

Research Article

The Deferral Dilemma: Analysing why Whole Blood Donors are Turned Away at a Tertiary Care Blood Centre, New Delhi

Gupta Surbhi^{1*}, Mittal Anita², Choudhary Irfan³

^{1*,3}MD, Senior Resident, Immunohematology and Blood Transfusion department (Blood centre), ESIC Medical College and Hospital, Basaidarpur, New Delhi.

²MD, Senior Administrative Grade (SAG), Immunohematology and Blood Transfusion department (Blood centre), ESIC Medical College and Hospital, Basaidarpur, New Delhi.

Corresponding Author: Dr Surbhi Gupta

MD, Senior Resident, Immunohematology and blood transfusion department, 3rd floor ESIC Medical College and Hospital, Basaidarpur, New Delhi, 110015.

E-mail: ^{1*}Surbhi1093gupta@gmail.com

Received: 08.04.26, Revised: 04.05.26, Accepted: 01.06.26

Source(S) of Support: Nil

Conflicting Interest: There are no conflicts of interest.

ABSTRACT

Background: Donor screening is essential for safety because it prevents adverse reactions through appropriate selection criteria. Recruitment can be hampered by donor deferrals, thus it's critical to understand and resolve the reasons behind them.

Aims: To Analyse the deferral pattern among whole blood donors at a tertiary care blood centre, New Delhi.

Settings and Design: This is a retrospective record-based study for a period of 3 years from September 2022 to August 2025 at immunohematology and blood transfusion department at ESI Medical college and Hospital, Delhi.

Methods and Material: Deferral data was collected by donor deferral register and monthly deferral report. Donors were deferred as per Drugs and Cosmetic Act of 1940 and the DGHS guidelines. Donors who were deferred were analysed according to age, sex, and reasons for deferral.

Statistical analysis used: Statistical analysis was done using Microsoft Excel, and data were expressed in numbers and percentages. Descriptive statistics were employed to summarize donor demographics, deferral rates among males and females, and to assess the causes of temporary and permanent deferrals.

Results: A total number of 24335 potential blood donors were registered for blood donation, out of which 4467 donors were deferred. Overall deferral rate was 18.35%. The deferral rate among male and female was 16.78% and 63.04% respectively. Temporary and permanent deferrals accounted for 76.30% and 23.70% respectively.

Conclusions: Donor deferral is the critical step in the donor selection criteria. Temporary deferred donors may be recruited back to the donor pool through appropriate counselling and management.

Keywords: Donor Selection, Donor Deferral, Recruitment, Temporary, Permanent, Deferral Rate.

INTRODUCTION

Blood transfusions save many lives every year all across the world. Blood is extremely important for human health, particularly in emergency situations where it provides vital support.¹ Blood transfusion services are the foundation and essential component of health care procedures as whole blood and its components are required to treat serious haemorrhages brought on by trauma, surgeries and obstetric complications.² An uninterrupted pool of blood donors is required to successfully supply these blood demands. The Drug and

Cosmetic Act of 1940 and the handbook (Director-General of Health Services MOH and FW, Govt. of India) establish guidelines for donor selection and deferral.³ For a variety of reasons, many blood donors are unable to successfully donate blood, either permanently or temporarily. "Deferred" donors are people who are not eligible from giving blood. Donors who are deferred frequently have negative emotions regarding both the blood donation procedure and themselves. Furthermore, there is a decreased likelihood that these donors will donate blood again.⁴ It is crucial to comprehend

the rationale for donor deferrals in order to strategically reengage deferred blood donors in the future. The overall efficacy and durability of blood donation programs are enhanced by this understanding.⁵ A blood donor deferral study could provide insight on the general population's health. The recruitment strategy can be guided by an understanding of the rate and reasons behind donor deferral.⁶ Millions of lives are saved by blood transfusions every year, yet getting timely and safe blood is still difficult, especially in underdeveloped nations.⁷ In light of this, the current study was designed to analyse the donor deferral rate as well as the causes of deferral within a whole blood donor community.

SUBJECTS AND METHODS

Study Design: This single-centre retrospective record-based study was done to examine the donor deferral rate and various deferral causes for period of 3 years from September 2022 to August 2025 at Immunohematology and Blood Transfusion Department at ESI Medical college and Hospital, Delhi, on both voluntary and replacement donors, whether in-house or in camp. A total number of 24335 blood donors were registered for blood donation.

