

Incidence With Reasons for Blood Donor Deferral in Private Healthcare Setting

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Abstract: ***Background:** Blood transfusion is a vital, life-saving intervention, especially in emergencies. In many developing countries, patients still face delays in accessing safe blood due to limited infrastructure, inadequate numbers of blood banks, poorly equipped laboratories, unreliable transport, low voluntary donation rates, cultural barriers, fear, misconceptions, and weak donor recruitment and retention systems. Ensuring safe transfusions depends on both advanced screening technology and the promotion of healthy, voluntary blood donation. Careful donor selection through proper eligibility criteria and infection screening is essential to prevent adverse reactions. However, deferring donors can discourage them from returning and reduce the available donor pool, making it important to understand and address the reasons for deferral. **Aim:** To assess the frequency and causes of blood donor deferrals in a Private health care setting and to examine their pattern in relation to donor characteristics. **Materials and Methods:** This was a cross-sectional retrospective study conducted over 3 months (April 2025– June2025) at the Blood Centre, Department of Transfusion Medicine, RBH, Jaipur. Donor information was obtained from official records. Descriptive statistics were used to summarize demographic details, deferral rates in males and females, and the proportion of temporary and permanent deferrals. A Chi-square test was applied to determine the association between gender and type of deferral. **Results:** Out of 752 individuals who registered for blood donation, 84 (5.85%) were deferred. The majority of donors were male (n = 60), while females accounted for 24 registrations. Most deferrals (76.4%) were temporary, commonly due to low haemoglobin levels or recent alcohol consumption on antibiotics, recent surgery or tattoos, rabies vaccination. Permanent deferrals (23.6%) were mainly due to uncontrolled hypertension, on cardiac medications and diabetes on insulin. A significant association was found between gender and deferral type (p < 0.05). **Conclusion:** Low haemoglobin, alcohol intake before donation, hypertension, and diabetes, recent minor surgeries were the leading causes of donor deferral. Focused strategies, including nutritional counselling, health education, and community outreach, are needed to improve donor eligibility and encourage deferred donors to return. Such measures can strengthen blood transfusion services and better meet the needs of patients requiring blood.*

Keywords: Blood donor deferral, Temporary deferral, Permanent deferral, Low hemoglobin, Donor eligibility, Private healthcare setting, Blood donation, Donor recruitment, Transfusion safety, Deferral causes

1. Materials and Methods

Study Design and Setting

This was a cross-sectional retrospective study conducted at the Blood Centre, Department of Transfusion Medicine at Rukmani Birla Hospital, Jaipur. The study focused on voluntary, non-remunerated blood donors who reported for donation either at the hospital or during voluntary blood donation camps in house. Ethical approval was obtained from the Institutional Review Board prior to the commencement of the study.

Data were retrieved from the donor deferral register, which contained detailed information on each deferred donor, including demographic characteristics, medical history, physical examination findings, hemoglobin levels, vital signs, and reasons for deferral. Donor selection and deferral criteria followed the National AIDS Control Organization (NACO) guidelines, World Health Organization (WHO) recommendations, and the Drugs and Cosmetics Act (Amendment, 2020).

Study Period

The study covered a period of 3 months, from April 2025 to June 2025.

Inclusion Criteria

All voluntary, non-remunerated blood donors presenting for donation at the blood centre or voluntary donation camps.

Donors meeting eligibility criteria, including:

- Age 18–60 years (as per NBTC guidelines)
- Hemoglobin level between 12.5–16.5 g/dL.
- Blood pressure within 100–140 mmHg systolic and 60–90 mmHg diastolic
- Normal heart rate, temperature, and oxygen saturation

Donors who provided informed consent for the use of their data in research.

Exclusion Criteria

Donors who did not meet the health and eligibility criteria, including:

- Hemoglobin levels outside the acceptable range
 - Abnormal blood pressure values
 - Medical conditions such as anemia, cardiovascular disease, diabetes, recent surgery, or blood disorders
- Donors with incomplete or missing data in medical records

Donors who failed to comply with standard donation procedures or Blood Centre protocols.

