

Blood Donor Deferral: Rates, Patterns, and Causes in a Tertiary Care Teaching Institute

Gajender Singh¹, Vaishali², Aashna Gupta², Simran Yadav³, Anjali², Chanchal⁴

¹Senior Professor and Head, Department of Immunohematology and Blood Transfusion, PGIMS, Rohtak, Haryana, India.

²Senior Resident, Department of Immunohematology and Blood Transfusion, PGIMS, Rohtak, Haryana, India.

³Senior Resident, Department of Pathology, PGIMS, Rohtak, Haryana, India.

⁴Junior Resident, Department of Pathology, PGIMS, Rohtak, Haryana, India.

Abstract

Background: Blood transfusion requires a safe and adequate donor pool. Donor deferral, though essential, reduces available blood supply. **Material and Methods:** This retrospective study was conducted at PGIMS, Rohtak (2023–2025). Data of all registered donors and pre-donation deferrals were analyzed as per DGHS guideline. **Results:** Out of 121,566 donors, 7,284 (5.99%) were deferred. Males constituted 97.03%, while females were 2.97%, with a higher deferral rate in females (49.07%) than males (4.68%). Most deferrals were temporary (94.45%). Anaemia (28.14%) was the most common temporary cause, while chronic hypertension (35.89%) was the leading permanent cause. **Conclusion:** The findings are comparable with other Indian studies, highlighting anaemia as the major cause of deferral. Most deferrals were temporary and preventable. Targeted interventions focusing on nutrition, awareness, and follow-up can improve donor retention and ensure an adequate blood supply.

Keywords: Rates, Patterns, and Causes in a Tertiary Care Teaching Institute. Temporary defer, Permanent defer, Blood donor defer.

Received: 15 July 2026

Revised: 10 August 2026

Accepted: 25 August 2026

Published: 25 September 2026

INTRODUCTION

Blood transfusion is a vital life-saving intervention that requires an adequate supply of safe blood collected from healthy donors. Ensuring the availability of sufficient and safe blood and blood components remains a major global public health challenge. Various strategies and approaches have been implemented worldwide by blood transfusion services and national blood transfusion committees to ensure the availability of safe blood, particularly during emergency situations.^[1]

In India, the National AIDS Control Organization (NACO) reports that the annual collection of blood is approximately 7.4 million units, which is insufficient when compared to the estimated requirement of nearly 10 million units.^[2] This gap between demand and supply highlights the need for strengthening donor recruitment and retention strategies.

Donor deferral, although essential to ensure the safety of both donors and recipients, leads to the loss of potentially valuable blood units, thereby limiting the available supply for emergency transfusions.^[3] Understanding the reasons for temporary and permanent deferrals is crucial, as it facilitates targeted corrective measures and strategic reengagement of deferred donors. Such knowledge contributes significantly to improving the overall effectiveness, safety, and sustainability of blood donation programs.^[4]

MATERIALS AND METHODS

This retrospective study was conducted by reviewing records of the donors reporting for blood donation from 1st Jan 2023 to 31st Dec 2025 at PGIMS, Rohtak Blood Transfusion Deptt. A total of 121,566 registered blood donors were included in the study. Data regarding all registered donors and pre-donation deferrals during the study period were collected from blood bank records. Donor selection and deferral criteria were applied in accordance with the Directorate General of Health Services (DGHS). Donors were categorized as either fit for donation or deferred.

Inclusion criteria Voluntary, non-remunerated and replacement recruited at outdoor camps and in-house sites were included in the study.

Exclusion criteria

Apheresis donors and professional donors were excluded from the study.

Ethical Approval

The study protocol was reviewed by the Institutional Ethics

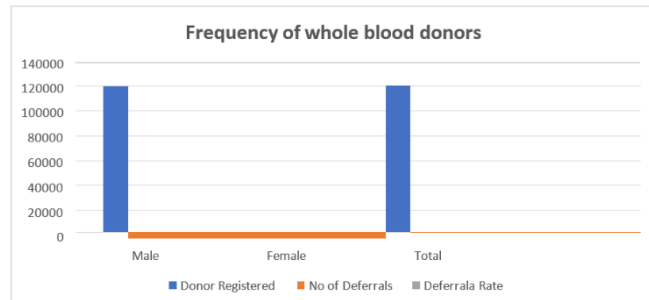
Address for correspondence: Dr. Vaishali,
Senior Resident, Department of Immunohematology and Blood Transfusion
PGIMS, Rohtak, Haryana, India.
E-mail: vaishaligupta822@gmail.com

DOI:
10.21276/amt.2026.v13.i3.1068

How to cite this article: Singh G, Vaishali, Gupta A, Yadav S, Anjali, Chanchal.
Blood Donor Deferral: Rates, Patterns, and Causes in a Tertiary Care Teaching
Institute. Acta Med Int. 2026;13(3):341-344.