Data Collection: The data of blood donor deferrals are collected by deferral register and monthly deferral report. The deferral causes were divided into permanent and temporary. Donors are evaluated physically for weight, age, and medical examination for blood pressure and haemoglobin. All donors were age group of 18 to 60 for first-time blood donors and 65yr for repeat blood donors. Standard pulse rate 60-100, blood pressure systolic 100 - 140, diastolic 60-90, body temperature 37.2-37.7 degrees Celsius, and haemoglobin above 12.5 gm/dl were selected for donation. Informed consent of all donors was taken.

Study Population: Inclusion criteria: All the blood donors who were deferred during the medical examination and donor questionnaire as per The Drug and Cosmetic Act of 1940 and the handbook (Director-General of Health Services MOH and FW, Govt. of India) guidelines as included in the Standard Operating Procedure (SOP) of the blood centre were included in the study.⁸

Exclusion criteria: The donors who were fit as per The Drug and Cosmetic Act of 1940 and the handbook (Director-General of Health Services MOH and FW, Govt. of India) guidelines as included in the SOP of the blood centre were excluded from the study.⁸

Ethics Statement: Institutional Ethical Committee approval was taken.

Statistical Analysis: Statistical analysis was done using Microsoft Excel, and data were expressed in numbers and percentages. Descriptive statistics were employed to summarize donor demographics, deferral rates among males and females, and to assess the frequency of temporary and permanent deferrals.

The recorded deferral causes were aggregated into nine major categories (e.g., low haemoglobin, underweight, jaundice, medical, surgical, high risk, dog bite/vaccine and miscellaneous). The percentage contribution of each cause was calculated based on the grand total of all deferrals (4,467). Detailed breakdowns were performed for the most common categories (medical, surgical, high risk, miscellaneous and female deferrals). Data and results were presented in tables and charts.

RESULTS

During the study period from September 2022 to august 2025, the total number of donors accepted for blood donation were 19868 both in the outdoor voluntary blood donation camp and at the blood centre. A total number of 24335 potential blood donors were registered for blood donation in both blood centre and outdoor camps collection, out of which 19868 donors selected and 4467 donors were deferred. Voluntary donors (VD) were 13398 (67.43%) and replacement donors (RD) were 6429(32.35%). Males (23507 [96.60%]) were registered more as compared to females (828 [3.40%]). Overall deferral rate was 18.35%. Male donors selected for donation were 19562(98.45%) and female donors selected were 306 (1.54%). The deferral numbers among male donors were 3945 (88.30%) and among female donors 522 (11.70%) as shown in Table-1, Figure-1. The deferral rate among male was 16.78% and in female, deferral rate was 63.04%.

Table-1

Characteristics	Total no. of registrations	Percentage (%)	Total blood donors bleed	Total deferred blood donors
-----------------	----------------------------	----------------	--------------------------	-----------------------------

Male	23507	96.60%	19562	3945
Female	828	3.40%	306	522
Total	24335	100%	19868	4467

