

Prevalence of HIV Infection among Blood Donors at Blood Centre in Western Rajasthan

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Abstract

Background: The HIV/AIDS epidemic is one of the largest public health crises of the 21st century, which has evolved from a mysterious illness to a global pandemic in less than 20 years. The purpose of this study is to estimate the prevalence of HIV infection among voluntary blood donors at the blood Centre.

Methods: A Retrospective study was carried out at Blood Centre, Department of Immuno-Haematology and Transfusion Medicine, S.P Medical College, Bikaner, Rajasthan. All Donors were screened from January 2022 to November 2022 and a total of 41167 donations were screened by trained personnel after satisfactory completion of the donor's questionnaire, their physical examination, and hemoglobin (Hb %) estimation. These donors were Voluntary Donors (VD) and Replacement Donors (RD). All data were collected in an excel data sheet and analyzed using statistical calculations by IBM SPSS statistical software platform 26. The Chi-square test was applied to test the significance. A p-value of <0.05 was considered significant.

Results: Out of the total 41167 donors tested for HIV infection, 21 (0.051%) were found to be HIV seropositive.

Conclusion: The prevalence of HIV was 0.051% among blood donors in Rajasthan. We concluded that increasing trend of voluntary donation with a male predominance. It can also be seen from the above data that there's a marked fall in the prevalence of HIV infection in the past decade which could be due to the various awareness, educational programs, and campaigns run by The Government of India.

Keywords: HIV, Voluntary Donors (VD), Replacement Donors (RD).

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Introduction

Acquired immuno-deficiency Syndrome (AIDS) a major threat to global health, was first linked to blood transfusion in 1982-1983. [1] Since then well documented cases of blood-transmitted AIDS have been reported. [2] The gravity of the situation has resulted in the creation of a global safety blood initiative by the World Health Organization in 1988. [3]

The HIV/AIDS epidemic is one of the largest public health crises of the 21st century, which has evolved from a mysterious illness to a global pandemic in less than 20 years. In 2007, a total of 33.2 million people were living with HIV with a global prevalence of 2.5 million. In India, the estimated number of HIV-infected people was 2.4 million in 2007. Although globally, as well as in India, the predominant mode of HIV transmission is through heterosexual contact, the risk of contracting HIV infection from transfusion of a unit of infected blood is estimated to be over 95%. [4]

In 1992, the Government of India demonstrated its commitment to combat the disease with the launch of the first National AIDS Control Programme (NACP-I) as a comprehensive program for the prevention and control of HIV/AIDS in India [13]. Responding to the immense challenge of the HIV/AIDS threat in India, National AIDS Control Organization (NACO) has a responsibility to increase access to services and effectively communicate for behavior change. With continuous efforts, today we stand at the beginning of NACP IV. In 2010, NACO approved the Teach AIDS curriculum for use in India, an innovation that represented the first time that HIV/AIDS education could be provided in a curriculum that did not need to be coupled with sex education. [5,6]

Material and method

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This is a Retrospective study that was carried out at Blood Centre, Department of Immuno-Haematology and Transfusion Medicine, S.P Medical College, Bikaner, Rajasthan. Donors were examined and screened by a Transfusion medicine specialist after satisfactory completion of the donor's questionnaire, their physical examination, and hemoglobin (Hb %) estimation.

Selection and deferral of all the blood donors were done according to the guidelines issued by the Ministry of Health and Family Welfare of India and NACO.

A total of 41167 blood units from the selected donors were collected for eleven months. These donors were Voluntary Donors (VD) and Replacement Donors (RD). Replacement donors were those donors who donated blood for ailing patients and were family members, close relatives, and friends of the recipient. The Voluntary donations were obtained from walk-in donors and voluntary blood donation camps organized by different institutions, neighboring colleges, and different social and political organizations. Professional and paid donors were carefully eliminated. Written consent from the donor was also taken before blood donation.

Sample Collection: Two separate blood samples were collected while maintaining strict aseptic hygiene and both test tubes were labeled on-site. Three ml blood in a plain vial and 2 ml blood in EDTA (ethylene diamine tetra acetic acid) vial were taken from the satellite bag.

