

Analysis of Pre-Donation Deferral of Blood Donors in Tertiary Care Hospital

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Abstract

Introduction: A blood transfusion is a life-saving procedure, and it requires an adequate supply of safe blood. Blood safety is ensured through selection of appropriate donor population, screening of donors, testing of donated blood units, and efficient blood transfusion practices as per the Drugs and Cosmetic Act 1940. Proper donor screening procedure minimized the risk of TTI (Transfusion transmitted disease) and also wastage of blood products.

Objectives: Our study aims to estimate incidence, to determine age and gender wise distribution patterns and to analyse various reasons for predonation deferrals in tertiary care hospitals.

Material and Methods: This prospective observational study of 2 years and 3 months from August 2020 to November 2022, total of 300 pre-deferred donors were enrolled, and different causes of deferrals were studied at the Department of Pathology SVPIMSR Blood Bank, affiliated to Smt. N.H.L. Municipal Medical College, Ahmedabad, Gujarat.

Result: In Present Study, total donor deferral rate was 6.1%, out of which maximum numbers of donors (56.33%) were deferred in the age group of 18-30 years and with Gender wise distribution pattern shows Male predominance (66%). Temporary deferrals (75.67 %) were more common reason for blood donor deferral.

Conclusion: Analysis of rate and reasons of deferrals with categorizations as temporary and permanent deferral may help medical personnel involved in blood collection to be more focused in donor screening. It will also ensure safe and quality blood and blood products for the recipients along with safety of blood products.

Keywords: Blood bank, Blood donation, Pre-donation deferrals, deferral reasons, Blood safety.

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Introduction

A blood transfusion is a life-saving procedure in many instances and it requires an adequate supply of safe blood.[1] Blood safety is ensured through selection of appropriate donor population, screening of donors, testing of donated blood units, and efficient blood transfusion practices as per the Drugs and Cosmetic Act 1940.[2]

Screening procedure is based on questionnaire and mini physical examination set by national guideline, which minimized the risk of TTI (Transfusion transmitted disease) and also wastage of blood and blood products.[3]

Large numbers of blood donors are not able to donate blood successfully for several reasons, either temporarily or permanently. Individuals

disqualified from donating blood are known as 'deferred' donors.[4] The donor deferral rate can be reduced by educating the donors and providing information about the selection criteria. This present study is undertaken to analyze the deferral incidence, the deferral pattern among blood donors in blood bank. So that temporarily deferred donors are identified and properly counseled to improve their quality and it leads to we can increase the pool of voluntary donors without compromising on the quality of the blood and safety to the donor and the recipient.[5]

Material and Method

This prospective observational study of 2 years and 3 months from August 2020 to November 2022,

total of 300 pre-deferred donors was enrolled and different causes of deferrals were studied at the Department of Pathology SVPIMSR Blood Bank, affiliated to Smt. N.H.L. Municipal Medical College, Ahmedabad, Gujarat.

Methodology

All blood donors were screened as per guidelines of National AIDS Control Organization (NACO) provided in Standards for blood bank and blood transfusion services under the Drug and Cosmetic Act 1940. Each donors was evaluated by the questionnaire, medical examination, body weight, age, blood pressure, pulse, temperature, hemoglobin (Hb) estimation and blood grouping.

Voluntary, Non-remunerated and Replacement whole blood donors with Age <18 and >65 years,

Weight <45 kg, who have donated recently in less than 3 months, BP>140/100 mmHg, Pulse >100/min with irregular rhythm, Temperature >37 degree Celsius, Hb <12.5 g/dl, Who have taken medications, Person with medical and surgical history constituted the subject for this study.

Apheresis donors (COVID Plasma and SDP donors) were excluded from the study.

Observation and Result

In present study, A total 4860 donors were registered for donation from August 2021 to November 2022, out of which 300 donors were deferred and 4560 were selected for donation. Total deferral rate was 6.1% as shown in table 1.

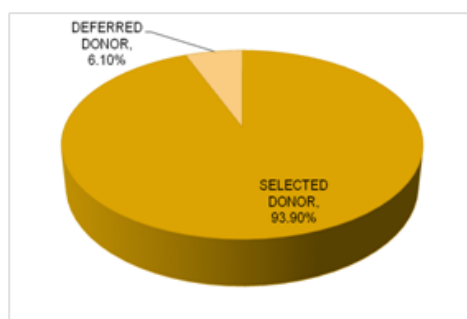


Figure 1: Distribution According to Numbers of Deferrals from Total Registered Donor and their Percentage

As shown in the Table 2, maximum No. of deferral found in the age group of between 18-30 years that were 169 (56.33 %), followed by 31-40 years that were 80 (26.67 %) and Minimum Number 0.67 % were found in >65 years of age.

