The seroprevalence of HIV is showing a declining trend from 0.2% in 2008 to 0.025% in 2013. This can be largely attributable to better counseling of blood donors, avoiding replacement donors and blood safety campaigning.

KEYWORDS: Human Immuno-deficiency Virus(HIV), Acquired Immuno-deficiency Syndrome(AIDS), Voluntary donors, Enzyme Linked Immuno-sorbent Assay (ELISA), Individual Donor- Nucleic acid test (ID-NAT).

INTRODUCTION: HIV and AIDS are important public health problem and have lead to increase in mortality and morbidity throughout the world. After the first description of AIDS, by now almost all countries in the world have been affected by HIV.¹ An HIV epidemic is defined by the HIV prevalence in the general population. The prevalence and implications on the epidemic are different from country to country. The oldest HIV positive blood sample was found in Kinshasa in 1959.²

HIV prevalence is the percentage of the population living with HIV. According to UNICEF, HIV prevalence is below 1% in the general population but exceeds 5% in specific at-risk populations like injecting drug users or sex workers.³ The high-risk groups like intravenous drug users, professional sex workers and homosexual men are usually the first to be infected and subsequently other population groups are infected via unsafe sex.

ORIGINAL ARTICLE

The Government of India estimates that in India about 2.40 million Indians are living with HIV. The adult prevalence according to the government was 0.31% in 2009. The total number of cases in Karnataka was estimated to be 250,000 in 2009. Most encouraging factor is the decline of HIV prevalence among the young population (15-24 yrs) at national level and in Karnataka, both among men and women. However, rising trends are noted in some states like Orissa, Assam, Chandigarh, Kerala, Jharkhand and Meghalaya.

According to India's National AIDS Control Organization (NACO), the bulk of HIV infections in India occur during unprotected heterosexual intercourse. One unit of blood taken from a donor in window period can infect three lives and hence increase the prevalence of the disease. National Aids Control Program has also helped in reducing the number of HIV infections by better blood safety and campaign of safe sex.

This study was conducted to assess the sero-prevalence of HIV in voluntary blood donors. Transmission of HIV through blood and blood products can be reduced to a great extent by efficient and reliable screening of the blood to be transfused. With better counseling of the donors and by avoiding replacement donors we can further reduce the sero-prevalence of HIV among the blood donors. Purushottam AG et al⁴ in 2012 conducted a similar study, where he found the sero-prevalence of HIV to be 0.07% in voluntary blood donors. Gupta et al⁵ found that there is a close relation between prevalence of HIV and Syphilis.

MATERIALS AND METHODS: A descriptive retrospective cross-sectional study was carried out for six years from January 2008 to December 2013. 8054 units were collected in 2008, 8394 units in 2009, 6308 units in 2010, 5437 units in 2011, 6034 units in 2012 and 7820 units in 2013 in blood bank attached to Bangalore medical college. All the blood donors were voluntary donors and met the standard inclusion and exclusion criteria followed in India.⁶

As per Drug and Cosmetic act 1940 (3rd amendment 2001),⁷ Government of India, all the units were tested by Enzyme Linked Immuno-sorbent Assay (ELISA). Additionally the blood units were also tested by Individual Donor-Nucleic acid test (ID-NAT) using standard procedures. Data on socio-demographic variables and serologic status of the subjects were abstracted from their records using structured format. 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: A total of 8054 units were collected and tested in 2008, 8394 units in 2009, 6308 units in 2010, 5437 units in 2011, 6034 units in 2012 and 7820 units in 2013.

	2008	2009	2010	2011	2012	2013
Males	7345 (91.2%)	7614 (90.7%)	5735 (90.9%)	4937 (90.8%)	5503 (91.2%)	7140 (91.3%)
Females	709 (8.8%)	780 (9.3%)	573 (9.1%)	500 (9.2%)	531 (8.8%)	680 (8.7%)

Table 1: Year-wise distribution of male and female voluntary blood donors

ORIGINAL ARTICLE

The number of female donors was less than 10% of the total voluntary blood donations in all six years. Males between the age group 18-35 years were responsible for maximum voluntary blood donations in the camp. Age group 35-60 years contributed less than one-third the total collection with a decreasing trend.

	2008	2009	2010	2011	2012	2013
18-35 years	5842 (72.5%)	5751 (68.5%)	5322 (84.4%)	4626 (85.1%)	5050 (83.7%)	6908 (88.3%)
35-60 years	2212 (27.5%)	2643 (31.5%)	986 (15.6%)	811 (14.9%)	984 (16.3%)	912 (11.7%)

Table 2: Age distribution of voluntary blood donors

	2008	2009	2010	2011	2012	2013
Males	17	17	05	04	04	02
Females	0	01	0	0	0	0

Table 3: Number of HIV positive voluntary blood donors

In the study period of six years only one female was found to be HIV positive, with males contributing to 47 HIV positive cases.