Serologic Screening: All samples were screened for HIV and other Transfusion transmitted diseases. Test for HIV I and II was performed by Merilisa HIV Gen 4 which is an enzyme immunoassay for the qualitative determination of HIV p24 antigen and antibodies to Human Immunodeficiency Virus type 1 (HIV-1)

and type 2 (HIV-2) in human serum or plasma.

Samples found positive for HIV were again retested and if found positive then discarded.

All donor which were seropositive were contacted telephonically and a letter was sent to them and was asked to come to our department.

Results

A total of 41167 blood was donated between January 2022 to November 2022 out of which 40806 (99.124%) were male donors and 361(0.876%) were female donors.

Replacement donors were 10291 and voluntary donors were 30876 and most of the donors belonged to the 26-40 age group

which demonstrates active participation in voluntary blood donation among the region.

This study also demonstrates the frequency of ABO and Rh blood groups in the region. The maximum number of blood donors were B followed by O then A and the least no of the donor were AB.

The seropositivity for HIV among the voluntary blood donors was 0.064% while it was 0.009% among the replacement donors which was statistically significant (P value is 0.032177 which is significant as $p < 0.05$). the overall seropositivity of HIV was 0.051%.

Age-wise distribution of seropositive donations and age-specific prevalence is shown in the table.

Maximum seropositive donations were from the 26-40 age group and least from the extreme age group 51-60 years.

Table 1: Profile of blood donors

Age Group (in years)	Voluntary Donors	Replacement Donors
18-25	10709	3323
26-40	14592	4961
41-50	3345	1454
51-60	2230	553
Total	30876	10291

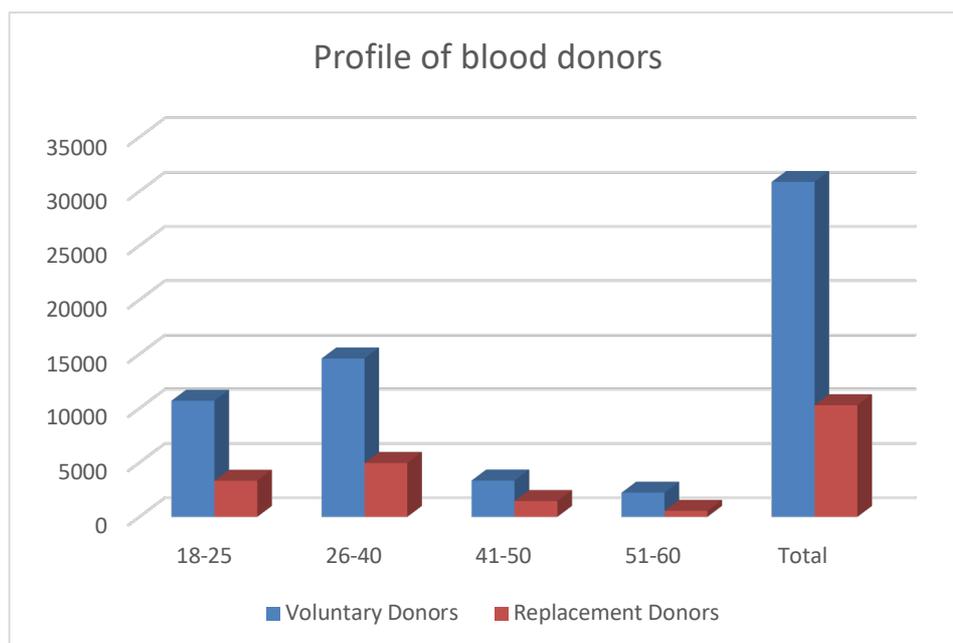


Figure 1: Profile of blood donors

Table 2: ABO and Rh frequency among blood donors

ABO group	Rh Positive	Rh-Negative
A	8074	788
B	13876	1351
AB	3349	298
O	12165	1266
Total	37464	3703

