



ISSN: 0975-833X

Available online at <http://www.journalcra.com>

International Journal of Current Research
Vol. 14, Issue, 11, pp.22695-22697, November, 2022
DOI: <https://doi.org/10.24941/ijcr.44218.11.2022>

INTERNATIONAL JOURNAL
OF CURRENT RESEARCH

RESEARCH ARTICLE

PREVALENCE OF HUMAN IMMUNODEFICIENCY VIRUS AMONG BLOOD DONORS IN CHIDAMBARAM

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ARTICLE INFO

Article History:

Received 14th August, 2022
Received in revised form
08th September, 2022
Accepted 29th October, 2022
Published online 30th November, 2022

Key words:

HIV, Blood Donors, Transfusion
Transmissible Infections.

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Citation: Dr. Paveethra, A.G., Dr. Krishnaswamy, B., Dr. Gopalakrishnan, KR., Dr. Dhanalakshmi, M. and Dr. Shyamala, E. 2022. "Prevalence of human immunodeficiency virus among blood donors in Chidambaram". *International Journal of Current Research*, 14, (11), 22695-22697.

INTRODUCTION

The Blood safety remains a major public health problem in India. The backbone for a well-organised blood transfusion service the backbone is recruitment and retention of voluntary, non-remunerated, low-risk blood donors. Screening for transfusion-transmissible infections such as human immunodeficiency virus (HIV), hepatitis B virus (HBV), hepatitis C virus (HCV) and syphilis is essential for blood transfusion safety and protecting human life.^[1] Blood transfusion can be a life saving intervention. Like all treatments it may result in acute or delayed complications and carries the risk of transfusion-transmissible infections. Appropriate clinical use of blood and supply of safe blood and blood products can minimize such complications and risks.^[2] Blood transfusion has been used since 1930 for various indications. Transfusion therapy is a well established treatment in various medical and surgical procedures.^[3] Government medical college and hospital, Cuddalore district (Ernstwhile Rajah Muthiah Medical College) mainly serves patients in around Chidambaram and Cuddalore. Blood bank in RMMCH screen the blood bags for TTI before transfusion not only to ensure patient safety but also to have a clue about the prevalence of TTI. The objective of this study is to

figure out the prevalence of HIV in the highly backward zone, Chidambaram.

MATERIALS AND METHODS

This is a retrospective study conducted on blood donors from January 2012 to August 2022 in the blood bank, Department of Pathology, Government medical college and hospital, Cuddalore district (Ernstwhile Rajah Muthiah Medical College), a rural teaching hospital in Chidambaram. Blood donors fulfilling the criteria for donor selection as per the guidelines of National blood transfusion services^[4] of India were considered for the present study. The donors were either voluntary or replacement donors. Voluntary donors are the persons who donate blood at blood camps and replacement donors are either relatives or friends of the patient. All the donor samples were analyzed for antibodies to HIV-1 and HIV-2. The reactive samples were retested in duplicate before considering its seropositivity. Seropositive blood bags were discarded.

OBSERVATION: In the study period from 2012 to 2022 included a total of 27,690 donors and were screened for transfusion transmissible

infections. Among them 26,725 (96.51%) were voluntary donors and 965 (3.49%) were replacement donors. (Table 1)

Table 1. Type wise distribution

Number of donors over a period of 10 years	Voluntary donors	Replacement donors
27,690	26,725 (96.51%)	965 (3.49%)

Among these 27,690 donors -27,045 (97.67%) were males and 645 (2.33%) were females. (Table 2, Figure 1)

Table 2. Sex wise distribution

Number of donors over a period of 10 years	Male	Female
27,690	27,045 (97.67%)	645 (2.33%)



Sex wise distribution Figure 1.

AGE DISTRIBUTION: In my study the donors ranged from 18 years to 50 years. There were 15,333 donors (55.37%) between 18-30 years, 8913 donors (32.19%) were between 31-40 years, 3444 donors (12.44%) were between 41-50 years. (Figure 2)

Table 3. Age Distribution

AGE (YEARS)	FREQUENCY	PERCENTAGE
18-30	15,333	55.37
31-40	8913	32.19
41-50	3444	12.44

BLOOD GROUP DISTRIBUTION: A+ donors were 6826 (24.65%), A- donors were 198 (0.71%), B+ donors were 12,220 (44.13%), B-donors were 322 (1.16%), AB+ donors were 1935 (6.99%), AB- donors were 150(0.54%), O+ donors were 5493 (19.84%),O- donors were 546 (1.97%).

Table 4. Blood Group Distribution

BLOOD GROUP	FREQUENCY	PERCENTAGE
A+	6826	24.65
A-	198	0.71
B+	12,220	44.13
B-	322	1.16
AB+	1935	6.99
AB-	150	0.54
O+	5493	19.84
O-	546	1.97

PREVALENCE OF HIV: During the period of study of 10 years 27,690 blood units were collected and screened for transfusion transmissible infections. Out of these 11 were positive for HIV.