	2008	2009	2010	2011	2012	2013
Males	0.23%	0.22%	0.08%	0.08%	0.067%	0.025%
Females	-	1%	-	-	-	-

Table 4: Sero-prevalence of HIV in male and female voluntary blood donors

In the study of six years, a total of 42,047 blood units were screened. Out of them, 38,274 were males and 3773 were females. The sero-prevalence was 0.12% for males and 0.03% for females in the entire six years.

	2008	2009	2010	2011	2012	2013
Total positive cases	17	18	05	04	04	02
Seroprevalence of HIV	0.2%	0.21%	0.07%	0.07%	0.067%	0.025%

Table 5: Sero-prevalence of HIV in voluntary blood donors

In 2010, one of the HIV positive cases also had VDRL positive. No other association with other transfusion transmitted disease was noted.

DISCUSSION: In the present study, in all the six years the percentage of female voluntary blood donors was less than 10 % (an average of 9.0%). WHO facts and figures⁸ 2011 estimate that the number of female voluntary blood donors is just below 10%. In our study, seroprevalence among females were much lesser as compared to males. Out of the total 48 cases in six years, only one case of HIV in females was seen in 2009. Zulfikar et al⁹ conducted a similar study in which there was a marked decrease in the number of HIV positive females as compared to males.

ORIGINAL ARTICLE

In the present study it is noted that, in the last 2-3 years the sero-prevalence of HIV was around 0.07% even in voluntary blood donors. Purushottam AG et al⁴ conducted a similar study among voluntary blood donors in a tertiary care Centre and found that the sero-prevalence was found to be 0.07%. But in the year 2013, there were only two HIV cases detected and accounted to 0.025%.

Whether this is accidental finding or a trend, only time and further studies will tell us. According to NACO, the adult HIV prevalence in India is maintaining a slightly declining trend over the period of 2006 through to 2009. In the present study, donors with age between 18-40 years have lesser prevalence than that of donors between 40-60 years. NACO also has shown a lesser prevalence among donors less than 40 years of age.

CONCLUSION: The sero-prevalence of HIV is showing a declining trend from 0.2% in 2008 to 0.025% in 2013. This can be largely attributable to better counseling of blood donors, avoiding replacement donors and blood safety campaigning. Screening of blood samples are to be stringent and use of ID-NAT with ELISA will help.

REFERENCES:

1. Global Report: UNAIDS Report on the Global AIDS Epidemic 2012. Saturday, 1 December, 2012.
2. Essex ME. Origin of acquired immunodeficiency syndrome. In: VT DeVita jun, S Hellman, SA Rosenberg. AIDS: Biology, diagnosis, treatment and prevention. 4th edition, Lippincott-Raven Publ, 3-14; 1997.
3. Current Epidemiological situation. Annual Report 2012-13, NACO. (2), 6-10; 2013.
4. Purushottam A Giri, Jayant D Deshpande, Deepak B Phalke, Karle. Seroprevalence of Transfusion Transmissible Infections Among Voluntary Blood Donors at a Tertiary Care Teaching Hospital in Rural Area of India. J Family Med Prim Care. 2012 Jan-Jun; 1(1): 48-51.
5. Gupta N, Kumar V, Kaur A. Seroprevalence of HIV, HBV, HCV and syphilis in voluntary blood donors. Indian J Med Sci 2004; 58: 255-7.
6. Blood donor selection. Guidelines on assessing donor suitability for blood donation. Annex 3. Geneva, World Health Organization, 2012.
7. Mallik V. Laws related to Drugs and Cosmetics Act 1940. 16th ed. Lucknow: Eastern Book Company; 2003: 279-303.
8. WHO fact sheet on Blood safety and donation, 2011.
9. Zulfikar A, Umaru M, Shreesha K. Seroprevalence of Transfusion transmitted Infections among blood donors in Mangalore. Medica Innovatica 2012;1 (2); 24-27.
10. National AIDS Control Organization. Annual Report NACO 2010-11.

ORIGINAL ARTICLE

AUTHORS:

1. Dheemantha P.
2. Panchakshari Prasanna B. K.
3. Sreelatha R.

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of Transfusion Medicine, Bangalore Medical College and Research Institute.
2. Associate Professor, Department of Transfusion Medicine, Bangalore Medical College and Research Institute.
3. Professor & HOD, Department of Transfusion Medicine, Bangalore Medical College and Research Institute.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Dheemantha P,
31/2, 18th Main Road,
A.G.S. Layout,
Bangalore-560061.
Email: dheemanthap@gmail.com

Date of Submission: 20/10/2014.
Date of Peer Review: 21/10/2014.
Date of Acceptance: 28/10/2014.
Date of Publishing: 30/10/2014.