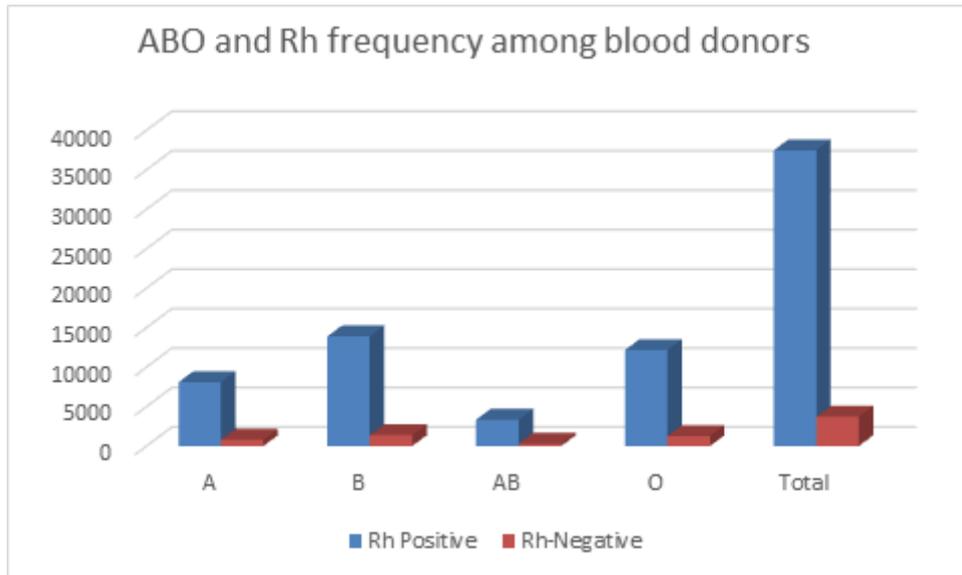


Figure 2: ABO and Rh frequency among blood donors

Table 3: HIV seropositivity among voluntary and replacement donors

HIV	Voluntary	Replacement	Total
Positive (%)	20(0.064)	1(0.009)	21(0.051)
Negative	30856	10290	41146
Total	30876	10291	41167

Table 4: Age-specific HIV positive donor and prevalence rate

Age Group	HIV Positive	Prevalence (%)
18-25	6/14032	0.0004
26-40	12/19553	0.0006
41-50	2/4799	0.0004
51-60	1/2783	0.0003
Total	21/41167	0.0005

Discussion

Screening of blood and its products before transfusion is one of the most important measures in the prevention of the spread of the AIDS virus, especially in areas of low prevalence.[7] In underdeveloped countries where blood transfusion services are inadequate, blood donation is mainly via paid or commercial blood centers which are

running parallel to voluntary and government services where no donor selection criteria are observed; therefore, the chances of epidemics of blood-borne diseases are more. This situation gets aggravated by the lifestyle of paid donors which includes living away from families, frequent homosexual contacts, promiscuity, and drug abuse, the factors which make them vulnerable to all sorts of infections.

Zuberi et al [8] have reported a high frequency of HBs Ag in blood donors. Most professional donors sell their blood three to four times every month at different places with different identification. Since AIDS has a very long asymptomatic incubation period an infected healthy index donor can transmit the infection to about 30 recipients annually. In the present study, we did not find any evidence of HP/infection which is not in conformity with the earlier reports [9,10]. This could be because donors belonging to the high risk were excluded from the present study or the donors who might have transmitted the disease have avoided the test or they were too ill to sell their blood or they might have died of AIDS. Whatever may be the reason, it is apparent that the incidence of AIDS in Pakistan is not high and, therefore, the time for active intervention is not lost. By taking appropriate steps in the right direction, the nation can be kept free from the AIDS menace, such as establishing a national AIDS program and emphasizing public education about AIDS and its prevention. A national blood transfusion committee could be formed to ensure the safety of blood and its products following minimum targets for blood transfusion services and global safety blood initiative. [11,12]

The Indian government has organized rigorous campaigns against AIDS along with numerous awareness and educational programs throughout the country which is responsible for the decrease in the prevalence rate of HIV infection in the past 10 years, low literacy level, and migration in the northeastern and southern region of India HIV is now most commonly concentrated in these areas. [13] HIV infection has a high prevalence rate in sub-Saharan Africa with a prevalence of 17.9%. South Africa has the highest epidemic of any country, the remaining countries in southern Africa have a prevalence rate of 10-15%. Multiple partners, unemployment & labor migration are considered the major

causative factors of the high incidence rate of HIV infection in this area. [14,16]

Conclusion

The prevalence of HIV was 0.3% among blood donors in Rajasthan. We concluded that increasing trend of voluntary donation with a male predominance. It can also be seen from the above data that there's a marked fall in the prevalence of HIV infection in the past decade which could be due to the various awareness, educational programs, and campaigns run by The Government of India.

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