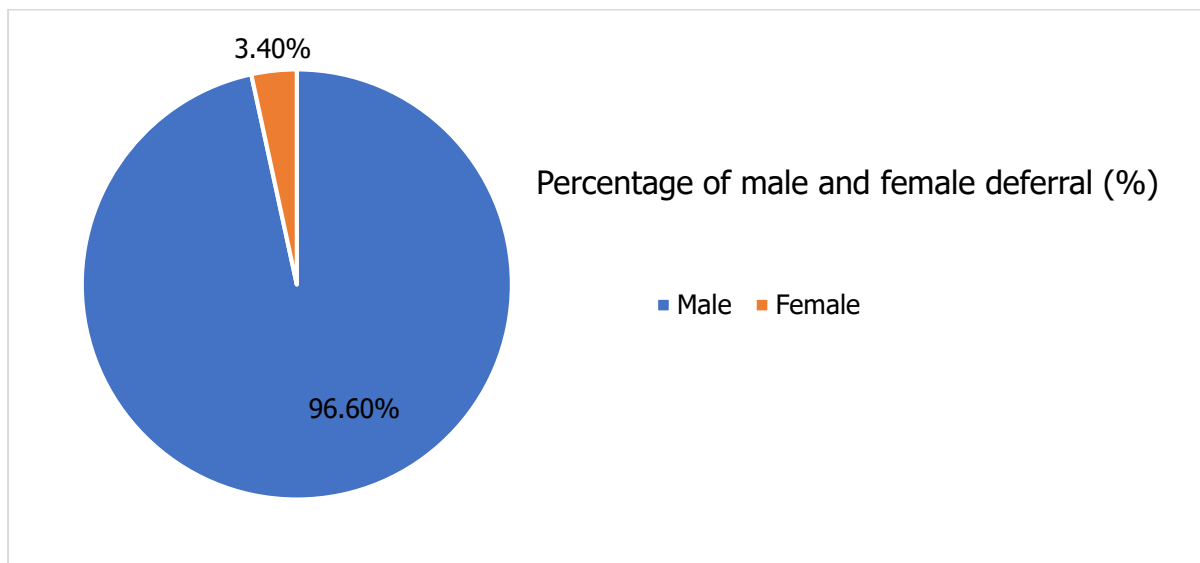


Figure-1: Pie Chart Showing Percentage of Male and Female Deferral. Percentage Deferral among Male Donors were 88.30% and Among Female Donors were 11.70%.

In the present study majority (47.50%) of the donors deferred were between 31-45 years followed by 18-30 years (41.71%), in age group

46-60 years (10.39%), then in age >60 years (0.22%) and <18 years (0.18%) as shown in, Figure-2

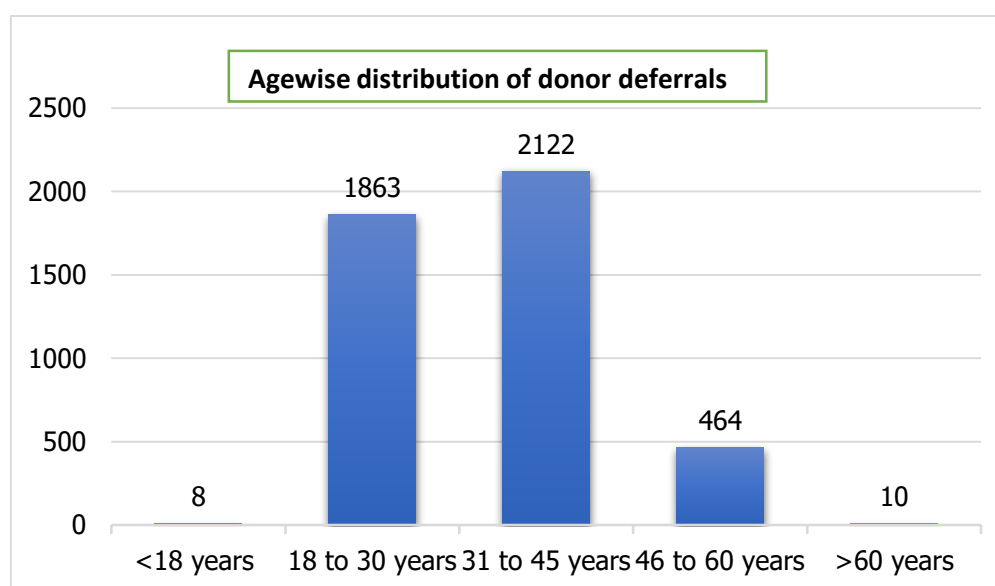


Figure-2: Bar Diagram Showing Age-Wise Distribution of Donor Deferrals.

Overall, the most common cause of deferral is medical reason (41.50%) specifically high blood pressure followed by low haemoglobin (20.80%), miscellaneous reasons (12.30%), dog bite/vaccination (6.80%), high risk behaviour (5.40%), surgical reasons (5.10%) polycythaemia (3.30%), jaundice (3.20%) and underweight (1.60%).

Most common cause of female deferral is low haemoglobin (84%) followed by medical reason (6.50%), miscellaneous (4.00%), dog bite/vaccine (2.00%), underweight (1.70%), surgical (1.50%), polycythaemia (0.20%), high risk (0.10%) and jaundice (0%) as given in figure-3.

