

A 6 YEAR RETROSPECTIVE STUDY OF BLOOD DONOR DEFERRAL IN BLOOD CENTRE OF A TERTIARY CARE HOSPITAL IN NORTHEAST INDIA

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Received: 26-06-2025

Accepted: 25-07-2025

Published: 05-08-2025

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ABSTRACT

INTRODUCTION: Blood transfusion is a life-saving intervention. Around the globe, there has always been an issue with the lack of blood donors. For a variety of reasons, many prospective blood donors are turned away from blood transfusion facilities. Deferrals result in the loss of valuable blood and the components that are still usable for transfusion. Analysing the reasons and frequency of these deferrals can help in reducing such wastage. **AIMS AND OBJECTIVES:** To study the deferral pattern and different causes of blood donor deferral in the blood bank of TMCH, Tezpur. **MATERIALS AND METHODS:** It is a record-based retrospective study conducted at Tezpur Medical College and Hospital over a period of 6 years from January 2018 to December 2023. All the donors were screened in accordance with the National guidelines. Data was analyzed with respect to age, sex, type of donors, type of deferral, and reasons for deferral. **RESULTS:** A total of 2213 (6.10%) donors were deferred out of 36249 registered donors. Registered donors consisted of 33700 (92.97%) males and 2549 (7.03%) females. Low haemoglobin (46.23%) was found to be the most common cause of deferring the donors, incidence of deferral of males (6.12 %) was more as compared to females (5.88%). Overall temporary deferrals were more (84.04%) as compared to permanent deferrals (15.96%). **CONCLUSION:** Regular analysis of the causes, frequency, and deferral patterns of blood donors, along with close follow-ups of temporarily deferred donors, will help maintain and recruit a healthy donor pool on a larger scale.

Keywords: Blood Donors, Blood Transfusion, Anaemia, Retrospective Studies, Donor Selection

INTRODUCTION

Blood transfusion is a life-saving intervention and saves millions of lives every year in casualties, surgical procedures, and medical emergencies. Around the globe, there has always been an issue with the lack of blood donors.¹ For a variety of reasons, many prospective blood donors are turned away from blood transfusion facilities. Deferrals result in the loss of valuable blood and the components that are still usable for transfusion. Analyzing the reasons and frequency of these deferrals can help in reducing such wastage.^{1,2}

MATERIALS AND METHODS

This retrospective study was conducted in the hospital-based blood bank of Tezpur Medical College and Hospital, Tezpur. Six year records of all blood donors including voluntary and replacement blood donations in the blood bank as well as in outdoor camps from 1st January 2018 – to 31st December 2023 were reviewed and the data was analyzed. The criteria for blood donor selection and deferral in India are provided by the Drugs and Cosmetic Act 1940 & Rules 1945 supplemented by the Standards for Blood Banks and Blood Transfusion Services by the National AIDS Control Organisation (NACO) and Transfusion Medicine Technical Manual by Ministry of Health and Family Welfare (MoHFW), Government of India (GOI). The donors were evaluated based on a brief clinical history which included a questionnaire enquiring history of any current illness, medication, allergy, previous history of jaundice, typhoid, malaria, tuberculosis, or any indulgence in high-risk behavior. Thereafter, a brief physical examination including blood pressure, pulse rate, and temperature was done and hemoglobin estimation of the donor was performed.

RESULTS:

During the six-year study period from January 2018 to December 2023, a total of 36,249 donors were registered at the centre of Tezpur Medical College and Hospital. Of these, 33,700 (92.97%) were males and 2,549 (7.03%) were females. Out of the total registered donors, 2,213 (6.10%) were deferred from donating blood. The deferral rate was slightly higher among males (6.12%) compared to females (5.88%). Low hemoglobin level emerged as the most common cause of deferral, accounting for 46.23% of the cases. Deferrals were categorized into temporary and permanent, with temporary deferrals constituting the majority (1,860 cases, 84.04%) and permanent deferrals accounting for 353 cases (15.96%).

TABLE 1: Blood Donor's Data for FY 2018 to 2023

YEAR	TOTAL DONORS REGISTERED	MALE	FEMALE
2018	4053	3720	333
2019	4399	4005	394
2020	4186	3800	386
2021	5253	4900	353
2022	8756	8251	505
2023	9602	9024	578
TOTAL	36249	33700 (92.97%)	2549(7.03%)

TABLE 2: Donor deferral profile according to Gender

GENDER	NO. OF REGISTERED DONORS (%)	NO. OF DEFERRED DONORS (%)	GENDER SPECIFIC % OF DEFERRELS
MALE	33700 (92.97%)	2063(5.69%)	6.12 %
FEMALE	2549 (7.03%)	150(0.41%)	5.88 %
TOTAL	36249	2213 (6.10%)	

TABLE 3: Distribution of blood donation deferral by causes

	TOTAL NO OF DONORS DEFERRED	PERCENTAGE OF DEFERRAL
TEMPORARY	1860	84.04%
PERMANENT	353	15.96%
TOTAL	2213	

TABLE 4: Causes of temporary deferrals and their proportions.

