

ORIGINAL ARTICLE

Frequency of HIV Positivity in Healthy Blood Donors presenting to a Tertiary Care Hospital

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ABSTRACT

Background: HIV has been under serious consideration by the World Health Organization as well as the Federal government and Provincial health departments. Strict measures have been taken and protocols implemented to curtail the spread of HIV along with Hepatitis B and Hepatitis C. Data from privately-run blood banks have not been reflected in the last 15 years.

Aim: To identify current trends of HIV positivity in Lahore

Methods: This prospective cross-sectional study was conducted at the Department of Pathology & Laboratory, Doctors Hospital & Medical Centre, Lahore from August 2021 to January 2022. After fulfilling the selection criteria 3160 non-remunerated blood donors selected through non-probability consecutive sampling, were enrolled. Anti-HIV test was performed using chemiluminescence.

Results: 3160 voluntary blood donors were investigated. All subjects were males with mean age 29.7 years ranging from 21 years to 46 years. 2 candidates for blood donation (0.06%) were tested positive for HIV.

Conclusion: This study reflects stagnation in HIV control as depicted by the frequency of its positivity. There is need to enhance awareness programs in controlling the spread of blood borne diseases especially HIV.

Keywords: HIV, blood donor, blood borne diseases, blood transfusion

INTRODUCTION

Blood transfusions are required for a wide range of health conditions. Although indications and requirements for transfusion differ on the basis of medical illnesses, surgical interventions and elective or emergency scenarios, one thing is common to all; they are all harvested from healthy donors. For nearly 120 million units of blood that are donated every year¹, maintenance of safety and efficacy during collection, storage and use, collectively known as haemovigilance, is vital and plays a pivotal role in ultimately benefitting the patient. On the other hand, if erred, it can lead to disastrous effects in short term as well as in the long run.

Hepatitis B, Hepatitis C and Human Immune deficiency Virus (HIV) are the three most dreadful transfusion-transmitted infections (TTIs)² under consideration for many decades now. They pose a great risk to the recipients' health in the long term and are a cause of massive burden on a country's health economy. These are the reasons why remuneration for blood donation has been discouraged at all levels. Currently Pakistan is implementing a 35 million US Dollar grant from the World Bank for treatment and support of people living with HIV (PLHIV) which includes a quarter of this amount to be utilized for HIV prevention³.

Establishment of National Blood Transfusion Program (NBTP) in 2009 has led to implementation of safety standards at national as well as provincial levels⁴. Estimated prevalence of HIV in Pakistan for 2013 was reported to be 0.07% with estimated 2200 HIV-related deaths⁵. Establishment of blood transfusion authorities at provincial levels and empowerment of these authorities at district level is expected to offer safer blood transfusion practices, strict adherence to protocols of haemovigilance, refraining from remuneration or paid blood donation and eventually,

This study evaluates current incidence of HIV in non-remunerated healthy blood donors at a tertiary care hospital in Lahore and will serve as an insight to the efficacy of programs being run by the government in order to control the spread of HIV.

PATIENTS AND METHODS

This prospective cross-sectional study was conducted at The Department of Laboratory & Pathology, Doctors Hospital & Medical Centre, Lahore, Pakistan between August 2021 and January 2022. After approval from the institutional review board, 3160 non-remunerated / replacement blood donors were enrolled.

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Significance value was calculated with 95% confidence interval and 5% margin of error. Donors were selected through non-probability consecutive sampling technique. Eligibility criteria for blood donation based on protocols devised by Punjab Blood Transfusion Authority (PBTA) which include healthy persons aged between 18 and 60 years, weighing at least 45kg and hemoglobin (Hb) level of at least 12.5g/dL were implemented by the blood bank. These parameters helped us set our inclusion criteria. Candidates from either the patient's family or their friends were entertained and those not belonging to the above stated categories were although eligible for donation, but were excluded from our study in order to discourage any paid donation. Similar to inclusion, those who were ineligible according to the blood bank's criteria were excluded. Such people were those with history of surgery, blood transfusion or prior donation within the last 6 months. Similarly, those having chronic illnesses, fever, taking antibiotics or anticoagulants, or recently vaccinated were excluded. Specially designed computerized questionnaires were used to record each donor's biodata, demographics, medical and surgical history, BMI, vital signs, and informed written consent. All donors were designated traceable record numbers in order to maintain confidentiality. Once the candidate fulfilled the eligibility criteria and signed his consent for donation, and consented for his data to be included into the study, he was enrolled. Various blood tests were performed for donor screening and crossmatching by the blood bank. Our primary focus was on the incidence of HIV which was performed on state-of-the-art chemiluminescence assay. Manufacturer instructions and guidelines were carried out and strict adherence to the testing protocols was ensured. All tests were performed on a single machine and no deviation from the standard operating protocols occurred.