Committee of Pt. B.D. Sharma Post Graduate Institute of Medical Sciences (PGIMS), Rohtak. As this study involved retrospective analysis of routinely collected blood bank records without any direct patient or donor interaction, a formal ethical approval was exempted. The study was conducted in accordance with the principles of the Declaration of Helsinki, and strict confidentiality of donor information was maintained throughout the study.

RESULTS



Among the registered donors, 117,963 (97.03%) were males and 3,603 (2.97%) were females (Table 1). The overall deferral rate was 5.99%, with a markedly higher deferral rate observed among females (49.07%) compared to males (4.68%) (Table 1).

Year-wise analysis showed that in 2023, 40,919 donors were registered, of which 2,047 (5.00%) were deferred. In 2024, out of 41,018 registered donors, 3,208 (7.82%) were deferred, representing the highest annual deferral rate. In 2025, 39,629 donors were registered, with 2,029 (5.12%) deferrals [Table 2].

Out of the total 7,284 deferred donors, 5,516 (75.7%) were males and 1,768 (24.3%) were females (Table 3). The highest

number of deferrals was recorded in 2024 (3,208 cases), followed by 2023 (2,047 cases) and 2025 (2,029 cases) [Table 3]. The majority of deferrals were temporary 6,880 (94.45%), whereas permanent deferrals accounted for only 404 (5.55%) [Table 4].

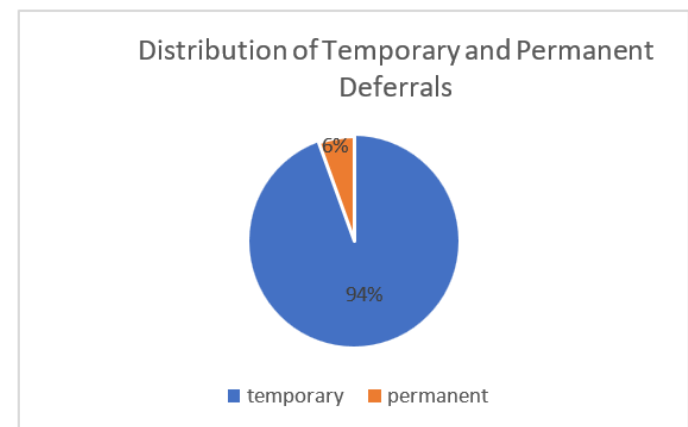
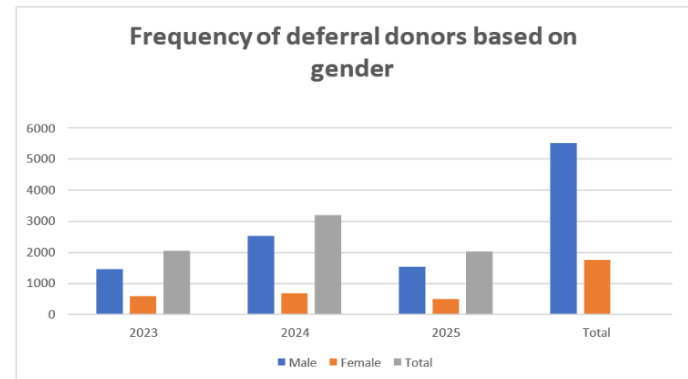


Table 1: Frequency of whole blood donors at Blood Bank PGIMS Rohtak

Gender	Donors registered	No. of Deferrals	Deferral Rate
Male	117963	5516	4.68%
Female	3603	1768	49.07%
Total	121566	7284	5.99%

Table 2: Frequency of successful and deferral donors per year

Year	2023	2024	2025	Total
Frequency of successful Donors	38872	37810	37600	114282
Frequency of deferred Donors	2047	3208	2029	7284
Total registered donor	40919	41018	39629	121566

Table 3: Frequency of deferral donors based on gender

Year	Male	Female	Total
2023	1453	594	2047
2024	2526	682	3208
2025	1537	492	2029
Total	5516	1768	7284

Table 4: Distribution of Temporary and Permanent Deferrals among Whole Blood Donors

Type of deferrals	No of deferrals	% of deferrals
temporary	6880	94.45%
permanent	404	5.55%
total	7284	100%

Table 5: Causes of permanent deferrals and their relative proportions.

