



BLOOD DONATION PATTERN AND TRANSFUSION-TRANSMITTED INFECTIONS AT THE BLOOD BANK OF TERTIARY CARE CENTRE: A RETROSPECTIVE STUDY

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ABSTRACT

Introduction: Blood donation plays a crucial role in saving lives during emergencies, surgical procedures, and medical treatments. However, rural areas in India often face a shortage of donors, whether voluntary or replacement. Additionally, the emergence of Transfusion-Transmitted Infectious agents (TTIA) poses new challenges to ensuring safe blood transfusions, as these infections can include hepatitis B, hepatitis C, HIV (human immunodeficiency virus), syphilis, and malaria, among others. The objective of this study is to analyze the blood donation patterns among different age groups and the prevalence of transfusion-transmitted infectious agents in recent years at the blood bank of Hind Institute of Medical Sciences in Ataria Sitapur, Uttar Pradesh, India.

Method: For this retrospective study, data were collected from the medical records of blood donors at the blood bank from January 2018 to December 2022. The information was then analyzed to draw meaningful conclusions.

Results: The study included a total of 2445 healthy donors. Notably, a majority of the donated blood (approximately 95.7%) was contributed through replacement donors, while voluntary blood donors (VBD) accounted for only about 4.3% of the donations. However, over the past two years, the overall total donation nearly doubled, and this increase was found to be statistically significant ($p < 0.000039$). Among the donors, the 20-30 years age group, predominantly comprising males, contributed most to the donated blood ($p < 0.008$).

Regarding transfusion-transmitted infections, the study revealed that the seroprevalence of HBV (hepatitis B virus) was 1.3%, followed by HCV (hepatitis C virus) at 0.65%, HIV at 0.04%, VDRL (syphilis) at 0.08%, and malaria at 0.08% during the last five years. Interestingly, a considerable number of these infections were detected in the younger population aged 20-30 years.

Conclusion: The findings indicate that the majority of blood donations come from the younger population, aged 20 to 30 years, which can be attributed to changing attitudes towards blood donation in recent years. To ensure safer blood transfusions, strict blood safety measures and precautions are necessary to prevent transfusion-transmitted infections at the blood bank.

Keywords: Blood transfusion, blood donor, Seroprevalence and TTIA (transfusion-transmitted infectious agent)

Introduction

Blood donation plays a critical role in maintaining an adequate and safe blood supply in any healthcare system. A functional blood bank relies heavily on voluntary donors as well as replacement donors to meet the constant demand for blood products [1-2]. However, in rural India, there exists a noticeable gender disparity in blood donation practices, with a higher proportion of donations coming from the male population compared to females. This discrepancy can be attributed to various factors, including low socioeconomic status, limited access to education and healthcare facilities, and a lack of awareness about the importance of blood donation among women [1].

Moreover, the majority of the blood pool in the blood bank is contributed by the younger segment of the population, specifically those aged between 18 and 30 years [2]. This trend can be partly explained by the higher enthusiasm and participation of young individuals in community and voluntary activities, including blood donation drives. However, it is crucial to encourage and sustain blood donation among all age groups to ensure a stable and reliable blood supply.

Globally, the demand for red blood cell transfusions is staggering, with more than 108 million units of red blood cells being transfused each year [1]. In India, the clinical demand for whole blood has been estimated at approximately 14.61 million units, requiring an equivalent of 36.3 donations per 1,000 eligible individuals. Meeting such a substantial demand for blood necessitates efficient and standardized blood transfusion practices, as well as the implementation of proper component separation procedures in healthcare facilities across the country [2].

However, maintaining the safety and quality of the blood supply is of utmost importance. The risk of transfusion-transmitted infectious agents (TTIA) demands stringent precautionary measures. To ensure the safety of donated blood, comprehensive screening protocols must be employed. Donors should undergo detailed counselling and rigorous screening to assess their eligibility based on medical history, lifestyle factors, and the presence of any infectious diseases. Screening for TTIA should be carried out using both card-based and ELISA kit-based methods, as these are reliable and effective tools for identifying potential infectious agents.