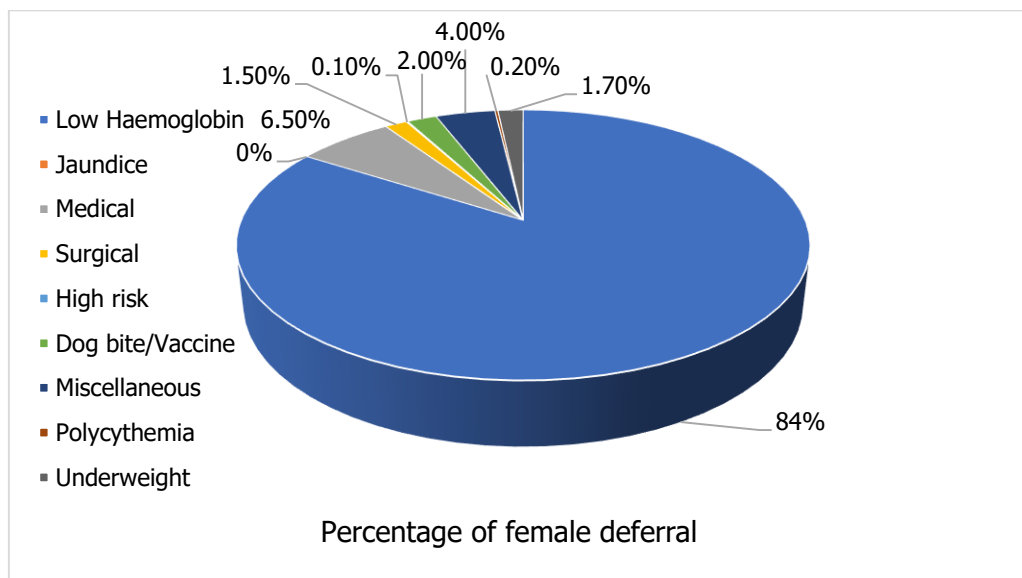


Figure-3: Pie Chart Showing Causes of Female Deferrals.

There were two categories of donor deferrals: temporary and permanent. Temporary deferrals accounted for 76.30% (3424 individuals) of all deferrals, while permanent deferrals accounted for 23.70% (1043). Most

common cause of temporary deferral is anaemia while the most common cause of permanent deferral is uncontrolled blood pressure. Causes of permanent deferral is given in table no. 3 and 4.

Table-3 Causes of Permanent Donor Deferrals

S.No.	Reasons	Deferred donors	Percentage (%)
1.	Uncontrolled hypertension	938	88.7%
2.	High risk behaviour (excluding tattoo and ear piercing)	72	6.8%
3.	Uncontrolled DM or on insulin	2	0.2%
4.	Heart disease	3	0.3%
5.	Neurological disease	9	0.9%
6.	Autoimmune disease	11	1.0%
7.	Age>65 years	5	0.5%
8.	H/o jaundice due to hepatitis B/C	5	0.5%
9.	Jail inmate	1	0.1%
10.	H/o Vasovagal reaction in previous 2 donations	11	1.0%
	Total	1057	100%

Table-4: Causes of Temporary Deferrals

S.No.	Reasons	Numbers	Percentage (%)
1.	Low hemoglobin (<12.5gm/dl)	928	27.2%
2.	Underweight (<45 kg)	59	1.7%
3.	Underage (<18 years)	8	0.2%
4.	On medication	275	8.1%
5.	Medical causes	531	15.6%
6.	Jaundice	139	4.1%
7.	Dog bite/Vaccine	303	8.9%
8.	Surgical causes	227	6.7%
9.	Tattoo/ear piercing	169	5%
10.	Alcohol	93	2.7%
11.	Inadequate sleep	146	4.3%

12.	Menstruation	14	0.4%
13.	Donation within 3 months	84	2.5%
14.	Fasting	70	2.1%
15.	Not willing to donate	70	2.1%
16.	Poor venous access	49	1.4%
17.	Hypotension	88	2.6%
18.	Hb > 17.5gm/dl	146	4.3%
19.	Breastfeeding	1	0.03%
20.	H/o blood transfusion <1year	1	0.03%
21.	Tobacco/Cigarette/Drug abuse	9	0.3%
	Total	3410	100%

DISCUSSION

The Blood Transfusion Service's main responsibility is to guarantee a timely, sufficient, and safe supply of blood and blood products, which is essential for the safety of both donors and recipients. A thorough donor screening procedure is necessary to accomplish this goal in order to protect donors' health and preserve the integrity of the blood supply. To detect any health issues and guarantee that only qualified individuals are approved for donation, a systematic and safe screening procedure is crucial.⁹ A sufficient supply of blood is more crucial, as is ensuring that neither the donor nor the receiver are harmed during the blood collection procedure. Donor selection criteria do this.¹⁰ There are regional and centre-specific variations in the rate and causes of deferral. Every year, the country suffers significant losses in the number of units available for transfusion due to donor deferral rates in blood centres, which range from 5 to 24%.¹¹

