e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2026; 18(4); 1222-1226

Original Research Article

Analysis of Blood Donor Deferral Pattern in a Tertiary Care Hospital: A Retrospective Hospital Based Study

***Sindhuja K.[1], Sandhya G.[2], Rajendra Prasad V.[3]**

[1*]Associate Professor, Department of Transfusion Medicine, Government General Hospital, RIMS, Kadapa, Andhra Pradesh, India

[2]Assistant Professor, Department of Transfusion Medicine, Government General Hospital, RIMS, Kadapa, Andhra Pradesh, India

[3]Assistant Professor, Department of Transfusion Medicine, Government General Hospital, RIMS, Kadapa, Andhra Pradesh, India

Received: 01-01-2026 / Revised: 15-02-2026 / Accepted: 21-03-2026

Corresponding author: Dr. Sindhuja K.

Conflict of interest: Nil

Abstract

Background: Blood transfusion is a critical component of modern healthcare, playing a vital role in the management of trauma, surgical procedures, hematological disorders, and obstetric emergencies. The safety and adequacy of the blood supply largely depends on the availability of healthy, voluntary, non-remunerated blood donors.

Aim & Objectives: To evaluate and analyze the patterns and causes of blood donor deferrals in a tertiary care hospital and to determine the incidence of blood donor deferrals among all registered donors during the study period.

Materials and Methods: This is a retrospective hospital based study conducted at the Department of Transfusion Medicine, Government General Hospital and Medical College, Kadapa, Andhra Pradesh.

Results: A total of 9336 blood donors, including voluntary, relative and replacement donors were registered during the study period out of which 171 donors were deferred.

Conclusion: This emphasizes the need for targeted strategies to reduce the deferral rate. By addressing the prevalent health issues that cause deferrals, we can work toward improving the overall donation rate, thereby ensuring a more robust and reliable blood supply. This approach not only enhances donor retention but also strengthens the effectiveness of transfusion services, ultimately benefiting patient care.

Keywords: Blood Donor, Donation Criterial, Temporary Deferral, Permanent Deferral, Young Age, Males, Donor Counselling.

DOI: 10.25258/ijcpr.18.4.195

Introduction

Blood transfusion is a critical component of modern healthcare, playing a vital role in the management of trauma, surgical procedures, hematological disorders, and obstetric emergencies. The safety and adequacy of the blood supply largely depends on the availability of healthy, voluntary, non-remunerated blood donors. However, not all potential donors are eligible to donate; a significant proportion are deferred either temporarily or permanently due to medical, behavioral, or other reasons [1,2].

Donor deferral is an important quality control measure to safeguard both the donor's health and the recipient's safety. While necessary, deferrals can negatively impact donor retention and reduce the overall pool of available donors [3]. High deferral rates may discourage potential donors from returning, thereby threatening blood supply sufficiency. Conversely, understanding the causes and patterns of donor deferrals can help in formulating strategies for donor education, pre-donation counseling, and policy improvements [4].

Analysis of donor deferral patterns provides insights into the demographic, medical, and behavioral factors that influence blood donation eligibility. Such data are essential for optimizing donor recruitment, minimizing deferrals, and strengthening blood transfusion services to meet the ever-increasing clinical demands [5].

Materials & Methods

The present study is a retrospective hospital based study carried out in the Blood Centre, Department of Transfusion medicine, Government General Hospital and Medical College, Kadapa, Andhra Pradesh, India for a period of one year from January to December 2024. All blood donors were screened as per guidelines of the National AIDS Control Organization (NACO) provided in Standards for Blood Banks and Blood Transfusion Services under the Drugs and Cosmetic Act 1940.

Records of demographic details of donors, interval between two donations, physical examination, haemoglobin percentage, along with the reasons for permanent and temporary deferrals were taken into consideration.The study was approved by the Institutional Ethics Committee, Government Medical College, Kadapa. Donor confidentiality will be strictly maintained; no personal identifiers will be used during data analysis. Data was entered in Microsoft Excel and analyzed using SPSS version 26.0 (IBM Corp., USA) with descriptive statistics including mean and percentage.

Results

A total of 9336 blood donors, including voluntary, relative and replacement donors were registered during the study period out of which 171 donors were deferred.