However, promoting gender equity in blood donation and encouraging blood donation across all age groups are essential steps in maintaining a robust and safe blood supply in rural India. By raising awareness about the significance of blood donation and implementing strict screening procedures, we can further enhance the safety and efficacy of the blood transfusion process, thereby contributing to the whole improvement of healthcare services. Therefore, need for proper counselling and screening of donors with present and past histories of medical diseases. Screening of blood should be done for TTIA by card and ELISA kit.

Material and methods

This study was conducted at the Hind Institute of Medical Sciences, Ataria, Sitapur, Uttar Pradesh, India. The data comprised a total of 2445 blood donors whose information was collected from the medical records at Hind blood bank and Component Centre, covering the period from 2018 to 2022. The study included healthy men and non-pregnant, non-lactating women between the ages of 18 and 60 years, with a minimum weight of 45 kg and a haemoglobin level above 12.5 g/dL. [3] To ensure the quality and reliability of the data, strict inclusion criteria were applied, resulting in a well-defined cohort of healthy individuals meeting specific age, weight, and haemoglobin level requirements. By focusing on healthy donors, the study aimed to minimize potential confounding factors that might arise from underlying health conditions.

Data Analysis

The use of SPSS software allowed for efficient data processing, facilitating the calculation of relevant statistical parameters, and enabling a comprehensive analysis of the collected information. Chi-square tests and proportions were employed to evaluate potential associations between different blood types and demographic variables, providing valuable insights into the distribution patterns within the study population.

Result

The present study encompasses an extensive analysis of five years' worth of data, revealing a steady and consistent rise in the demand for blood supply over the years. Notably, the yearly requirement of blood has shown a gradual increase, almost reaching double the initial figures during the last two years of the study period. This substantial rise in demand indicates an escalating need for a sustainable and adequate blood supply to cater to the healthcare needs of the population. Interestingly, a slight dip in blood demand was observed during the year 2020. This period coincided with the onset of the COVID-19 pandemic, which likely contributed to the temporary reduction in blood supply requirements. The pandemic's impact on healthcare systems and changes in medical procedures might have influenced the fluctuations in blood usage during that specific timeframe. However, it is worth noting that following the year 2020, there was a rapid and significant surge in the demand for blood supply, indicating a recovery and restoration of healthcare services post-pandemic.

The trends in blood demand were meticulously visualized in Figure 1, which graphically represents the temporal changes in the required blood supply over five years. The figure illustrates the steady growth in demand, the dip during the pandemic year, and the subsequent sharp increase in blood

requirement.

To ascertain the statistical significance of the observed trends, a chi-square test was performed to explore potential correlations between the year-wise blood supply data. The results of the statistical analysis revealed a highly significant relationship ($p = 0.00003$), confirming that the variations in blood supply demand over the study period were not random but followed a distinct pattern.

The findings from this study underscore the importance of proactive measures to address the escalating blood supply requirements in the healthcare system. Understanding the factors contributing to the increasing demand can guide healthcare providers and policymakers in formulating effective strategies to meet the needs of patients adequately. Additionally, the insight gained from the study allows for more efficient planning and allocation of resources to ensure a continuous and robust blood supply in the face of dynamic healthcare challenges.

While the data provides valuable insights into the trends of blood supply demand, it is essential to acknowledge certain limitations. The study's scope is limited to the specific geographical area and the time frame investigated, which may not fully capture broader regional or global trends. Moreover, the study does not delve into the underlying reasons behind the surge in blood demand, warranting further research to identify the contributing factors.

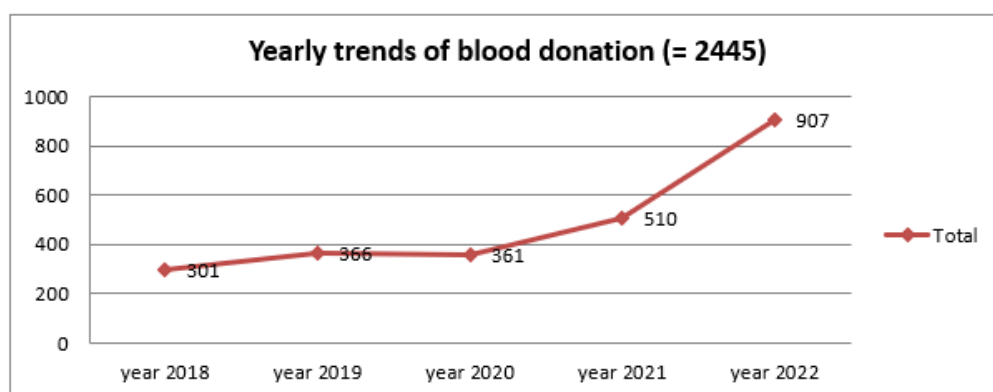


Figure 1: The line diagram shows the pattern of total yearly blood donors from JAN 2018 to DEC 2022