In this study, the overall blood donor deferral rate was 18.35%, which aligns with findings from similar studies conducted in India like Singh et al¹² having deferral rate of 18.1%, Zahiden et al¹³ 18.8%, Mangwana et al¹⁴ reported a deferral rate of 17.88% in a tertiary healthcare centre in North India, Chaudhary et al¹⁵ 16.4%, Bassi et al¹⁶ 16.71%. However, our findings differ from those of V et al¹⁷, Agnihotri et al¹⁸, Rabeya et al¹⁹, Sundar et al²⁰, Dr. Gurika et al⁶ who reported lower deferral rates in urban settings. Srivastava et al²¹ found a deferral rate of 11.5%, with most deferrals being temporary. This discrepancy may be attributed to higher awareness levels and better health conditions in urban populations compared to rural donors. Conversely, Charles et al²² and Shah R et al²³ reported a deferral rate as high as 35.6% and 33% respectively.

The most critical finding is the severe gender disparity in deferral rates. Gender-wise, female donors had a higher deferral rate (63.04%)

compared to males (16.78%), which aligns with studies by Singh et al¹² female (43.1%) and male (17.2%), Bassi et al¹⁶ female (41.67%) and male (15.11%), Vyasrao et al²⁵ female (40.7%) and male (8.2%), V et al¹⁷ female (54.5%) and male (4.5%), Chaudhary et al¹⁵ female (47%) and male (13.5%).

Most common cause of deferrals among males was medical reason in which specifically it was high blood pressure while the main deferral reason among females was low haemoglobin (83.72%). This finding strongly suggests a high prevalence of nutritional anaemia in the female population, necessitating dedicated public health and pre-donation educational efforts focused on improving iron status. Early-stage iron deficiency can be detected by pre-screening female donors using serum ferritin and haemoglobin tests. When ferrous sulphate supplements are administered on time as part of treatment, adequate iron levels are ensured, improving the donor's health and preserving the quality of donated blood.^[5]

Age-wise distribution, majority (47.50%) of the donors deferred were between 31-45 years followed by 18-30 years of age group (41.71%) which is contrast to other studies where maximum deferrals were in the age group of 18 to 30 years like 51.7% in Gurika et al⁶ 51.4% in Girish et al²⁴ 65% in Gaikwad et al²⁵ and 74.33% in study by Nagrekha Kulkarni²⁶. But according to a Tanzanian study²⁷, those 46 years of age and beyond had greater deferral rates (27.6%) than those in younger age groups (≤ 30 years). Furthermore, although precise frequencies were not given, a Chinese study^[28] found that deferred blood donors were more likely to be older than 35.

In the present study, temporary deferrals were more than the permanent deferral (76.30% vs. 23.70%). This was consistent with research by Shah et al²³ (87.55% vs. 12.45%), Sundar et al²⁰ (84% vs. 16%), and Attri N et al²⁹ (81.30% vs. 18.69). In the current study, anaemia was the most frequent cause of temporary deferral

(20.8%). This result was consistent with research conducted by Bahadur et al³⁰ (32.8%) and Priya et al³¹ (37.8%). In our study, uncontrolled high blood pressure accounted for 21% of permanent deferrals. It was observed that this was an incidental finding in a large number of donors. Study by Ramesh S. Patil et al³² reported similar results.

The dominance of the medical category and specifically high blood pressure (hypertension) as the single largest reason across all donors (50.54% of medical reasons) suggests that non-communicable diseases, particularly those influenced by lifestyle and stress, are a major hindrance to donation eligibility. Finally, the high rate of deferrals due to inadequate sleep and alcohol (combined 43.46% of miscellaneous reasons) highlights a deficit in donor knowledge regarding the necessary pre-donation eligibility criteria.