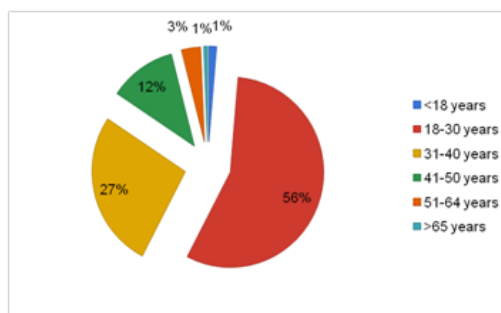


Figure 2: Distribution of Deferred Donors According to Age Group

Out of total deferred donors, there were 198 males (66 %) and 102 Females (34 %) with Male to Female ratio 1.94: 1 as shown in Table 3.

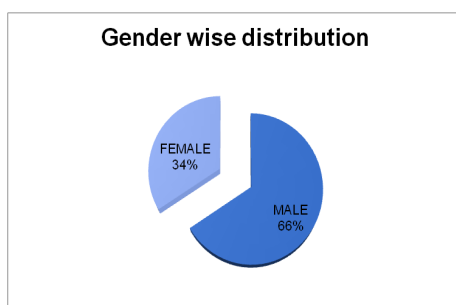


Figure 3: Distribution of Deferred Donors According to Gender

As shown in table 4, Most common reason for deferral for blood donation in our study was of Temporary causes (75.6 %). Only 24.4 % were reasons for the permanent deferral.

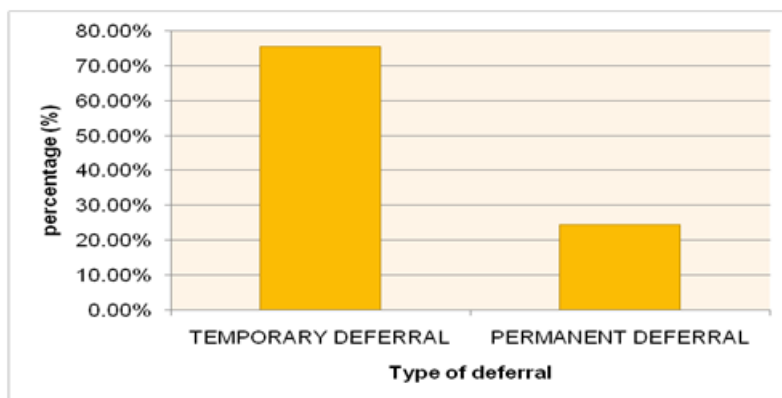


Figure 4: Distribution of Donors According to Temporary and Permanent Deferrals

From all the temporary deferrals (75.6%), Most common reason for temporary deferral were of Anemia (45.8%) followed by Covid 19 vaccination (15.9 %) and Medications (12.8 %). [table 5]

Table 1: Various Causes of Temporary Deferrals According to Numbers and Percentage

Reasons of Temporary deferrals	Total No. of cases	Percentage % (out of temporary deferrals)	Percentage % (Out of total deferral)
Anemia/Low Hemoglobin (<12.5)	104	45.8 %	34.6 %
Medications	29	12.8 %	9.7 %
Alcohol intake in last 24 hours	02	0.9 %	0.7 %
Allergic / Skin diseases	08	3.5 %	2.7 %
Under weight	07	3.1 %	2.3 %
Covid 19 vaccine	36	15.9 %	12 %
Covid 19 infection	02	0.9 %	0.7 %
Fever, cough, cold	04	1.8 %	1.3 %
Recent Blood donation within 3 months	03	1.3 %	1 %
Under Age (<18)	04	1.7 %	1.3 %
Recent surgical history (Major, minor and dental surgery)	09	4 %	3 %
Tattoo and ear 0piercing	12	5.2 %	4 %
Menstruation within one week	7	3.1 %	2.3 %
Total	227	100 %	75.6 %

Table 6 shows various causes of permanent donor deferrals. Out of total 73 causes of permanent donor deferrals, most common reason was Hypertension (43.9 %) followed by Diabetic on insulin (13.6 %) and Epilepsy (12.3 %).