Reasons	Male	Female	Total
Chronic hypertension	139	6	145
Epilepsy	32	-	32
Diabetes on insulin	60	-	60
Heart disease	44	-	44
Asthma	29	-	29
Thyroid disease	65	4	69
High risk behaviour	25	-	25
Total	394	10	404

Among permanent deferrals, the most common cause was chronic hypertension (35.89%), followed by thyroid disorders (17.08%) and diabetes mellitus on insulin therapy

(14.85%). Other causes included heart disease (10.89%), epilepsy (7.92%), asthma (7.18%), and high-risk behaviour (6.19%) [Table 5].

Table 6: Causes of Temporary Deferrals and their relative proportions

Reasons	Male	Female	Total
Anaemia	668	1268	1936
Underweight	487	117	604
Menstruation	-	282	282
antibiotic intake	569	12	581
Unknown medication	116	5	121
Alcohol intake	472	-	472
Dengue	31	-	31
Typhoid	222	-	222
tattoo	126	-	126
Recent donation	378	-	378
Surgery	203	-	203
Fever	208	-	208
Dog bite	133	-	133
Recent vaccination	105	5	110
Allergy	423	-	423
Dental procedure	81	-	81
fasting	161	8	169
Lack of sleep	284	-	284
Other	500	16	516
Total	5112	1768	6880

Among temporary deferrals, anaemia was the most common cause (28.14%), particularly among females. Other major causes included underweight (8.78%), antibiotic intake (8.44%), other miscellaneous causes (7.50%), alcohol intake (6.86%), and allergy (6.15%). Female- specific causes such as menstruation (4.10%) also contributed significantly. Additional causes included recent donation (5.49%), lack of sleep (4.13%), fever (3.02%), and typhoid (3.23%), among others [Table 6].

DISCUSSION

Blood donor deferral is a critical step in ensuring both donor safety and recipient protection. In the present study, the overall deferral rate was 5.99%, which is comparable to rates reported in Indian studies such as Bahadur S et al.⁵ (9.0%) and Agnihotri N et al.⁶ (8.4%).

However, it is lower than some reports, possibly reflecting differences in donor selection criteria and population characteristics.

A marked male predominance (97.03%) was observed, consistent with findings from Unnikrishnan B et al.⁷ and Patel EU et al.⁸ where sociocultural factors and higher prevalence of anaemia among females limit female participation in blood donation. The female deferral rate (49.07%) in the present study was significantly higher than

males, similar to observations by Bahadur et al.⁵ and Agnihotri et al.⁶ where anaemia was the predominant cause.

The highest annual deferral rate in 2024 (7.82%) may reflect improved screening practices or temporal variations in donor health. Comparable year-to-year variability has been reported by Arslan O9, emphasizing the role of screening policies and awareness programs in influencing deferral trends.

The predominance of temporary deferrals (94.45%) in this study is in agreement with findings by Agnihotri 6 and Unnikrishnan et al.⁷ where temporary causes accounted for more than 85–90% of deferrals. This is encouraging, as these donors can potentially be recruited again with proper counselling and follow-up.

Among permanent deferrals, chronic hypertension (35.89%) was the most common cause, followed by thyroid disorders and diabetes. Similar trends have been reported by Chaudhary RK et al.¹⁰ highlighting the growing burden of non-communicable diseases affecting donor eligibility.

Regarding temporary deferrals, anaemia (28.14%) was the leading cause, particularly among females. This is consistent with studies by Bahadur et al.⁵ and Unnikrishnan et al.⁷ where anaemia was the most frequent reason for deferral. Other causes such as underweight, medication intake, alcohol consumption, and recent donation were also comparable with previous Indian and international studies. Female-specific factors such as menstruation further contributed to temporary deferrals,

emphasizing the need for targeted interventions to improve female donor participation.

Deferrals due to infections (dengue, typhoid), vaccination, and minor procedures reflect strict adherence to donor selection criteria aimed at minimizing transfusion-transmitted infections. The implementation of advanced screening methods such as nucleic acid testing (NAT) has significantly reduced the window period for detection of infections, thereby improving blood safety.^[11]

Despite its importance, donor deferral may negatively impact donor motivation. Studies by Sharma UK et al,^[12] have shown that proper donor notification, counselling, and follow-up improve donor return rates and compliance. Therefore, strengthening donor education and communication strategies is essential to maintain a stable donor pool.

CONCLUSION

Deferring donors is an important step to keep both donors and recipients safe, and the overall deferral rate in this study was 5.99%. A much higher deferral rate among females, mainly due to anaemia, shows the need to focus on their health and nutrition. Since most deferrals were temporary, many donors can return if they are properly guided and followed up. Long-term conditions like hypertension were the main reasons for permanent deferral, reflecting changing health trends. Better awareness, counselling, and communication can help retain donors and ensure a steady supply of safe blood.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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