The incidence of deferral was 1.83%. Out of total 171 deferred donors males were 168(1.8%), and females were 3(0.03%). [Table 1]

Table 1: Demographics of donors and deferral rate.

Gender	Registered for donation (N)	No. of deferrals (N)	% of deferrals
Male	9287	168	1.8%
Female	49	03	0.03 %
Total	9336	171	1.83%

The age distribution of deferred donors showed that the majority were younger, with 92.4% (158 individuals) falling within the 18- to 40-year age group. Another 7% (12 individuals) were aged between 41 and 50 years, and 0.6% (1 individuals) were aged between 51 and 60 years (Table 2).

Table 2: Age distribution of the deferred donors.

Age group of deferred donors	Number of donors deferred (N)	% of donors deferred
18-40	158	92.4%
41-50	12	7%
51-60	01	0.6%
Total	171	100%

Out of total 171 deferred donors, Temporary deferrals were more common constituting 157 (91.8%) compared to 14 (8.2 %) for permanent deferrals.[Table 3]

Table 3: Frequency of temporary and permanent deferrals.

Type of deferral	Number of deferrals	Male deferrals N (%)	Female deferrals N (%)	% of deferral
Temporary	157	154(91.7)	03(100)	91.8%
Permanent	14	14(8.3)	00	8.2%
Total deferral	171	168	03	100%

Maximum donor deferral rate for temporary causes was due to anemia (37.8%) followed by medical causes(15.9%), followed by tattooing/ear and body piercing(15.8%) followed by dental problems(7%), dermatological problems(6.4%), donor refusal or their blood donation interval less than 3 months (5.7%),Alcohol consumption(3.8%),History of surgery (last 6 months)(3.2%),Vaccination(1.9%) followed by age and weight criteria(2.4%).[Table 4]

Table 4: Factors leading to temporary deferral.

Temporary Deferral Cause	Number of deferrals	% of temporary deferrals	% of total deferral
Anemia	59	37.8	34.5
Tattooing / Ear piercing	25	15.9	14.55
Medical cases	25	15.8	14.55
Dental problems	11	7	6.4
Skin related problems	10	6.4	5.8
Donation in last 3 months	9	5.7	5.3
Alcohol consumption	6	3.8	3.5
History of surgery (last 6 months)	5	3.2	2.9

Vaccination	3	1.9	1.8
Age criteria	2	1.3	1.2
Weight criteria	2	1.2	1.2
Total	157	100	91.7

The most common cause of permanent deferral was high blood pressure with end organ disease (71.4%) followed by epilepsy (14.3%), Asthmatics on steriods(7.15%) and uncontrolled diabetes mellitus (7.15%) [Table 5]

Table 5: Factors leading to permanent deferral.

Permanent Deferral Cause	Number of deferrals	% of permanent deferrals	% of total deferral
High BP with end organ disease	10	71.4	5.8
Epilepsy	2	14.3	1.2
Asthma	1	7.15	0.65
Diabetes Mellitus	1	7.15	0.65
Total	14	100	8.3

Discussion

Blood donor selection criteria based on science, informed medical opinion and regulatory rules influence donor demographics and lead to specific deferral pattern[6].In the present study, we aimed to analyse donor deferral characteristics in terms of demographics, frequency of donation, interval between donation, reason for deferral and deferral is permanent or temporary.

Out of 9336 registered donors, 9165 successfully donated, while 171 (1.83%) were deferred. In our study, the donor pool was overwhelmingly male (9287;99.5%) compared to females (49;0.5%). This finding was similar to studies conducted by Kokani MJ,[7] who reported 94.2% male and 5.8% female donors, Unnikrishnan et al,[8] who reported 95.13% males and 4.8% female donors.

The deferral rate in present study was 1.83%. It was comparable with study conducted by gurika et al(9) with 2.3%, Jethani et al [10] in Rajasthan who reported 2.56% as deferral rate. High deferral incidence was shown in studies like Zou et al [11] (12.8%), Chaudhary et al [12] (16.4%).

