

Original article:

Pre Donation Deferral of Blood Donors- A Retrospective Study

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Abstract

Introduction: Millions of patients who are in need of blood transfusion do not have timely access to safe blood. Donor selection is important to ensure safe blood supply. Knowledge of donor deferral frequency and pattern is vital to prevent loss of precious blood units.

Objectives: To analyse blood donor deferral rate and causes.

Materials and methods: A retrospective study was done from 1st January 2010 to 31st December 2015 in the blood bank of Super speciality Hospital and Government Medical College, Nagpur, to analyse donor deferral rate and causes. A total of 11620 donors were screened and 1109 donors were deferred.

Results: The donor deferral rate was 9.54%. More number of female donors were deferred (76/323 cases, 23.53%) as compared to male donors (1033/11297 cases, 9.14%). Temporary deferral was more common (879/1109 cases, 76.26%) than permanent deferral (230/1109 cases, 20.74%). The most common cause of temporary deferral was anaemia (56.77%) and hypertension (63.48%) was the commonest cause for permanent deferral.

Conclusion: Analysis of blood donor deferral helps in identifying the rate and causes of deferrals. Temporarily deferred donors should be counselled, managed and followed up. Public awareness programmes are needed to educate and motivate people for blood donation.

Key Words: Blood donor, deferral causes, temporary, permanent

INTRODUCTION

Blood transfusion is a vital lifesaving procedure which requires adequate blood supply of safe blood from a healthy donor. Safe and adequate supply of blood and blood products is a major public health issue faced globally.

According to the figures of World Health Organisation (WHO), over 81 million units of blood are collected annually worldwide, but only 39% are collected in developing countries, which have 82% of world's population¹. In India, the annual rate of blood donation is 7.4 million units against the requirement of 10 million units, according to National AIDS Control Organisation's statistics².

The aim of Blood Transfusion Services should be to provide effective blood and blood products, which are as safe as possible and adequate to meet patient's need³. Safe transfusion practice, a symbol of good blood banking means transfusion practice which is safe for the patient and the donor and this is achieved by having donor deferral criteria⁴ and stringent screening of collected blood for possible transfusion transmissible infections (TTI's)⁵.

A large number of blood donors are not able to donate blood successfully for many reasons. Deferred donors are those who are disqualified from donating blood. Deferrals are divided into temporary and permanent deferrals. Blood donor deferral is a painful and disheartening experience

for the donor and for the blood centre screening the donor as well. Deferred donors are less likely to return for blood donation in future⁶. Therefore deferred donors must be given proper counselling and education regarding the reason for their deferral. Especially the donors who are deferred temporarily should be advised how to rectify the issue before the next visit.

Studies conducted in the past have provided different reasons for deferral of whole blood donors, highlighting differing demographic profile^{7,8}.

The primary objective of this study was to analyse the donor deferral rates and various causes of deferral.

The study was conducted in the Blood Bank of Super speciality Hospital and Government Medical College, Nagpur from 1st January 2010 to 31st December 2015.

2. MATERIALS AND METHODS

Every donor who came to donate blood was asked to fill a donor questionnaire. This was followed by a thorough physical examination. Complete medical history, age, weight, blood pressure, pulse

rate, temperature and haemoglobin (estimated by CuSO₄ (Copper Sulphate) method) of each and every donor was recorded. Donors were selected as per the criteria laid down by Directorate General of Health Services guidelines, Ministry of Health and Family Welfare (2003). Deferred donor data was analysed with respect to age, sex and causes of deferral (temporary and permanent).

Criteria for donor selection

The donor shall be in the age group of 18-60 years and weight shall not be less than 45 kilograms

Temperature and pulse of the donor shall be normal. The systolic and diastolic blood pressure should be within normal limits without medication. Haemoglobin shall not be less than 12.5 gm/dl.

The donor shall be free from acute respiratory disease and any disease transmissible by blood transfusion.

The donor shall be free from any skin disease at the site of phlebotomy. The arms and forearms of the donor should be free from skin punctures or scars indicative of professional blood donors or addiction to self injected narcotics.

