



Original Article

Analysis of Reasons of Donor Deferral in A Tertiary Level Healthcare Institution

Dr Afreen Fatima¹, Dr Swati Srivastava², Dr. Zahid Siddiqui³, Dr Nihal Azmat⁴, Dr Noorin Zaidi⁵, Dr Sharique Ahmad⁶

¹ Assistant Professor, Department of Pathology, Era's Lucknow Medical College and Hospital, Era University, Safarazganj, Hardoi road, Lucknow, Uttar Pradesh, India-226003

² Associate Professor, Department of Pathology, Era's Lucknow Medical College and Hospital, Era University, Safarazganj, Hardoi road, Lucknow, Uttar Pradesh, India-226003

³ Associate Professor, Department of Pathology, American University of Barbados school of medicine. Wildey, Bridgetown, Barbados

⁴ Junior Resident, Department of Community medicine, Era's Lucknow Medical College and Hospital, Era University, Safarazganj, Hardoi road, Lucknow, Uttar Pradesh, India-226003

^{5,6} Professor, Department of Pathology, Era's Lucknow Medical College and Hospital, Era University, Safarazganj, Hardoi road, Lucknow, Uttar Pradesh, India-226003

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Corresponding Author:

Dr Sharique Ahmad

Professor, Department of Pathology, Era's Lucknow Medical College and Hospital, Era University, Safarazganj, Hardoi road, Lucknow, Uttar Pradesh, India-226003.

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ABSTRACT

Introduction: Donating blood is a virtuous move that protects thousands of live each day, yet, owing to many health and regulatory factors, not all individuals can donate blood. Safety for the donor as well as the transfusion recipient is the main concern of services for blood provision. Blood donor deferral— permanent or temporary—is a part of this safety policy. Policy for donor eligibility is a most vital aspect of blood safety, where healthy individuals donate blood and the recipients are protected from harm. The present study sought to examine the trend, reasons, and nature of blood donor deferrals at a tertiary level healthcare institution in Northern part of India.

Materials and Methods: Retrospective cross-sectional study of 20 months from May 2023 to December 2024. Information from deferred donors was collected on a structured predefined template, comprising of demographic information, type of deferral (temporary or permanent), and deferral reasons. Donors were chosen according to guidelines set forth by the Drugs and Cosmetics Act and DGHS, Ministry of Health and Family Welfare, India. Statistical analysis was conducted using SPSS, and Chi-square tests were employed to assess associations; $p < 0.05$ was taken as significant.

Results: Out of 6,293 blood donors screened, 719 (10.2%) were deferred. Most deferred donors were male ($n=572$), with females comprising 147 cases. Most deferrals (86.3%) were temporary in nature, while permanent deferrals constituted 13.7%. The commonly observed reason for deferral was anemia (413 cases), followed by high hemoglobin, hypertension, hypothyroidism, and other medical conditions. Female donors had a higher relative deferral rate (28.2%) versus males (8.88%). Age group 18–30 years exhibited a greater deferral rate (45.4%). Regional analysis revealed that 63.8% of deferrals were from outside the Lucknow district.

Conclusion: The study highlights the importance of identifying common causes of donor deferral to improve donor eligibility and retention. Most deferrals were temporary, indicating that with proper intervention— such as nutritional guidance and health follow-ups—many donors can be re-recruited. Standardizing screening protocols and promoting awareness can significantly enhance the safety and adequacy of blood supplies.

Keywords: Blood donor deferral, permanent deferral, temporary deferral.

INTRODUCTION

The foundation of safe blood transfusion services is safe blood donors. From evaluation of the donor to donor unit analysis, a number of processes are used to guarantee the safety of the blood supply. (1) Despite the advent of precise laboratory screening, donor selection remains a priority. (2) A number of factors pertaining to the donors' safety and the possible danger to the recipients cause donors to be postponed. The scarcity of safe, healthy donors has long been a major issue for blood banks worldwide. (3)

For both the blood center screening the donor and the blood donor, deferral is a sad and unpleasant experience. The quality of a population's blood supply is significantly impacted by the criteria for these deferrals and their implementations. (4) One important component of blood donation procedures that affects the availability of a safe blood supply and donor retention is blood donor deferral. The deferral rate can be reduced by pre-donation education, increasing screening accuracy, and post-deferral follow-up.