In rural areas, blood donors can be broadly categorized into two types: replacement donors, where family or relatives donate blood for a specific patient, and voluntary blood donors (VBD), who willingly donate blood to the blood bank for general use. A comprehensive analysis of blood donor data from January 2018 to December 2022 in rural areas revealed that the majority of blood supply to hospitals was from replacement donors, accounting for 2341 individuals (95.7%). On the other hand, voluntary blood donors contributed to 104 individuals (4.3%) out of the total 2445 donors (Table 1a). Table 1a showcases the distribution of blood donors across different years. Throughout the five years,

replacement donors consistently constituted the primary source of blood supply to hospitals. The data reveals a considerable proportion of replacement donors each year, with percentages ranging from 92.5% in 2020 to 97.5% in 2022. On the contrary, voluntary donors, although a smaller group, contributed consistently across the years, with percentages fluctuating between 2.5% in 2022 and 7.5% in 2020.

The statistical analysis revealed a highly significant result with a p-value of 0.000039, indicating that the observed differences in the proportions of replacement and voluntary donors were not due to chance alone. The result is considered significant at $p < 0.05$, affirming that there is a clear association between the type of donors and their contribution to the blood supply.

The dominance of replacement donors in rural areas suggests the cultural and social significance of familial support in times of medical need. However, the relatively smaller contribution of voluntary donors indicates that there may be potential opportunities to encourage and raise awareness about voluntary blood donation in these regions. Engaging the community and promoting the importance of voluntary blood donation could play a vital role in ensuring a more diverse and sustainable blood supply in rural healthcare settings.

The data highlights the prevalence of replacement donors as the primary source of blood supply in rural areas, with voluntary donors making a smaller but notable contribution. The significant statistical association reinforces the importance of understanding and addressing the factors that influence blood donation patterns. By fostering a culture of voluntary blood donation and enhancing community participation, rural healthcare systems can work towards maintaining a well-rounded and adequate blood supply to meet the healthcare needs of the population effectively.

Table: 1a Type of blood donors at blood bank from JAN-2018 to DEC-2022 (n=2445)

Year	2018	2019	2020	2021	2022	Total	P value
Replacement	288 (95.7%)	340 (93%)	334 (92.5%)	494 (97%)	885 (97.5%)	2341 (95.7%)	.000039 (p<.05)
Voluntary	13 (4.7%)	26 (7%)	27 (7.5%)	16 (3%)	22(2.5%)	104(4.3%)	
Total	301	366	361	510	907	2445	

In this study, the majority of blood donors were found to be from the male population, comprising 98% of the total donors. This striking gender disparity in blood donation could be attributed to various factors, one of which is likely the low socioeconomic status prevalent in the rural areas under investigation. The relationship between socioeconomic status and health-related factors, including haemoglobin levels, overall health, and education levels, might be contributing to this observed trend (Table 1b).

Table 1b displays the distribution of blood donors based on gender. The data indicates a

significant overrepresentation of male donors throughout the study period. This pattern suggests that cultural and societal norms, as well as the prevailing economic conditions, may play a role in influencing blood donation behaviour.

The correlation between low socioeconomic status and health outcomes is well-established. Individuals from disadvantaged socioeconomic backgrounds may have limited access to healthcare resources and face challenges in maintaining overall health. Consequently, this can affect haemoglobin levels, which are critical in determining eligibility for blood donation.

Furthermore, education levels can also play a role in shaping health-related behaviours, including blood donation. Individuals with lower education levels may be less aware of the importance of voluntary blood donation or may have misconceptions about the process, leading to a lower participation rate in blood donation drives.

Addressing the gender imbalance in blood donation and promoting equal participation among both genders is essential for ensuring a more diverse and sustainable blood supply. Public health initiatives should focus on raising awareness about the significance of blood donation, dispelling myths and misconceptions, and targeting communities with lower socioeconomic status to encourage active participation.