Criteria for Temporary Donor Deferral

Causes	Period of Deferment
Abortion	6 months
Surgery	12 months
History of Malaria duly treated (endemic area)	3 months
History of Malaria duly treated (Non endemic area)	3 years
Tattoo	6 months
Breast Feeding	12 months postpartum
Immunization for cholera, typhoid, Diphtheria, Tetanus, Dengue	15 days
Rabies Vaccination	12 months
History of Hepatitis in family or close contact	12 months
Immunoglobulin	12 months
Previous Blood Donation	3 months
Low Hb and Low Weight	Until corrected

Criteria for Permanent Donor Deferral

Donors with history of following diseases were permanently deferred.

- 1] Cancer, 2]Heart disease, 3] Abnormal bleeding tendencies 4]Unexplained weight loss5] Diabetes controlled on Insulin 6] Hepatitis infection7] Chronic Nephritis 8] Liver disease9] Tuberculosis 10] Polycythaemia Vera 11]Asthma 12] Epilepsy 13] Leprosy 14] Schizophrenia 15] Endocrine disorders

3. RESULTS

In this retrospective study from 1stJanuary 2010 to 31stDecember 2015, a total of 11620 donors were screened in our blood bank and out of these screened donors, 10511 (90.46%) were selected for blood donation while 1109 (9.54%) were deferred.. As shown in Table I, out of11620 donors screened, 11297 (97.22%) were males and 323 (2.78%) were females. Of the 11297 screenedmale donors, 10264 (90.86%) were selected and 1033 (9.14%) were deferred. Out of 323 screened female donors, 247

(76.47%) were selected and 76 (23.53%) were deferred. Deferral rate was high amongst females.

Total deferrals were categorised into temporary and permanent deferrals. Out of the total 1109 deferrals, majority 879 (79.26%) were temporary deferrals whereas 230 (20.74%) were permanent deferrals. Tables II and III show relative proportions of the causes of temporary and permanent deferrals. Anaemia (Hb <12.5gm/dl) was the most common cause for temporary deferral (56.77%) and hypertension was the leading cause for permanent deferral (63.48%).

Table IV shows that anaemia was the most common cause for deferral both in male(44.24%) and female (55.26%) donors. However hypertension (13.94%) was the second most common cause for deferral in male donors while low weight (15.79%) was the second most common reason for deferral in female donors.

Table V indicates that majority (59.69%) ofdeferred donors were in the age group of 18-30 years.

Table I: Gender wise distribution of screened, selected and deferred donors.

Donors	Males	Females	Total
Screened	11297	323	11620
Selected	10264 (90.86%)	247 (76.47%)	10511 (90.46%)
Deferred	1033 (9.14%)	76 (23.53%)	1109 (9.54%)

Table II: Causes of temporary deferrals (n=879) and their relative proportions.

Cause	Number	% of Temporary Deferrals	% of Total Deferrals
Anaemia (Hb<12.5gm/dl)	499	56.77	44.99
Low Weight	133	15.13	11.99
Medication	75	8.87	7.03
Fever	56	6.37	5.05
Surgery	39	4.10	3.25
Previous blood donation	27	2.62	2.07

Vaccine	18	2.05	1.62
Abortion	11	1.25	0.99
History of hepatitis in family	09	1.02	0.82
Dog Bite	06	0.68	0.54
Malaria	03	0.34	0.27
Breast Feeding	02	0.23	0.18
Tattoo	01	0.11	0.09
Total	879	100	79.26

Table III: Causes of permanent deferrals (n=230) and their relative proportions.

Causes	Number	% of permanent deferrals	% of total deferrals
Hypertension	146	63.48	13.17
Age	37	16.09	3.34
Diabetes	19	8.26	1.71
HBsAg +ve	18	7.83	1.2
Asthma	07	3.04	0.63
Epilepsy	03	1.30	0.27
Total	230	100	20.74

Table IV: Leading causes of deferrals in male and female donors.

Males (1033)			Females (76)		
Causes	Number	% of deferrals	Causes	Number	% of deferrals
Low Hb	457	44.27	Low Hb	42	55.26
Hypertension	144	13.94	Low Wt	14	18.42
Low Wt	119	11.52	Abortion	11	14.47
Medication	71	6.87	Medication	04	5.26
Fever	53	5.13	Fever	03	3.95

Table V: Age wise distribution of deferred blood donors.