Conclusion and Recommendations:

In the current study, the deferral rate was moderate that is 18.35%. Temporary deferrals were seen to be greater than permanent deferrals. If temporary donors get appropriate counselling and management of the reason for their deferral, they may be recruited back to the donor pool. High blood pressure was the most common reason for donor deferral, followed by anaemia. Every blood bank and medical professional must examine the health state and donor deferral patterns in their local area in order to prevent needless deferrals, particularly those caused by transient circumstances. In order for females to contribute to the pool of healthy donors, special emphasis should be given to treating their anaemia.

Misinformation about donations and social and gender conventions continue to be significant obstacles to donor participation. Reducing deferrals and ensuring a sustainable, safe blood supply can be achieved by addressing these problems through focused education, youth involvement, and supportive donor policies.

The deferral analysis at ESI Medical College and Hospital Basaidarapur, New Delhi, identifies specific, actionable areas for improvement. The key interventions recommended are:

1. Targeted Anaemia Management: Implement focused campaigns and educational materials for female donors, including promoting iron-rich diets and potentially providing free point-of-care anaemia screening and follow-up.

2. Enhanced Hypertension Screening: Introduce a structured protocol for managing elevated BP during screening, including a mandatory rest period and a second check to rule out white-coat hypertension or temporary stress.
3. Improved Donor Education: Prioritize education on lifestyle factors (sleep, alcohol, food intake) immediately preceding donation to minimize deferrals due to other miscellaneous reasons.

Addressing these specific deferral patterns will not only improve donor yield but also contribute valuable insights into the public health status of the community served by the blood bank.

Limitations

This study has several limitations:

- [1] Because it is a retrospective study, its accuracy may be impacted by previously collected data that is inconsistent or incomplete.
- [2] Gender-specific deferral pattern might not be adequately captured by the smaller number of female donors.
- [3] Follow-up information on deferred donors to ascertain if they subsequently became eligible is absent from the study.
- [4] Religious convictions, cultural taboos, and gender standards are examples of sociocultural factors influencing donor deferrals that were not thoroughly investigated.
- [5] The results, which span the months from September 2021 to August 2025, might not be relevant to times outside of study's time frame.
- [6] Its findings cannot be generalized because it was carried out at a single tertiary care centre in Delhi.

Acknowledgement: I am thankful to all the faculty members of the department for their valuable inputs and encouragement during the course of this work.

REFERENCES

1. 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, 3:150-2. 10.33545/pathol.2020.v3.i3c.272
2. Jadon A, Bagai R. Blood transfusion practices in obstetric anesthesia. *Indian J Anaesth.* 2014 Sep;58(5):629-36. doi:

- 10.4103/0019-5049.144674. PMID: 25535427; PMCID: PMC4260311.
3. Marwaha N. Voluntary blood donation in India: Achievements, expectations and challenges. *Asian J Transfus Sci.* 2015 Apr;9(Suppl 1):S1-2. doi: 10.4103/0973-6247.157011. PMID: 26097329; PMCID: PMC4455102.
4. Lim JC, Tien SL, Ong YW. Main causes of pre-donation deferral of prospective blood donors in the Singapore blood transfusion service. *Ann Acad Med Singapore.* 1993; 22:326-31.[PubMed].
5. Singh JR, Husain S, Singh A, Singh S, Giri VP: Blood donor deferral pattern at tertiary care teaching institute in western Uttar Pradesh, India. *J Popl Ther Clin Pharmacol.* 2023, 30:1068-74.
6. 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. DOI: <https://doi.org/10.52403/ijhsr.20240849>.
7. World Health Organization. Blood safety and availability: recommendations. Geneva: World Health Organization; 2023 Jun.
8. Transfusion medicine technical manual. 2023
9. Dr.Nusrath. "Pattern of Blood Donor Deferral System - In A Tertiary Care Teaching Hospital - An Evaluation and Fact Finding Analysis." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 18, no. 6, 2019, pp 53-58.
10. Naveen Agnihotri. Whole blood donor deferral analysis at a center in Western India. *Asian J Transfus Sci.*2010; 4(2):116-122.
11. Tomasulo PA, Anderson AJ, Paluso MB, Gutschenritter MA, Aster RH. A study of criteria for blood donor deferral. *Transfusion* 2003;20(5):511-18.
12. Singh AK, Bharati JK, Shivhare A, Mohan Y, Singh N. Analysis of blood donor deferral pattern in Uttar Pradesh, India. *Bioinformation.* 2025 Jul 31;21(7):1942-1946. doi: 10.6026/973206300211942. PMID: 41170048; PMCID: PMC12569857.
13. Zahidin M, Saidin N, Ibrahim N, et al. (February 26, 2024) The Blood Donor Deferral Rate and the Reasons for Deferral at a Tertiary Care Teaching Institute in Northeastern Malaysia. *Cureus* 16(2): e54954. DOI 10.7759/cureus.54954.
14. Mangwana S et al. *Asian J Transfus Sci.* 2013 7:160. [DOI: 10.4103/0973-6247.115595].
15. Chaudhary RK, Gupta D, Gupta RK. Analysis of donor-deferral pattern in a voluntary blood donor population. *Transfus Med* 1995; 5:209-212.
16. Bassi, Rajni Singal, Poonam Kaur, Liveleen Kapoor, Urvashi Bansal, Sukriti. (2024). The Evaluation of pattern of whole blood donor deferrals in a tertiary care centre of North India. *Asian Journal of Pharmaceutical and Clinical Research.* 171-174. 10.22159/ajpcr.2024.v17i5.50314.
17. V S, R A, Haran A H, I SK, James S. Analysis of Blood Donor Deferral Pattern at a Tertiary Care Hospital in Chennai: A Cross-Sectional Retrospective Study. *Cureus.* 2024 Aug 22;16(8):e67541. doi: 10.7759/cureus.67541. PMID: 39310487; PMCID: PMC11416578.
18. Agnihotri N: Whole blood donor deferral analysis at a center in Western India . *Asian J Transfus Sci.* 2010, 4:116-22. 10.4103/0973-6247.67035.
19. 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 May;39(3):571-4. PMID: 18564700.
20. Sundar P et al. *Asian J Transfus Sci.* 2010 4:112. [PMID: 20859511]
21. 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;10(2):122-6. doi: 10.4103/0973-6247.187938, PMID 27605848
22. Charles KS, Hughes P, Gadd R, Bodkyn CJ, Rodriguez M. Evaluation of blood donor deferral causes in the Trinidad and Tobago National Blood Transfusion Service. *Transfus Med.* 2010 Feb;20(1):11-4. doi: 10.1111/j.1365-3148.2009.00968.x. Epub 2009 Sep 24. PMID: 19788640.
23. Shah R et al. *Asian J Transfus Sci.* 2013 7:63. [PMID: 23559769]
24. Girish CJ, Chandrashekhar TN, Ramesh BK, Kantikar SM. Pre-donation deferral of whole blood donors in District Transfusion Centre. *J Clinic Diagn Res* 2012;6(1):47-50.

25. Gaikwad MJ, Rathod KB, Chaudhari A, Nakate LA. Understanding deferral rate and reason among voluntary blood donors at a tertiary care centre. *IP Journal of Diagnostic Pathology and Oncology* 2022;7(1):1-5.
26. Kulkarni, Nagarekha. (2012). ANALYSIS OF DONOR DEFERRAL IN BLOOD DONORS. *Journal of Evolution of medical and Dental Sciences*. 1. 1081-1087. 10.14260/jemds/177.
27. Valerian DM, Mauka WI, Kajeguka DC, Mgabo M, Juma A, Baliyima L, et al. (2018) Prevalence and causes of blood donor deferrals among clients presenting for blood donation in northern Tanzania. *PLoS ONE* 13(10): e0206487. <https://doi.org/10.1371/journal.pone.0206487>.
28. Yang Y: Characteristics and causes of pre-donation deferrals at a Chinese blood center. *Transfus Apher Sci*. 2021, 60:103153. 10.1016/j.transci.2021.103153.
29. Attri N, Margam S, AM. A study of the reasons for deferral of voluntary blood donors at a tertiary care hospital. *Ann Pathol lab Med*. 2019;6(1):84-90.
30. Bahadur S, Jain S, Goel RK, Pahuja S, Jain M. Analysis of blood donor deferral characteristics in Delhi, India. *Southeast Asian J Trop Med Public Health*. 2009;40(5):1087-91.
31. Priya S. Retrospective Analysis of Patterns of Donor Deferral among Blood Donors in a Tertiary Care Hospital. *Int j Contemp Med Res*. 2019;6(1):6-9.
32. Ramesh S Patil, Sagar M, Madhavi Rayate, A GafoorKarache. Analysis of Blood Donor Deferral causes in Solapur District. *Int J Biol Med Res*.2014; 5(3):4227-30.