Table: 1b Yearly blood donors distribution by male and female (n=2445)

	2018	2019	2020	2021	2022	Total
Male	297	362	355	494	889	2397 (98%)
Female	4	4	6	16	18	48 (2%)
Total	301	366	361	510	907	2445

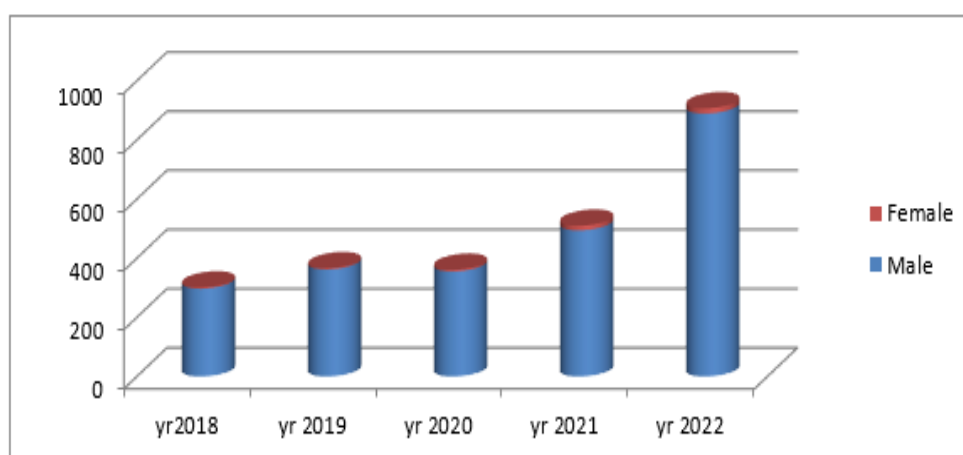


Figure 2: Yearly blood donor distribution by male and female

The age distribution of blood donors in this study reveals that the majority of donors, comprising 70.6% of the total, belong to the age group of 18 to 30 years. Following this, the age group of 31 to 40 years constitutes 22% of the donors, and the least represented age group is those above 40 years,

accounting for 7.4% of the total 2445 blood donors (Table 1c).

Table 1c displays the distribution of blood donors based on age groups. The data highlights a significant concentration of donors in the younger age groups, with the 18 to 30 years age category being the most prominent. This observation suggests that individuals in their late teens to early thirties are more actively participating in blood donation drives in the rural areas under study.

The statistical analysis performed using the chi-square test indicated a significant relationship between age groups and blood donation patterns ($p = 0.008021$). This statistically significant finding indicates that the variations in the distribution of donors across different age groups are not random but follow a distinct pattern.

The high representation of younger donors may be influenced by various factors. Younger individuals tend to be more active and engaged in social causes, including blood donation. Additionally, they are likely to be in better health, which makes them more eligible to donate blood. Moreover, educational institutions and community organizations often play an essential role in organizing blood donation camps and raising awareness among young adults, leading to increased participation from this age group. Conversely, the lower representation of donors above 40 years could be attributed to various factors, including potential health conditions that may render them ineligible for donation or limited awareness about the importance of voluntary blood donation in this age group. To ensure a steady and sustainable blood supply, efforts should be made to encourage blood donation across all age groups. Tailored awareness campaigns targeting older age groups and highlighting the benefits of regular blood donation can help increase participation among this segment of the population.

This study demonstrates a clear relationship between age groups and blood donation behaviour, with a significant majority of donors falling within the 18 to 30 years age range. Efforts should be made to promote voluntary blood donation among individuals of all age groups, with a specific focus on raising awareness and encouraging participation from those above 40 years. By fostering a culture of regular blood donation and engaging the community across all age groups, healthcare systems can ensure a continuous and sufficient blood supply to meet the needs of patients effectively.