Table 2: Various Causes of Permanent Deferrals According to Numbers and Percentage

Reasons for Permanent deferrals	Total no. of deferrals	Percentage (%) (out of Permanent deferrals)	Percentage (%) (out of total deferrals)
Age >65 years	2	2.7 %	0.7 %
Asthma	5	6.9 %	1.7 %
Epilepsy	9	12.3 %	3 %
Hypertension	32	43.9 %	10.6 %
Thyroid diseases	5	6.9 %	1.7 %
Hepatitis Infection	1	1.4 %	0.3 %
Heart disease	2	2.7 %	0.7 %
Psychiatric disorder	1	1.4 %	0.3 %
Diabetic on insulin	10	13.6 %	3.3 %
High Sexual risk behaviour	6	8.2 %	2 %
Total	73	100 %	24.4 %

In present study, from total 300 deferred causes of deferrals, overall the most common reason for deferral was Anemia 104 causes (34.6 %) followed

by Covid 19 vaccination 36 causes (12 %) and Hypertension 32 cases (10.6 %) were second and third common cause as shown in the Table 5 and 6.

Discussion

They term “blood bank” was first coined by Dr. Bernard Fantus in 1937 at Cook County Hospital in Chicago. The collection of blood from voluntary, nonremunerated, and low-risk populations is the need of the day to ensure safety and quality of blood for transfusion. Strict criteria for blood donation are not only necessary to safeguard the health of donors but also extremely important so as to prevent transfusion transmittable infections spreading to the recipient.

Worldwide, all blood banks face shortage of blood units due to paucity of healthy voluntary blood donors. Deferral of blood donors leads to loss of precious blood and demotivation of donors. The causes of donor deferral may serve as an indirect indicator of disease burden in the general population.

In our study, out of 300 cases (6.1 %) were deferred due to some of the other reasons, which is comparable to the study by Sayed et al [7], Chauhan S et al [6] showing a deferral rate of 6.17 % and 7.93 % respectively.

Table 3: Comparison of Donor Deferrals According to Age Group of Present Study with Other Study

Age Group	Percentage (%)		
	Present study	Sivaramakrishnan A et al[8]	Laikangbam D et al (2019)[9]
<18 year	1.33 %	0.54 %	1.7 %
18-30 year	56.33 %	54.34 %	48.4 %
31-40 year	26.67 %	28.80 %	33.8 %
41-50 year	11.67	14.13 %	13.0 %
51- 64 year	3.33 %	2.17 %	3.1 %
>65 year	0.67 %	-	-

In present study, Age wise distribution of all the causes of deferral, majority of deferred donors belong to the age group of 18-30 years (56.33 %). Similar results was observed by Sivaramakrishnan A et al[8] and Laikangbam D et al[9] where majority of belong to 18-30 years of age group. [Table 7]. Gender wise distribution shows that majority of deferrals were found in the males (66 %), whereas only 34 % found in the females. The prevalence of deferral rate amongst

male were also found higher in the study done by Chauhan S et al [10] and Ahmad N et al[11] which is 86.90 % and 81.6 % respectively. Out of total 300 deferrals, Most common cause for deferrals were of temporary (75.6%). On comparison with studies done by Chauhan S et al [6], and Sayed et al [7] also shows temporary deferrals were most common reason for deferral that is 85.71 % and 90.9 % respectively. So our result is consistent with other studies.

Table 4: Comparison of Leading Cause of Deferral with Other Studies

Study	First Major cause	Second leading cause	Third leading cause
Present Study	Anemia (34.6 %)	Covid 19 vaccination (12 %)	Hypertension (10.6%)
Ahmad N, et al(2020) [11]	Anemia (43.2 %)	Alcoholism (13%)	Hypertension (10 %)
Sayed et al(2020)[7]	Anemia(46.94 %)	Medications (9.87 %)	Alcoholism (6.11%)

In our study, most common reason found for deferrals was Anemia Which constitute 34.6 % of total deferrals. This result were in concordance with Ahmad N et al [11] and Sayed et al [7] in which Anemia constitutes 43.2 % and 46.94 % respectively.

Anemia (45.8 %) was found also the most common reason for temporary deferrals and Hypertension (43.9%) for the permanent deferral in our present study which is consistent with study done by Sayed et al, which [7] found most common reason for temporary deferrals was Anemia which is 51.62% and Hypertension found other most common reason for permanent deferral, which is 34.8%.

It is recommended that a proper record of follow-up and information regarding management of temporarily deferred donors should be maintained at transfusion centers so that they can

be recruited back for future donation. It is important to counsel the donors regarding this permanent deferral and refer them for further management. Regular assessment of deferral pattern in transfusion centers will help in planning strategies to minimize donor rejection.

Conclusion

Increased awareness among the voluntary donors regarding deferral criteria is necessary to decrease the rate of deferral in the population.

It is important to identify the common causes for deferral in the blood bank to minimize deferrals and to retain potential donors. It is recommended that all the potential blood donors should be informed about the cause and duration of deferral so that appropriate measures can be taken to correct

the cause and recruit them back in cases of temporary deferrals.

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