ISSN: 0975-833X

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

International Journal of Current Research

Vol. 17, Issue, 02, pp.31948-31950, February, 2025
DOI: https://doi.org/10.24941/ijcr.48630.02.2025

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

PREVALENCE OF TRANSFUSION-TRANSMITTED INFECTIONS AMONG VOLUNTARY BLOOD

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ARTICLE INFO

Article History:
Received 30th September, 2024
Received in revised form
15th November, 2024
Accepted 26th December, 2024
Published online 27th February, 2025

Key words:
Blood donation, Transfusion-Transmitted Infections, Voluntary Donors, Seroprevalence, Manipur.

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ABSTRACT

Background: Ensuring a safe and adequate blood supply is crucial for transfusion services. **Objectives:** This study investigates the prevalence of transfusion-transmitted infections (TTIs) among voluntary blood donors at Jawaharlal Nehru Institute of Medical Sciences (JNIMS), Imphal, Manipur. **Methods:** A cross-sectional study was conducted from January to December 2021, including 3,352 voluntary blood donors. Blood samples were screened for HIV, Hepatitis B (HBV), Hepatitis C (HCV), Syphilis, and Malaria using ELISA and rapid test methods. **Results:** The overall TTI serop revalence was 2.03%, with HBV being the most prevalent (0.95%), followed by HCV (0.83%), HIV (0.14%), and Syphilis (0.11%). No Malaria cases were detected. **Conclusions:** The findings emphasize the need for robust donor screening, regular monitoring, and improved transfusion safety protocols.

Citation: Biraj Louriyam, Dr. Okram Geetchandra Singh and Dr. Colleen Sonia Pariat. 2025. *"*Prevalence of Transfusion-Transmitted Infections Among Voluntary Blood*". International Journal of Current Research, 17, (02),* 31948-31950.

INTRODUCTION

Blood transfusion is a critical medical intervention used in surgeries, trauma management, and hematological disorders (Mohammed & Bekele, 2016). Despite its benefits, transfusion can transmit infections such as HIV, HBV, HCV, Syphilis, and Malaria, posing significant health risks (Bartonjo et al., 2019). In India, the Supreme Court banned professional blood donations in 1998, ensuring that all donations are voluntary or replacement-based (Saran & India, 2003). The Drugs and Cosmetics Act mandates that blood banks screen for TTIs to ensure safety (Chaurasia et al., 2014). While voluntary blood donors are considered a safer source compared to replacement donors, it is still essential to monitor TTI prevalence among them. This study aims to estimate the prevalence of TTIs among voluntary blood donors in a tertiary care hospital in Manipur, a region with high rates of HIV and hepatitis infections (Kermode et al., 2016).

METHODOLOGY

Study Design and Setting: This retrospective cross-sectional study was conducted at JNIMS Blood Centre, Imphal, from January to December 2021. Data were collected from donor records.

Study Population: The study included all voluntary blood donors during the study period (n=3,352). Laboratory Screening Methods

Blood samples were tested for

- **HIV**: Erba Lisa HIV Gen4
- **HBV**: Erba Lisa SEN HBsAg
- **HCV**: Erba Lisa HCV Gen3
- **Syphilis**: Rapid Plasma Reagin (RPR) test
- **Malaria:** Immunochromatographic rapid test

All tests followed manufacturer protocols for accuracy and reliability.

Data Analysis

Data were analyzed using Microsoft Excel, and results were presented in tables and charts.

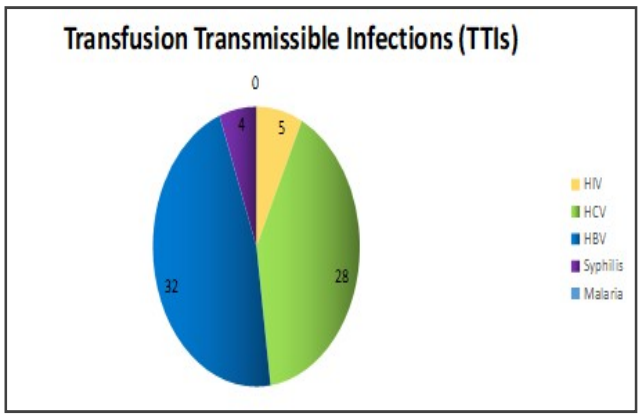
RESULTS

Prevalence of TTIs: Out of 3,352 donors, 69 (2.03%) tested positive for at least one TTI.

Table I. Prevalence of TTI among voluntary Blood donor

TTI	Positive Cases	Prevalence (%)
HIV	5	0.14
HCV	28	0.83
HBV	32	0.95
Syphilis	4	0.11
Malaria	0	0

HBV was the most prevalent infection, followed by HCV.



This pie chart shows the sero-prevalence of HBsAs, HCV, HIV, Syphilis, Malaria are 0.95%, 0.83%, 0.14%,0.11%, and 0% respectively.