Cause of deferral	No. of cases deferred	% of deferral
Low hemoglobin	860	46.23%
Medicines	189	10.16%
Hypertension/Hypotension	220	11.82%
Previous donation within 3 months	95	5.10%
Over age or under age	39	2.09%
Alcohol	156	8.38%
Under weight	112	6.02%
Tattoo	38	2.04%
Skin diseases and Allergic reactions	36	1.93%
Jaundice	32	1.72%
Vaccination	25	1.34%
Others	58	3.11%
Total	1860	

TABLE 5 : Causes of Permanent Deferrals and their proportions

Reasons for Permanent Deferral	Total	% of Permanent Deferral
Hepatitis B	90	25.4%
HIV	80	22.6%
Hepatitis C	71	20.1%
Cardiac disease	37	10.4%
Chronic Renal Disease	30	8.49%
Diabetes	22	6.23%
Asthma	13	3.68%
Malignancy	10	2.83%
Total	353	

DISCUSSION

The safety and adequacy of the blood supply are critically dependent on the selection of healthy blood donors. In this retrospective study conducted over six years at a tertiary care hospital in Northeast India, the overall deferral rate was found to be 6.10%, which is consistent with reports from other regions of India, where deferral rates range from 5% to 15% depending on the study population and local demographics. A notable finding of this study is that low hemoglobin levels accounted for the majority (46.23%) of all deferrals. This is in agreement with previous studies by Bahadur et al. and Sharma et al., which also identified anemia as the leading cause of temporary deferral, particularly among female donors. However, in our study, despite females forming a smaller proportion of the donor pool (7.03%), the deferral rate among them (5.88%) was slightly lower than that of males (6.12%). This could be attributed to more stringent pre-donation self-selection among female donors or underrepresentation due to sociocultural factors. Temporary deferrals constituted the majority (84.04%), which is a positive finding, as these donors can potentially be re-integrated into the donor pool with proper management and counselling. Conditions such as low haemoglobin, recent illness, or temporary medication use are reversible, and efforts should be made to educate and follow up with these donors. Implementing pre-donation screening camps to detect correctable conditions like anaemia can help reduce deferral rates at the time of donation. Permanent deferrals accounted for 15.96% of the cases and typically involved conditions such as a history of jaundice, chronic illnesses, high-risk behaviours, or other contraindications as per national guidelines. These donors are excluded to maintain the safety of both donors and recipients and to comply with transfusion safety protocols laid out by the Ministry of Health and Family Welfare and NACO. The year-wise distribution of donors showed a steady increase in voluntary participation, with the highest numbers recorded in 2022 and 2023. This rise may reflect growing awareness and outreach efforts. However, the gender gap in donor participation remains evident, indicating the need for strategies aimed at encouraging female donors through community education and reassurance regarding safety. Comparing with

international data, countries with robust donor education, pre-screening measures, and nutritional interventions report lower deferral rates. Hence, integrating similar practices in Indian settings, especially in resource-limited and rural areas, may significantly improve donor eligibility. Blood donor deferral rates found in the literature, range from 2.56% to 35.6%. A study by Bahadur et al.² reported a 9% deferral rate, 12.4% by Rahman et al.³, and 11.16 % by Gajjar et al.⁴. In our study donor deferral rate is found to be 6.10%. Most of the donors are males as compared to females. This finding was similar to a study from South India by Unnikrishnan et al.⁵ who reported 95.13% male and 4.8% female donors. In the present study, more deferrals were due to temporary reasons (84.04%). In previous studies, Krishna MC et al.⁶ report 93% temporary and 7% permanent

deferral. Similarly, Custer et al reported⁷ 68.5% temporary and 31.5% permanent donor deferral. Measures such as proper education of donors and raising general awareness for blood donation could help retain temporarily deferred donors, thus can be a strategy for the long-term retention of motivated blood donors. Overall, the data underscores the need for regular audits of donor deferral trends. Such evaluations provide insights into modifiable risk factors, help design targeted interventions, and ultimately strengthen the blood donation system by ensuring a safe and sustainable donor base.

CONCLUSION

This six-year retrospective study highlights that blood donor deferrals constitute a significant proportion (6.10%) of all prospective donors, with low hemoglobin being the leading cause. Temporary deferrals were considerably more common than permanent ones, emphasizing the importance of targeted interventions to reduce avoidable deferrals and improve donor retention. The slightly higher deferral rate among males may reflect their predominance in the donor population rather than a gender-specific risk. Regular monitoring and analysis of deferral trends, along with appropriate counseling and follow-up of temporarily deferred donors, are essential to maintain a safe and adequate donor pool. Additionally, public awareness programs focusing on correctable conditions like anemia and adherence to donor eligibility criteria can further enhance the efficiency and reliability of blood transfusion services.

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