Table: 1c Blood donation by different Age group distribution in the past five years (n=2445)

Age group	2018	2019	2020	2021	2022	Total	P value
18-30 years	237 (78.7%)	270 (73.8%)	238 (66%)	352 (69%)	630 (69.4%)	1727 (70.6%)	.008021 (p < .05)
31-40 years	49 (16%)	72 (19.7%)	100 (27.7%)	116 (22.7%)	200 (22%)	537 (22%)	
>40 years	15 (5%)	24(6.6%)	23(6.3%)	42(8.2%)	77(8.5%)	181 (7.4%)	
Total	301	366	361	510	907	2445	

Transfusion-transmitted infectious agents (TTIA) and their seroprevalence

Data from the last five years of study show results of seropositive tests by antigen card test and further by ELISA test found 50% positivity by HBV that is a total of 32 cases, of which 18 cases were found in last year (2022) followed by HCV 25% (16 cases), VDRL 19% (12 cases), malaria 3% (2 cases) and least HIV 1.5% (1 case). (Table 2a and Figure 3).

The figure presents the percentage of positive cases for each Transfusion-Transmitted Infectious agent (TTIA) detected using the antigen card test and subsequently confirmed through the ELISA test.

- HBV (hepatitis B) had the highest seropositivity at 50%, with a total of 32 confirmed cases. Out of these, 18 cases were detected in the last year (2022).
- HCV (hepatitis C) showed a seropositivity rate of 25%, resulting in 16 confirmed cases.
- VDRL (syphilis) had a seropositivity rate of 19%, accounting for 12 confirmed cases.
- Malaria showed a seropositivity rate of 3%, with a total of 2 confirmed cases.
- HIV (human immunodeficiency virus) exhibited the lowest seropositivity rate at 1.5%, resulting in one confirmed case.

These results highlight the prevalence of various TTIs in the blood donor population over the specified period. Blood banks must implement strict screening and testing protocols to ensure the safety of blood transfusions and reduce the risk of transmitting infections to recipients.

Table: 2a Yearly seropositive blood donors for transfusion-transmitted diseases (n=63)

Year	2018	2019	2020	2021	2022	Total
HBV +VE	1	3	6	4	18	32 (50%)
HCV +VE	2	2	2	6	4	16 (25%)
HIV +VE	0	0	0	0	1	01 (1.5%)
VDRL +VE	0	0	3	1	8	12 (19%)
Malaria	0	0	0	0	2	02 (3%)
Total	3	5	11	11	31	63

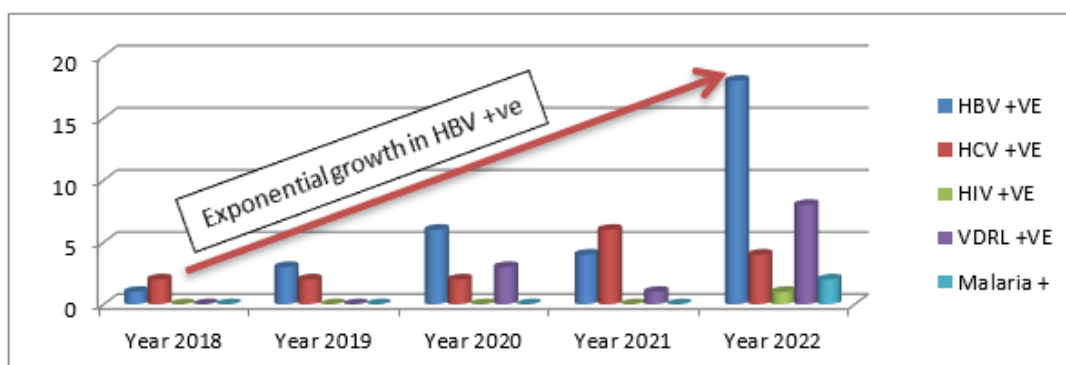


Figure 3: The bar diagram shows yearly seropositivity for TTIA among blood donors.

Exponential growth observed in HBV infection in the population in recent years.