Table 5. Year Wise Prevalence of HIV

YEAR	TOTAL NUMBER OF BLOOD SAMPLES	HIV POSITIVE	
		NUMBER OF CASES	%
2012	2989	2	0.06
2013	2402	NIL	NIL
2014	2404	1	0.04

2015	2141	2	0.09
2016	2584	1	0.03
2017	2219	NIL	NIL
2018	2940	NIL	NIL
2019	3022	3	0.09
2020	1902	NIL	NIL
2021	2578	2	0.07
2022	2509	NIL	NIL

Table 6. Age wise distribution of HIV

AGE	HIV POSITIVE
BELOW 20	2
21-30	5
31-40	3
41-50	-
51-60	1

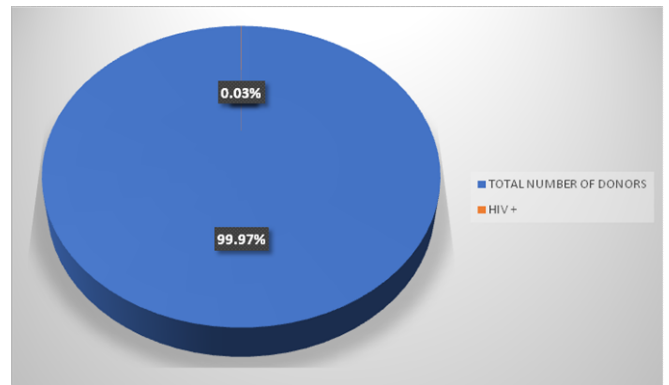


Figure 2. title missing

DISCUSSION

Blood transfusion is a significant route of transmission of infectious diseases in which HIV infection is lethal.^[5] The seroprevalence of HIV among blood donors in this study is 0.03%.

VOLUNTARY OR REPLACEMENT DONORS: In our study out of 27,690 blood donations, majority of the donors are voluntary donors 96.51% as compared to replacement donors 3.49%. Similarly majority of the donors in other studies were out of total 8844 donors majority donors are voluntary 75.02% and replacement donors were 24.98% by Surthi, et al^[6], out of total 15,566 donors majority of the donors were voluntary donors 11,235 (72.18%) and replacement donors were 4,331 (27.82%) by Mahapatra S^[7], in other study out of total 42,582 donors majority of the donors were voluntary donors 73.85% when compared to replacement donors 26.15% study done by Shailendra Singh Chouhan, et al^[8]

MALE OR FEMALE DONORS: In our study out of total of 27,690 blood donations, majority of the donors are male donors 97.67% compared to female donors 2.33%. Similarly another study is compared, majority of donors are male donors 95.69% and females donors were 4.31% by Cheema, et al^[9] Similarly in other studies, majority of the donors were male 95.08% which is compared to the study done by Mahapatra S^[7] In another study a total of 8844 blood bags were screened, of these 97.98% were male donors and 2.02% were female donors Surthi, et al^[6].

SEROPREVALENCE OF HIV: In our study, between the years 2012 to 2022, out of a total 27,690 blood units collected, 11 blood units were tested positive for HIV and seroprevalence was 0.03% . Seroprevalence of HIV is low when compared to another study 0.24% in total donors by MAKROO et al.^[10] In another study, out of total 42,582 donors, the seroprevalence of HIV is 0.10% done by Shailendra Singh Chouhan, et al^[8] Our seroprevalence of HIV is very low as compared with the above studies. Likewise, seroprevalence of HIV is low (0.03%) in other studies conducted by Cheema, et al^[9] out of a total 10,797 blood donors, out of a total of 15,566 blood

donors ,the seroprevalence of HIV was 0.02% in a study conducted by Mahapatra S^[7]

Table 7 Comparison of seroprevalence of hiv with various studies

AUTHORS	PLACE	HIV
Piyush A.Patel, <i>et al</i>	Ahmedabad	0.08%
Solanki P, <i>et al</i>	Indore	0.06%
Mahapatra S	Odisha	0.025%
Cheema, <i>et al</i>	Himachal Pradesh	0.03%
Present study	Tamil Nadu	0.03%

AGE WISE DISTRIBUTION: In our study, the seroprevalence of HIV is higher in the age group 18-30 years (0.018%). When compared to another study the HIV seroprevalence were higher (0.105%) in the age group 26-35 years by Shailendra Singh Chouhan, et al^[8]

CONCLUSION

The present study documents a relatively low seroprevalence of HIV 0.03% (11 out of 27,690). Majority of the seropositive cases were present in the age group of 18-30 years. This high seroprevalence of HIV in younger age group suggests a potential public health problem. Therefore voluntary blood donation should be encouraged and the time and cost involved in screening donated blood can be reduced by an effective donor education . Introducing nucleic acid testing (NAT) for HIV is recommended to detect the infection during window period.

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