Age in years	Males (1033)	Females (76)	Total (1109)
<18	14 (1.35%)	--	14 (1.26%)
18-30	605 (58.57%)	57 (75.00%)	662 (59.69%)
31-40	331 (32.04%)	14 (18.42%)	345 (31.11%)
41-50	25 (2.42%)	03 (3.95%)	28 (2.53%)
51-60	35 (3.39%)	02 (2.63%)	37 (3.34%)
>60	23 (2.23%)	--	23 (2.07%)

4. Discussion

Safe donor is the first step towards safe transfusion services. This is achieved by donor selection criteria⁹. This retrospective study was done to assess the health problem of the donor population and understand the reasons for deferral because the reasons for deferral of donors have not received much attention⁵.

Donor deferral rates in various blood centres vary from 5% - 24% leading to huge losses in terms of available blood units for transfusion in the nation every year¹⁰. In this study, out of total 11620 donors who were screened for donation, 1109 (9.54%) donors were deferred for various reasons. This deferral rate of 9.54% observed in our study is similar to the deferral rate observed by Bahadur et al.⁵ (9%), Lawson- Ayayi et al.¹¹ (10.8%), HinalGajjar et al.¹² (11.16%), Zou et al.⁸ (12.8%) and Custer et al.¹³ (13.6%).

Lower donor deferral rates have been reported by Fred John and Mary Varkey¹⁴ (5.12%) Unnikrishnan et al.¹⁵ (5.2%), Rabeya et al.¹⁶(5.6%) and Sundar et al.¹⁷(6%). However very high donor deferral rates (20-35.6%) have been reported by Tomasuletal.¹⁰,Charles et al.¹⁸, and Madan et al.¹⁹.

In this study 23.53% of female donors were deferred whereas the deferral rate in male donors was found to be 9.14%. Chauhan et al.²⁰ have observed a very high female donor deferral rate of 63.13% while deferral rate of male donors was noted to be 3.41%.

In our study 79.26% donors were deferred for temporary reasons whereas 20.74% donors were deferred for permanent reasons, studies by Custer et al.¹³ and Arslan²¹ have reported permanent deferral rate of 10.6% and 10% respectively.

In this study the most common cause of temporary donor deferral was anaemia (56.77%). Similar findings have been observed by Gajjaret al.¹² (59.55%) and Custer et al.¹³ (60%). The second most common cause for temporary deferral in this study was low weight (15.13%). Gajjaret al.¹²have observed that low weight accounted for 9.8% of temporary deferrals, however a very high rate was observed by Bahadur et al.⁵ (26.6%).

The most common cause of permanent deferral in this study was hypertension (63.48%) which is similar to observations made by Gajjaret al.¹² (63.35%).

In our study most of the deferred donors (58.57%) were in the age group of 18-30 years which is similar to finding observed by Girish et al.²² (57.08%).

A sizeable percentage of donors (79.26%), in this study were deferred due to temporary reasons with anaemia and low weight as the leading causes of these temporary deferrals. This loss can be managed by calling the donors back after correction of the cause of temporary deferral, which can help retain future donor pool. Recruitment of fresh donors especially by organising voluntary blood donation camps requires

manpower, money, motivation of donors and precious time. All this can be curtailed by calling back the temporary deferred donors after correction of their cause as was done in the previous study by Kaguet al.²³.

5. Conclusion

Donor deferral rate of 9.54% was observed in this study. A majority of 79.26% donors were deferred for temporary causes while 20.74% donors were deferred for permanent causes.

We observed that deferral rate was higher in female donors (23.53%) as compared to the rate in male donors (9.14%). This highlights the fact that female health should be given due importance. The most common cause for temporary deferral was observed to

be anaemia (56.77%) and hypertension (63.48%) was the commonest cause of permanent deferral.

Donor deferral leads to loss of blood units. Temporarily deferred donors should be properly counselled, managed and followed up so that a precious pool of future potential blood donors is not lost.

Analysis of donor deferral rate and pattern is extremely vital for formulating and modulating the policies towards modern blood transfusion services and we also emphasise the need for public awareness programmes to be held regularly to educate and motivate the donors especially the younger generation in 18-30 years age group and female donors as well, so as to bridge the gap between supply of safe blood and a nation's most basic requirements for blood.

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