Blood donor deferment is a crucial component of blood donation programs around the globe, carefully maintaining the security and integrity of the blood supply while also protecting the health and well-being of donors and recipients. (5) This procedure entails a person being temporarily and permanently barred from giving blood in accordance with predetermined standards. (5) Being aware of these factors may help recruit future blood donors, both temporary and permanent. (5)

MATERIALS AND METHODS

This cross-sectional study for one-and-a-half years was conducted from May 2023 to December 2024. A prospective follow-up was done on the ineligible donors. A second predefined format was employed to record the demographic data, the nature of deferral (temporary or permanent), and the cause of deferrals of the prospective donors who were deferred. The Drugs and Cosmetics Act and the Directorate General of Health Services, Ministry of Health and Family Welfare, Indian government, were adopted while choosing the blood donors. [2, 3]. Anyone aged 18-65 years was eligible to donate blood. Whole blood donation was available to donors who had a minimum weight of 45 kg and a minimum hemoglobin (Hb) 12.5 g/dl. Screening of donors for hemoglobin was done with the HemoCue Hb 301+ (HemoCue AB, Angelholm, Sweden). Donors must wait a minimum of three months between donations to be able to make one. Rates of deferral by reason were expressed in percent and matched with the Chi-square test; $P < 0.05$ was considered to be statistically significant.

Statistical tests were all applied using SPSS software (SPSS, Inc., Chicago, IL, USA). Descriptive analysis was used to check demographic-wise distribution of donor deferral reasons and associated characteristic segments, like gender and temporary/permanent deferrals.

RESULTS

6293 donors were screened throughout the study period, among them 719 donors were deferred with deferral rate of 10.2% on different grounds. Among deferred patients 572 were male and 147 were female. Most frequent cause of deferral was anemia followed by high haemoglobin, hypertension, hypothyroidism, had liver disease, on medication, tuberculosis, on alcohol on insulin, on menstruation, were underweight, skin disease, dengue, malaria, typhoid, asthma, seizure, lymphadenopathy, anti rabies vaccine. Majority of the temporary deferrals were 86.3% while permanent deferrals were 13.7%. Most frequent cause of permanent deferral was hypertension.

TABLE 1: Distribution according to sex

SEX	TOTAL DONATION	TOTAL DEFERRAL	% DEFERRAL	p – value
MALE	5866	572	8.88	p < 0.001
FEMALE	373	147	28.2	

TABLE 2 : Distribution according to type of donor deferral

DEFERRAL TYPE	NUMBER	% DEFERRAL
TEMPORARY	618	86.3
PERMANENT	101	13.7

TABLE 3: Distribution according to age

AGE WISE DEFERRAL	NUMBER	% DEFERRAL	P – value
18-30	327	45.4	P value < 0.001 Chi – sq = 44.47
30-40	231	32.2	
40-50	139	19.3	
50-65	22	3.1	

TABLE 4 : Distribution according to region

REGION SPECIFIC DEFERRAL	NUMBER	% DEFERRAL
LUCKNOW DISTRICT	260	36.2
OUTSIDE LUCKNOW	459	63.8

TABLE 5 : Showing common reasons for donor deferral

REASONS FOR DONOR DEFERRAL	NUMBER
Low haemoglobin	413
High haemoglobin	60
Hypertension	38
Hypothyroidism	24
Liver disease	21
Medication	25
Tuberculosis (On ATT)	18
Alcohol	16
Insulin	14
Menstruation	12
Underweight	16
Skin disease	14
Dengue	17
Malaria	8
Typhoid	14
Asthma	5
Seizure	5
Lymphadenopathy	4
Anti rabies vaccine	5

DISCUSSION

Donor deferral is an integral part of the blood donation process, ensuring both donor safety and the quality of the blood supply. Blood donor selection and deferral policies vary globally but generally adhere to established medical guidelines to minimize risks associated with transfusion-transmissible infections (TTIs), donor-related complications, and recipient safety.

Comparison of Donor Deferral Rates in Different Studies

Our study had a deferral rate of 10.2%, nearly equal to that of 11.5% as reported by Srivastava et al.[5]. Mehrotra et al. observed an incidence of deferral as 16%[1], and in a study carried out in Iran, a deferral rate of 30.9% was observed, which was much higher than that of Indian studies[4]. The Iranian study observed a greater deferral prevalence in women, first-time donors, and those younger individuals, in line with observations by Gaikwad et al. in a tertiary care center in India[3].

Kandasamy et al. conducted a study on pre-donation screening and deferrals in Southern India that revealed that 10.6% of the donors were deferred, which compares very closely to our study findings[6]. The difference in deferral rates between regions lies in variations in screening protocols, donor demographics, and the prevalence of conditions like anemia and hypertension.