The present study reveals a higher rate of deferrals among individuals aged 18-40 years, making up 92.4% of all deferrals. This finding is consistent with data reported by Sundar et al. [13] and Shrivastava et al. [14]. While young adults tend to be the most eligible and readily available donors compared to older individuals, they also exhibit a higher deferral rate within this demographic group.

Male donors experienced a deferral rate of 98.2%, while female donors had a deferral rate of 1.8%. These findings are consistent with the research conducted by Agnihotri et al. [1] Sundar et al. [13], Gaajreetal [15]. The lower participation and deferral rates among female donors are largely attributed to the misconception that women are less suitable for blood donation due to a higher prevalence of anemia, as well as fear and lack of awareness regarding the donation process.

The temporary deferral rate, at 91.8%, surpasses the permanent deferral rate of 8.2%, aligning with earlier research by Custer et al. [3], Kulkarni [16],Chauhan et al. [17],John et al. [18]. In the current study, anemia emerged as the leading cause of temporary deferral, accounting for 37.8% of cases, followed by medical causes at 14.55%. Numerous studies have consistently identified anemia as the predominant reason for temporary deferral. The major cause of anaemia was iron deficiency anaemia. The donors deferred should be advised proper diet, iron supplements with awareness health programmes at the community levels.

In the current study, hypertension emerged as the leading cause of permanent deferral, accounting for 71.4% of cases. These findings are consistent with those reported in previous studies conducted by Chauhan et al. [17], Kujur et al. [19], Bhimani et al. [20], Faheem et al. [21], and Sabari Priya et al. [22].

The study observed higher deferral rates among males and younger individuals, which underscores the need for targeted strategies to address specific demographic challenges.

Regular monitoring and stringent health checks during the donation process also contribute to maintaining the overall safety of blood transfusions [23]. Assessments of social behaviors and lifestyle factors are equally important. This includes evaluating factors such as alcohol consumption, drug use, and travel history, which can impact the donor's eligibility and the safety of the blood supply. By understanding these social and behavioral aspects, blood banks can better manage deferral risks and address issues that may contribute to higher deferral rates [16].

To ensure a safe and adequate supply of blood for recipients, it is essential to implement a comprehensive strategy involving detailed donor histories, thorough physical and clinical

examinations, and evaluations of social behaviors. A detailed donor history provides critical insights into potential health risks and past medical conditions that could affect the donor's eligibility and the safety of the donated blood. This history helps identify any pre-existing conditions or lifestyle factors that might disqualify a donor or increase the risk of complications, thereby enabling the BTS to make informed decisions regarding donor acceptance [21]. The integration of these practices into blood donation strategies will aid in overcoming the challenges associated with donor deferral and improve overall operational efficiency.

Conclusion

In our study Donor deferral rate was 1.83%,. Temporary causes accounted for most deferrals, particularly anemia, medical conditions, tattooing/ear piercing, and Permanent causes were mainly related to hypertension and chronic diseases. Female donor participation was extremely low, highlighting the need for targeted awareness and health interventions.

This emphasizes the need for targeted strategies to reduce the deferral rate. By addressing the prevalent health issues that cause deferrals, we can work toward improving the overall donation rate, thereby ensuring a more robust and reliable blood supply. This approach not only enhances donor retention but also strengthens the effectiveness of transfusion services, ultimately benefiting patient care.

It is necessary that every blood bank as well as health professional should analyse pattern of donor deferral and health status in their own region so that unnecessary deferral especially due to temporary reasons can be avoided. Donor deferral can be reduced with health awareness and intensive health education.