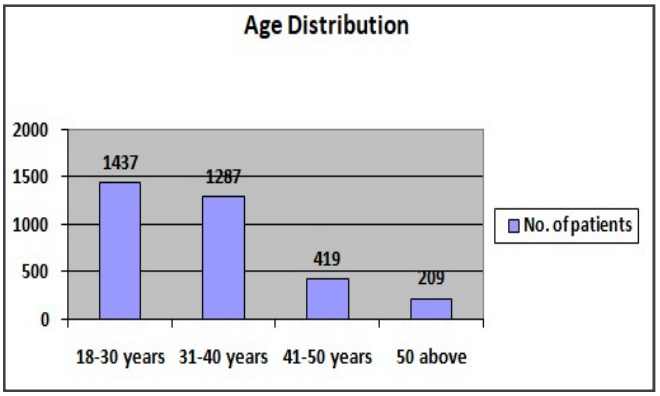
Demographic Distribution

Age Distribution: The highest number of donors were aged 18–30 years (43%), followed by 31–40 years (38%)

Table II. Age distribution of the voluntary donors

Age group	Number of donors	Percentage
18-30	**1437**	**43%**
31-40	1287	38%
41-50	419	13%
≥51	**209**	**6%**

Total number of donors = 3352



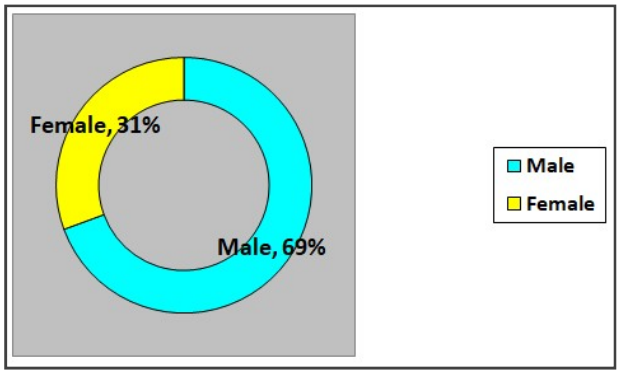
Graphical Representation of Age distribution of the voluntary donors

Gender Distribution: Male donors constituted 69% (n=2,326), while females accounted for 31% (n=1,026).

Table III. Gender wise distribution of voluntary donors

Year	Gender	Number of Patients	Percentage
2021	Male	2326	69%
2021	Female	1026	31%

Total number of voluntary donors = 3352 (100%) Out if 3352 (100%) voluntary donors 2326 (69%) were males and 1026 (31%) were females.



Doughnut chart Representation of the Gender Distribution of voluntary donor

DISCUSSION

Comparison with Other Studies. The overall TTI prevalence in this study (2.03%) is comparable to findings from Andhra Pradesh (2.42%) (Sowjanya Lakshmi et al., 2016). HBV was the most common TTI (0.95%), similar to previous studies in India (Diwan & Mathur, 2012). The HCV prevalence (0.83%) was higher than that reported in other regions (Chandekar et al., 2019), likely due to the high prevalence of HCV in Manipur (Kermode et al., 2016).

Implications for Blood Safety

- The higher proportion of male donors aligns with trends in other studies, where women are often deferred due to low hemoglobin levels (Bisetegen et al., 2016).
- The younger age group (18-30 years) had the highest donation rates, consistent with studies showing that younger individuals are more willing to donate (Fernandes et al., 2010).
- No Malaria cases were detected, possibly due to strict donor deferral criteria.

CONCLUSION

This study highlights a 2.03% seroprevalence of TTIs among voluntary blood donors, with HBV as the most common infection. Regular monitoring and improved donor selection are essential for maintaining a safe blood supply. Advanced testing methods, such as nucleic acid testing (NAT), should be considered for early detection.

RECOMMENDATIONS

- Strengthen donor screening: Implement pre-donation counseling and risk factor assessments.

- Promote HBV vaccination: Encourage vaccinations for high-risk populations.
- Improve testing strategies: Consider NAT for more accurate detection of infections.
- Increase public awareness: Educate communities about the importance of voluntary blood donation and TTI risks.

REFERENCES

Bartonjo, G., Oundo, J., & Ng'ang'a, Z. (2019). Prevalence and associated risk factors of transfusion transmissible infections among blood donors. Pan African Medical Journal, 34. https://doi.org/10.11604/ pamj. 2019 .34.31.17885

Bisetegen, F. S., Bekele, F. B., Ageru, T. A., & Wada, F. W. (2016). Transfusion-Transmissible Infections among Voluntary Blood Donors. Canadian Journal of Infectious Diseases and Medical Microbiology, 2016, 1–6. https://doi.org/10.1155/2016/8254343

Chaurasia, R., Zaman, S., Das, B., & Chatterjee, K. (2014). Screening donated blood for transfusion-transmitted infections. Asian Journal of Transfusion Science, 8(1), 27–31.

Diwan, R., & Mathur, M. (2012). Incidence and pattern of transfusion-transmitted infections. Journal of Pharmaceutical and Biomedical Sciences, 22(22), 1–4.

Kermode, M., Nuken, A., Medhi, G., Akoijam, B., Sharma, H., & Mahanta, J. (2016). High burden of hepatitis C & HIV co-infection among people who inject drugs in Manipur. Indian Journal of Medical Research, 143(3), 348. https://doi.org/10.4103/0971-5916.182626

Saran, R. K. & India. Directorate General of Health Services. (2003). Transfusion Medicine. Government of India.

Sowjanya Lakshmi, V., Devarashetty, S. P., Borugadda, N., & Suman Kumar, T. (2016). Seroprevalence of transfusion-transmitted infections. Journal of Evolution of Medical and Dental Science, 5(74), 5456–5458. https://doi.org/10.14260/jemds/2016/1235

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