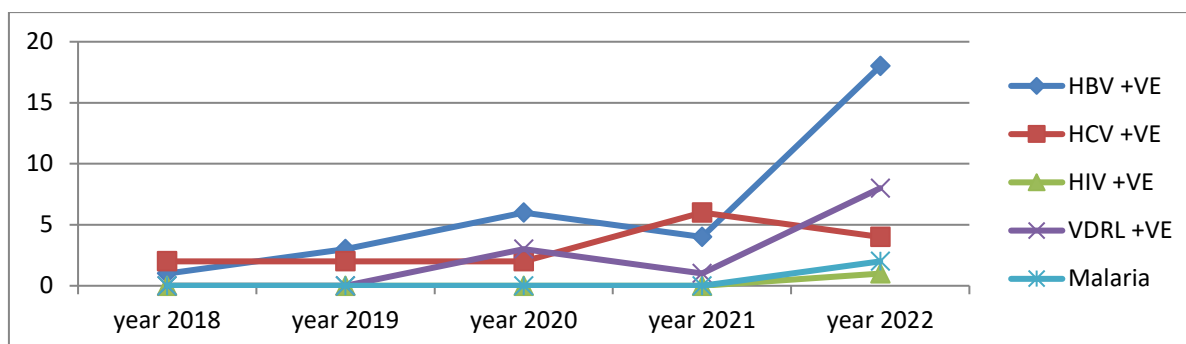


Figure 4: Line diagram showing yearly correlation of seropositivity among TTIA (transfusion-transmitted infectious agents)

In Table 2b, it is evident that a total of 63 cases were found positive for Transfusion Transmissible Infections agents (TTIA) among the blood donors. The seropositivity of TTIA was observed to be predominantly prevalent in the younger population, particularly in the age group of 18 to 30 years, accounting for 60.2% of the TTI-positive cases, which corresponds to 38 cases. Following this age group, the next highest seropositivity was found in the age group of 31 to 40 years, constituting 23.8% of the TTIA-positive cases, with a total of 15 cases. Lastly, the age group above 40 years demonstrated a seropositivity rate of 16%, equivalent to 10 TTIA-positive cases.

These findings highlight a notable trend of higher TTIA seropositivity in the younger age groups. This observation could be attributed to several factors, including lifestyle choices, social behaviours, and potential exposures to infectious agents. Younger individuals may engage in riskier behaviours or have increased social interactions, making them more vulnerable to infections that can be transmitted through blood transfusions.

The data underscores the significance of age-specific screening and preventive measures in the blood donation process. Implementing strict screening protocols for all potential donors, irrespective of age, is crucial to ensure the safety and integrity of the blood supply. Additionally, targeted awareness campaigns can be employed to educate the younger population about the importance of safe blood donation practices and the potential risks associated with certain behaviours.

Furthermore, the findings from Table 2b underscore the importance of continuous monitoring and evaluation of blood donor populations to identify and address potential risks associated with TTI. Regular surveillance helps in early detection, appropriate management of TTI-positive cases, and the implementation of preventive measures to safeguard the health of both blood donors and recipients.

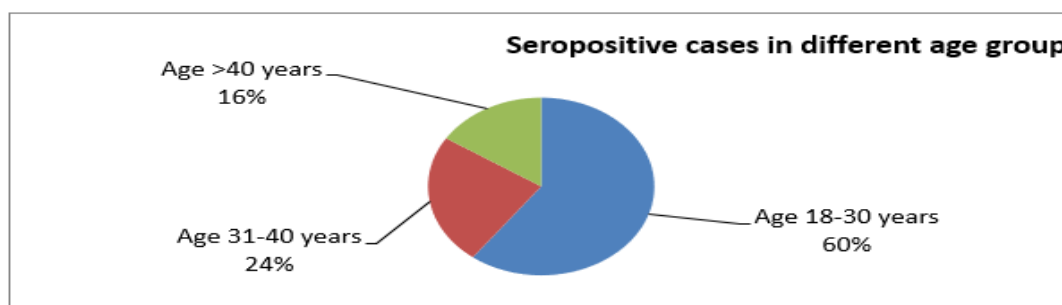


Figure 5: Pi diagram shows the distribution of Seropositive cases of TTIA in different age groups.

Table: 2b Overall Seropositivity of transfusion-transmitted infection among donors (n=63)

Age range	Total seropositive	Percentage (%)
18-30 years	38	60.2%
31-40 years	15	23.8%
>40 years	10	16%

The complete seroprevalence of infectious diseases among blood donors in the last five years was found to be highest for Hepatitis B virus (HBV) at 1.3%. On the other hand, the seroprevalence of the Human Immunodeficiency Virus (HIV) was found to be the least among the infectious diseases tested in the same period (Table 2c).