References

1. Agnihotri, N. Whole blood donor deferral analysis at a center in Western India. Asian Journal of Transfusion Science. 2010; 4(2):116–22.
2. Bahadur, S., Jain, S., Goel, R. K., Pahuja, S., & Jain, M. Analysis of blood donor deferral characteristics in Delhi, India. Southeast Asian Journal of Tropical Medicine and Public Health.2009; 40(5):1087–91.
3. Custer, B., Chinn, A., Hirschler, N. V., Busch, M. P., & Murphy, E. L. The consequences of temporary deferral on future whole blood donation. Transfusion.2004;44(4): 565–72.
4. Charles, K. S., Hughes, P., & Gadd, R. Analysis of blood donor deferral in Trinidad and Tobago. Transfusion Medicine.2010; 20(1):11–4.
5. Sharma, T., Agnihotri, S. K., & Bhatt, N.Pattern of blood donor deferral and its effect on donor retention: Study at a tertiary care center. Journal of Family Medicine and Primary Care.2020; 9(6):2991–6.
6. Newman B. Blood donor suitability and allogenic whole blood donation. Transfusin Med Rev. 2001;15(3):234-44.
7. Kokani M.J, Menapara C.B. Evaluation of different criteria for blood donor deferral in a hospital affiliated with teachinginstitute. Trop J Path Micro. 2019;5(4):227-232.
8. Unnikrishnan B, Rao P, Kumar N, Ganti S, Prasad R, Amarnath A, et al. Profile of blood donors and reasons for deferral in coastal South India. Australas Med J. 2011;4:379– 85
9. Gurika, Sonia Gupta, Rajesh Kumar, Priya Bansal. To determine the blood donor deferral pattern and its causes among blood donors in tertiary care hospital. Int J Health Sci Res. 2024; 14(8):428-434.
10. Jethani N, Goyal V, Pachori G, Agrawal S, Kasliwal N, Ali G. Analysis of predonation blood donor deferral characteristics in Ajmer (Rajasthan) region. Int J Med Sci Public Health. 2016;5:2435-42.
11. Zou S, Musavi F, Notari EP, Rios JA, Trouern-Trend J, Fang CT. Donor deferral and resulting donor loss at the American Red Cross Blood Services, 2001 through 2006. Transfusion. 2008;48(12):2484–6.
12. Chaudhary RK, Gupta D, Gupta RK. Analysis of donor-deferral pattern in a voluntary blood donor population. Transfusion Med. 1995;5(3):209–12.
13. Sundar P, Sangeetha SK, Seema DM, Marimuthu P, Shivanna N. Pre-donation deferral of blood donors in South Indian set-up: An analysis. Asian Journal of Transfusion Science 4(2): 112-115
14. Shrivastava M, Shah N, Navaid S, Agarwal K, Sharma G. Blood donor selection and deferral pattern as an important tool for blood safety in a tertiary care hospital. Asian J Transfus Sci. 2016 Jul-Dec;10(2):122-6.
15. Gaajre AV, Khatib Y, Patel R, Oraon AP. Evaluation of the causes of deferral among blood donors: a retrospective study.Ann Pathol Lab Med. 2016;3:244–248.
16. Kulkarni N.Analysis of donor deferral in blood donors.J Evol Med Dent Sci. 2012;1:1081–1087.
17. Chauhan C, Chauhan R, Awasthi S, Dutta S, Joshi H. Pattern and outcome of donor deferral - need of hour. Int J Res Med Sci. 2017;6:289–292.
18. John F, RithuVarkey M.Evaluation of blood donor deferral causes in a tertiary hospital, south India. Int J Biomed Adv Res. 2015;6:253–258.

19. Kujur D, Tiwari D, Bagde D, Bombeshwar D, Behera D. Assessment of blood donor selection and deferral pattern in a tertiary care hospital in central India. Trop J Pathol Microbiol. 2020;6:83–88.
20. Bhimani RK, Joshi P, Kamaliya A, Khodifad M, Kachhadiya K. Evaluation of blood donor deferral causes in a tertiary care center. Int J Clin Diagn Pathol. 2020;3:150–152.
21. Faheem K, Nusrath N, Sushma C, Sujatha C, Prasad BV, Venkatalakshmi Venkatalakshmi, Anuradha B.Pattern of blood donor deferral system - in a tertiary care teaching hospital - an evaluation and fact finding analysis. IOSR J Dent Med Sci. 2019;18:53–58.
22. Sabari Priya E.Retrospective analysis of patterns of donor deferral among blood donors in a tertiary care hospital. Int J Contemp Med Res. 2019;6:6–9.
23. Rabeya Y, Rapiaah M, Rosline H, Ahmed SA, Zaidah WA, Roshan TM.Blood pre-donation deferrals--a teaching hospital experience. Southeast Asian J Trop Med Public Health. 2008; 39:571–574.