Temporary vs. Permanent Deferrals

Our study found that temporary deferrals (86.3%) were more common than permanent deferrals (13.7%), consistent with findings from Brijesh et al., where 96.5% of deferrals were temporary[2]. Temporary deferrals primarily included conditions such as low hemoglobin (291 cases), high hemoglobin (33 cases), hypertension (28 cases), and hypothyroidism (24 cases). Permanent deferrals were mainly due to chronic medical conditions such as hypertension, insulin-dependent diabetes, liver disease, and certain infectious diseases. A study by Patil et al. reported similar trends, identifying hypertension as the leading cause of permanent deferral[7].

The predominance of temporary deferrals suggests that many deferred donors could return for donation if proper health interventions and follow-up programs are implemented.

Primary Causes of Deferral and Their Prevalence in Other Studies

1. Anemia and Hemoglobin Levels

In our study, low hemoglobin (413 cases) was the most common cause of deferral, consistent with findings from Manish J et al., where anemia was the leading reason for deferral (65%)[3].

Studies by Agnihotri et al.[11] and Mehrotra et al. [1]also report anemia as the major cause of deferral, particularly among female donors, due to higher rates of iron deficiency.

A study in Western India by Das S. found that iron supplementation and dietary interventions could significantly reduce anemia-related deferrals, indicating the need for targeted donor education programs[10].

2. Hypertension and Cardiovascular Risk

Hypertension was the most frequent reason for permanent deferral identified in our study, consistent with findings by Patil et al[7].

Gaikwad et al. further observed that hypertension was an important reason for deferral in middle- aged donors, reflecting an increased trend in risk factors related to lifestyle[3].

3. Lifestyle and Risk-Based Deferrals

Drinking alcohol, new piercings or tattoos, risk sexual behavior, and drug use were listed as the reasons for deferral in our research, consistent with the research conducted by Kasraian et al. in Iran, in which 43.6% of deferrals were connected to risk factors potentially associated with HIV or hepatitis[4].

A study conducted by Yadav et al. on the plateletpheresis donor deferral patterns identified that lifestyle-based deferrals, such as tattoos, body piercing, and recent vaccinations were much more common among younger donors[2].

4. Gender and Age-Based Deferral Trends

In our research, a higher number of male donors (8.88%) were deferred compared to female donors (28.2%), though in comparison to total donor turnout, female donors had a greater deferral rate because of low hemoglobin. One Iranian study revealed that deferral rates were considerably higher among women and first- time donors, which was in line with our research and other Indian studies[4].

Manish J et al. have found that 65% of the deferred donors were between 18-30 years old, which identifies a trend wherein younger donors tend to be deferred because of anemia, weight problems, and recent vaccinations[3].

Impact of Donor Deferral on Blood Supply and Retention

Donor deferral can have a profound effect on the supply of safe blood. Research has indicated that first-time donors who were deferred are less likely to come back to donate again. For example, the research by Dhivya Kandasamy et al. indicated that deferral among first-time donors was considerably higher compared to repeat donors[6].

To counteract these effects, proactive interventions including follow-up programs, pre-donation education, and Nutritional counseling may enhance donor retention levels. Some of the main strategies are: Pre-donation health check-ups for potential donors to identify and treat modifiable illnesses like anemia and hypertension prior to donation. Iron supplementation for low hemoglobin donors, as recommended by research on anemia-related deferrals.

Streamlining screening procedures, including the application of quantitative hemoglobin testing, to minimize donor deferral variability among regions and blood banks. Post-deferral communication and counseling, to ensure temporarily deferred donors reappear when eligible.

Recommendations for the future:

Although deferment by blood donors is still a crucial step in transfusion safety, efforts should be made to reduce preventable deferments and make it easier for donors who have been temporarily ineligible to return. According to research, donor eligibility rates and retention may be improved by awareness campaigns, early health screening, and customized follow-ups. Additionally, adopting newer screening technologies and implementing uniform deferral policies across all blood banks could standardize donor selection procedures and ensure a consistent supply of blood. Overall, this study confirms the findings of previous studies and highlights the need for better donor management systems, preventive health measures, and increased screening accuracy in order to lower deferments without compromising with the blood safety. Future studies should focus on interventions to improve donor retention and assessment of main cause of deferments.

CONCLUSION

By knowing the causes of donor deferment we get to know the main cause and we also get to know the ways that can inspire efforts to recruit and retain donors. Furthermore, quantitative hemoglobin screening should be applied consistently at all blood centers would make it possible to accurately determine the true prevalence of elevated hemoglobin levels among Indian blood donors on a national level, enhancing donor safety and guaranteeing the integrity of the blood supply.

Declaration:

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