Table 2c presents the seroprevalence rates of different infectious diseases among blood donors over the five-year study period. The data indicate that HBV had the highest prevalence among the tested infectious agents, accounting for 1.3% of the total blood donors. Conversely, HIV exhibited the lowest prevalence among infectious diseases, reflecting a relatively lower occurrence of HIV infection among the blood donor population.

The findings from this study are significant as they provide crucial insights into the prevalence of infectious diseases among blood donors, which has implications for blood safety and transfusion practices. Ensuring a safe and uncontaminated blood supply is of utmost importance in the healthcare system to prevent the transmission of infectious diseases to recipients.

On the other hand, the lower seroprevalence of HIV is encouraging, indicating that the screening and preventive measures in place have been effective in reducing the risk of HIV transmission through blood transfusions. However, continuous vigilance and adherence to strict screening procedures remain critical to maintaining a safe blood supply and further minimizing the risk of HIV transmission. The study highlights the seroprevalence rates of infectious diseases among blood donors over the last five years. HBV was found to have the highest prevalence, while HIV had the lowest among the tested infectious agents. These findings emphasize the importance of robust screening and testing procedures to ensure a safe and reliable blood supply, ultimately contributing to better patient outcomes and public health.

Table: 2c Seroprevalence of transfusion-transmitted infection in five years (n=2445)

AGENT	Total cases	Seroprevalence
HBV	32 (50%)	1.3
HCV	16 (25%)	.65
HIV	01 (1.5%)	.04
VDRL	12 (19%)	.5
Malaria	02 (3%)	.08
Total	63	2.57

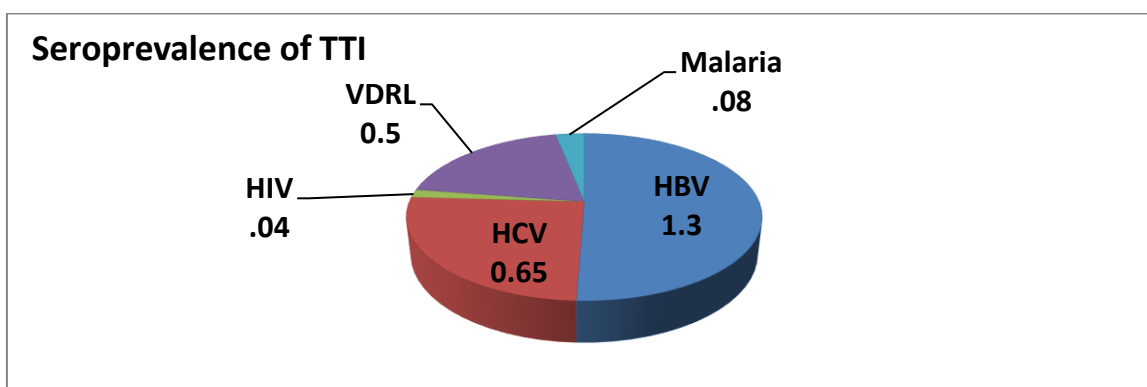


Figure 6: Pi diagram showing overall seroprevalence of transfusion-transmitted infection in the last five years (2018 to 2022)

Discussion

Our findings reveal a significant male predominance among blood donors in this institute, with 98% of donors being males and only 2% females. This observation aligns with similar studies conducted by Mathew AS et al. and Unnikrishnan B et al., which reported 95.5% males and 4.5% females among blood donors [4] [5]. Another study also documented a high percentage of male donors, constituting about 99% [6].

Voluntary blood donation (VBD) involves individuals donating blood willingly and selflessly to help the poor and society. On the other hand, replacement donation is done specifically in response to a patient's or their family/friends' request for blood, serving as an exchange to the blood bank [7]. In our study, most donors chose replacement donation, contributing to 95.7% of the donors, while voluntary blood donors accounted for 4.3%. Similar research conducted by Pachori S et al. reported 87.47% replacement donors and 12.53% voluntary blood donors [6]. Other studies indicated replacement and voluntary blood donors as 60.2% and 39.7%, respectively [8] [9], and 96.9% and 3.06%, respectively.