RESULTS

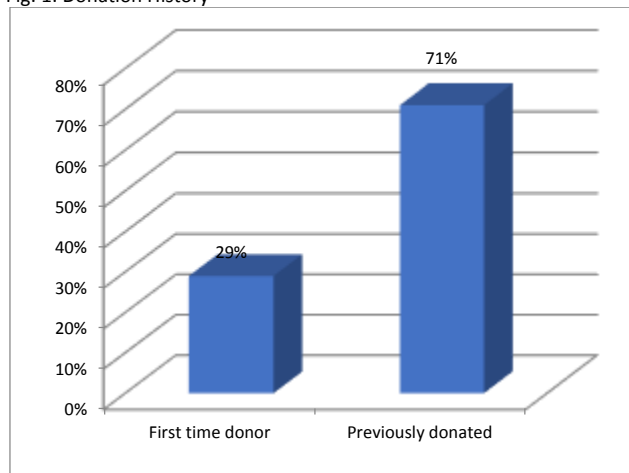
Three thousand, one hundred and sixty candidates for blood donation were enrolled into the study after satisfying our inclusion and exclusion criteria. All of them were males with an average age of 29.7 years (range 21 years to 46 years) (Table 1). Females were neither excluded, nor discouraged and all consecutively eligible candidates were included. Female donors were either not encountered during our data collection period, or as a rarity, denied consenting for participation in to the study. Donors were categorized on the basis of being directed donors defined in our study as those donating the exact blood group for transfusion, which constituted 74.6% (n=2356) of the sample population,

whereas 804(25.4%) were replacement donors where the family could not arrange the required blood group and hence, a random group was donated by the patient's family and subsequently replaced with the required blood group from the blood bank. Moreover, donors were also divided into categories based up on previous donation history. 908 candidates (28.7%) were donating blood for the first time in their life whereas those who had previously donated blood for any cause at least once but not less than 6 months ago were 2252(71.3%) (Figure 1). Out of the 3160 people tested, 2(0.06%) were positive for HIV. Maintaining confidentiality and adhering to protocols, they were informed and referred for further workup and testing.

Table 1: Age range of blood donors (n = 3160)

Age group (years)	Directed donors	Replacement donors	Total
18-22	269	109	378
23-27	759	247	1006
28-32	573	181	754
33-37	404	144	548
38-42	236	74	310
43-47	115	49	164
Total	2356	804	3160

Fig. 1: Donation History



DISCUSSION

Our study aimed at investigating the recent statistics of HIV positivity in healthy non-remunerated blood donors. The latest study from Lahore was published in 2017 which showed an increasing trend in the frequency of HIV⁶. This data warranted further investigation into the matter under a mutually exclusive setting. We, therefore, managed to identify and target a different sample population and donor testing was performed with improved technology. Our study was hence based on chemiluminescence which is far more reliable and reproducible⁷. Moreover, ICT is a screening test and is dependent upon further testing for disease confirmation. On the contrary, chemiluminescence has high sensitivity and specificity than other traditional methods of detection and has been documented to be comparable to⁸ or even superior to ELISA in terms of sensitivity⁷.

Similar study based on ELISA was performed in Peshawar in 2017 which showed 0.1% positivity of HIV in blood donors⁹. These figures seemed alarming since the incidence was much higher than studies from Karachi¹⁰ and even from those conducted in Peshawar¹¹.

Various studies from the region and from other regions have reported varying incidence and prevalence but one thing has been common to all of them; HIV has been reported as lowest among all TTIs⁵. Data from African countries such as Nigeria show extremely high prevalence rates of TTIs, such as 19% for Hepatitis B and 3% for HIV¹² but in our region it is still in fractions such as 0.249% in

India¹³ and 0.1% in Nepal¹⁴. Data from Muslim countries depict even smaller figures. Iran has reported prevalence of 0.004%¹⁵

Annual prevalence of HIV in a blood bank from Karachi has been reported between 0.01% 0.11%⁵, whereas pooled seroprevalence in a meta-analysis from Pakistan has been reported as 0.0011% in blood donors and 0.0032% in blood recipients¹³. Highest incidence of HIV in blood donors was reported from Balochistan which was documented to be 0.96%¹⁶, whereas lowest incidence was reported from Lahore¹⁴. Over a period of 10 years, their analysis showed varying incidence ranging from 0% to 0.06% with a mean of 0.03%¹⁴.

Since there is a paucity of data from privately run blood banks in Pakistan, which are reported to cater almost one-thirds of blood donations in the country¹⁷, this study will reflect current statistics of private blood banks in Lahore. Previous statistics from a private blood bank in Lahore were conducted more than 15 years ago¹⁸, hence, recent statistics were warranted.

The merits of our study included an adequate sample size and representation from privately run blood bank. Moreover, the tests were run on chemiluminescence which is reliable, reproducible, confirmatory and equivalent to ELISA as compared to other traditional methods or screening tests. However, there are some shortcomings as well. The sample size could have been even larger and other blood banks from the city could have been included in order to cover a greater population and sample size which had led to diverse and more evenly distributed demographics. Along with this, the statistics for other TTIs could also have been calculated and reported but were not addressed to. Moreover, the data and directory of statistics from the PBTA was not utilized for this study which could have given a comparative analysis on the prevalence throughout the province. Similarly, sample could have been compared with government-run blood banks as well so that diversity in demographics and social status could be made

CONCLUSION

This study reflects stagnation in HIV control as depicted by the frequency of its positivity. There is need to enhance awareness programs in controlling the spread of blood borne diseases especially HIV.

Conflict of interest: Authors declare to have no conflicts of interest.

Conflict of interest: None

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