Data Analysis

Descriptive statistics were used to summarize donor demographics, overall deferral rates, and the distribution of temporary and permanent deferrals. The Chi-square test was applied to assess the association between gender and type of deferral. Data analysis was performed using [specify statistical software, e.g., SPSS version XX or Microsoft Excel].

Study Size and Sampling Method

Over a 3-month period a total of 84 registered voluntary blood donors were recorded at the Blood Centre. A simple random sampling technique was applied to select participants, ensuring that the study sample accurately reflected the characteristics of the overall donor population.

Data Collection

Data were sourced from the meticulously maintained voluntary blood donor registry and associated records of the Blood Centre. For each donor, a detailed review of medical history was performed, followed by a brief physical examination conducted by a qualified medical officer. Clinical assessment included the evaluation of hemoglobin concentration, blood pressure, body temperature, pulse rate, and pulse regularity. All collected data were compiled and organized using Microsoft Excel (Microsoft Corp.).

The donor selection process and deferral criteria were strictly aligned with the standards set by the National AIDS Control Organization (NACO), the World Health Organization (WHO), the Drugs and Cosmetics Act (Amendment, 2020), and the Directorate General of Health Services (DGHS, 2022), ensuring both uniformity and reliability of results.

Primary Variables

The study examined donor demographics (age, gender), key physiological parameters (hemoglobin levels, blood pressure, temperature, pulse rate), and reasons for deferral, which were classified as either temporary or permanent. Deferred donors were further categorized by gender and age group to identify trends, determine predominant causes of deferral, and provide data-driven insights to support donor recruitment and retention strategies.

Statistical Analysis

Descriptive statistics were employed to summarize donor characteristics and deferral patterns. Comparative analysis of deferral rates between male and female donors was carried out. The Chi-square test was used to evaluate associations between gender and type of deferral. Statistical analysis was performed using [insert software name and version].

2. Results

Over the 3-month study period, a total of 752 individuals registered for voluntary blood donation at the Blood Center. Of these, 617 (82.0%) were males and 135 (18.0%) were females (Table 1). The analysis showed that male donors were the predominant contributors to the donor pool. Further evaluation of deferral patterns by gender revealed.

Table 1: Gender-wise distribution and deferral pattern

Gender	Total Donors (n)	% of Total Donors	Deferred Donors (n)	Deferral Rate (%)	% of Total Deferrals
Male	617	82.0%	60	9.72%	71.43%
Female	135	18.0%	24	17.78%	28.57%
Total	752	100%	84	11.17%	100%

Table 2: Age-wise distribution of deferred donors

Age Group (years)	Deferred Donors (n)	Percentage (%)
18–30	50	59.9
31–45	27	31.7
46–60	7	8.4
Total	84	100