Apart from gender, age also plays a significant role in blood donation. In our study, the majority of blood donors fell within the 18 to 30 age group, contributing to around 70% of the blood pool. Younger individuals demonstrated a better response to blood donation, with 62.7% in the 18-30 years

age group and 25.3% in the 31-40 years age group, which is consistent with findings from Sethi et al [10]. Pre-donation counselling has been observed to be more effective in convincing and educating younger individuals in rural areas.

However, despite their better understanding and willingness to donate, the younger population also exhibited a higher prevalence of seropositive Transfusion Transmissible Infections (TTI) compared to the older population, as indicated in Table 2b and Figure 5. The seropositive TTI cases were notably more common among younger individuals, with 60.2% of the total 63 cases found in the 20 to 30 age group (Table 2b & Figure 5). This finding highlights the need for targeted interventions and screening measures to address the higher prevalence of TTI in the younger age group.

Table 3: Comparison of the common prevalence of TTIA in Various parts of India

Study & year	Location	Total TTI	HBV	HCV	VDRL
Chandra et al. 2009 [11]	Lucknow UP.	3.05%	1.96%	0.85%	0.01%
Giri et al. 2012 [12]	Maharashtra	1.97%	1.09%	0.74%	0.07%
Leena et al 2012 [13]	South India	1.35%	0.71%	0.14%	0.10%
Makroo et al. 2014 [9]	Delhi	2.09%	1.18%	0.43%	0.23%
Sethi et al. 2014 [10]	Uttarakhand	1.05%	0.63%	0.20%	0.02%
Dobariya et al [14] 2016	Gujrat	1.34%	0.98%	0.09%	0.16%
Pachori S et al. 2020 [6]	Jaipur Rajasthan	1.87%	1.22%	0.14%	0.40%
This study 2023	HIMS* Sitapur Uttar Pradesh.	2.57%	1.3%	0.65%	0.5%

*HIMS (Hind Institute of medical sciences).

When comparing TTIA in our study with other studies it has been found that a nearby study in Lucknow done by Chandra et al. [11] found slightly higher TTIA (3.05), it may be because of earlier and urban areas with high population. The least TTIA was found in Uttarakhand studied by Sethi et al. [10] HBV (hepatitis B virus) was found most prevalent among TTI in the present study at about (1.3) followed by HCV (0.65), syphilis (VDRL) 0.5 and least cases of HIV (.08) and malaria (0.04) since last five years. Here we compared HBV, HCV and VDRL seroprevalence with other studies. (Table 3) Studies like Chandra et al. [11], Pachori S et al [6], Makroo et al [9], Giri et al. [12], including our study show HBV prevalence 1.96, 1.22, 1.18 and 1.09 per cent respectively, which was found closer to the present study (1.3). HCV show found <1 prevalence was observed in most studies with higher by Chandra et al. (0.85) and least by Dobariya et al. (0.09) as compared to our study (0.65) but was found similar as documented by Sundramurthy et al [15], Sastry et al [16] and Giri et al [12] as .56%, .41% and .74% respectively. In contrast to other TTIA, Syphilis (VDRL) is less common but found a higher prevalence in the present study (0.5) as compared to other studies shown in the above table. Seroprevalence of HIV in one case (.04) and malaria in two cases (.08) was observed very least. Overall it has been observed that populous and urban regions of India have more prevalence than rural areas.

Limitations

The present study done in rural and urban slum areas that have less population and lower education than urban metropolitan cities of India makes different demographic data. Other hand rural areas have less medical facilities for blood transfusion so blood bank has less storage of blood pool. Voluntary blood donation (VBD) and female donors are very less as compared to urban areas. All above can alter demographic statistics and results may vary.

Conclusion

There is an emerging trend in young people and students are increasingly likely to donate. Less educated may lack relevant knowledge on the necessity of blood donation. Making a balance between demand and supply is a challenging task in ongoing hospitality and transfusion medicine. Unfortunately, HBV infection is an emerging problem that reflects only the tip of the iceberg, even though there are high efficacy vaccines available for a long time but most of the population is not immunized. Other hand prevalence of HIV decreased in the population. So Blood safety is a vital aspect of transfusion medicine needs standard screening tests to reduce transfusion-transmitted infection and educate people about this for the prevention of infection in society. The more sensitive test needs to screen blood donors and judicious blood and blood products should be used whenever necessary.

Financial support

Nil.

Conflicts of interest

There are no conflicts of interest.

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