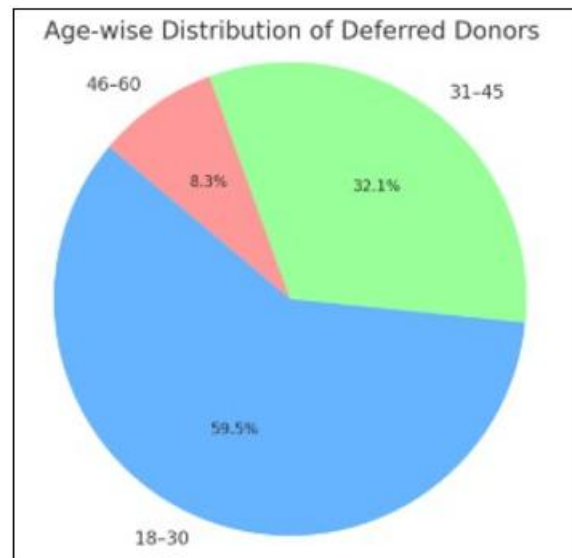


Table 3: Distribution of Temporary and Permanent Donor Deferrals by Gender

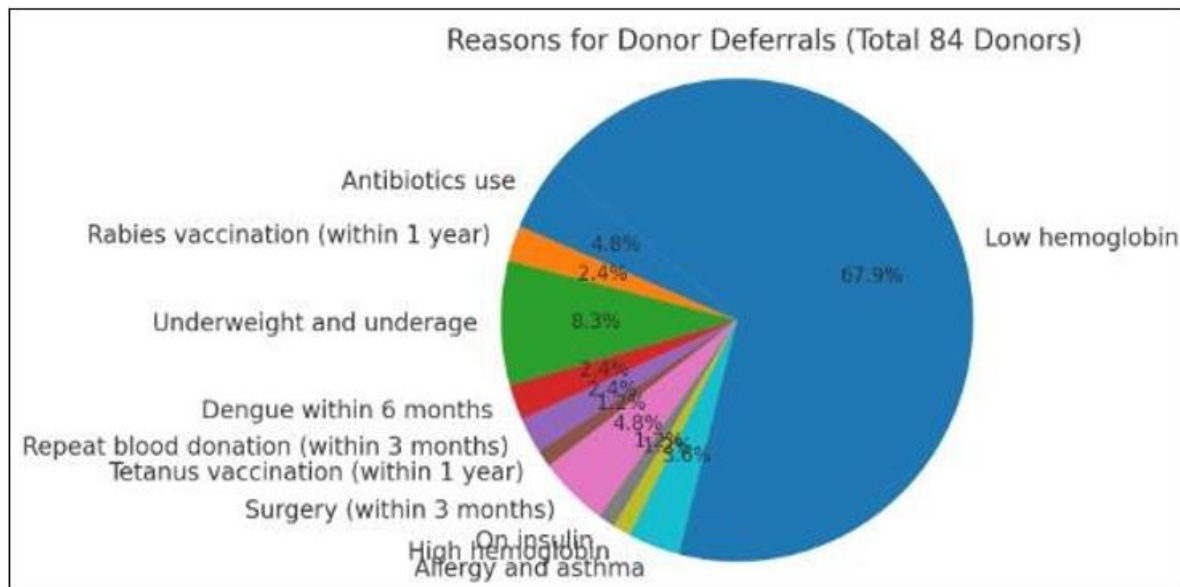
Deferral Type	Total Deferrals (n)	% of Total Deferrals	Males (n)	Females (n)
Temporary	64	76.0%	46	18
Permanent	20	24.0%	14	6
Total	84	100%	60	24

Statistical Test	Value
Chi-square (χ^2)	18.54
p-value	0.000017*

The Chi-square test demonstrated a statistically significant association between gender and type of deferral ($\chi^2 = 18.54$, $p = 0.000017$).

Table 4: Reason for Deferral

Reason for Deferral	Number of Donors	Percentage (%)
Antibiotics use	4	4.76
Rabies vaccination (within 1 year)	2	2.38
Underweight and underage	7	8.33
Dengue within 6 months	2	2.38
Repeat blood donation (within 3 months)	2	2.38
Tetanus vaccination (within 1 year)	1	1.19
Surgery (within 3 months)	4	4.76
On insulin	1	1.19
High hemoglobin	1	1.19
Allergy and asthma	3	3.57
Low hemoglobin	57	67.86
Total	84	100



3. Discussion

In this three-month study of 752 donors, the deferral rate was 11.17% (84 donors), with males forming most deferrals (71.4%) and females 28.6%. The gender difference was statistically significant ($p < 0.05$).

Temporary deferrals (76%) dominated, mainly due to low hemoglobin, antibiotic use, recent vaccination, underweight, and recent illness. Permanent deferrals were rare and linked to chronic conditions. Most deferred donors were 18–30 years old.

Low hemoglobin as the leading, preventable cause highlights the need for donor education, nutritional improvement, and pre-donation screening to reduce avoidable deferrals and ensure a stable blood supply.

4. Limitations

This study was conducted at a single center, which may limit the generalizability of results to other settings. Additionally, the retrospective design relied on existing records, which may have incomplete or missing data. Seasonal and regional variations in deferral patterns were not assessed due to the short study period.

5. Conclusion

Deferral rates were significantly higher in males, with temporary causes—especially low hemoglobin—being most common. Addressing preventable causes through targeted health education, nutritional interventions, and better pre-donation counseling could improve donor retention and blood supply stability.

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