



## Original Research Article

## Donor deferral criteria-one year study at a tertiary care hospital

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## ABSTRACT

**Background:** Blood Transfusion Services is vital part of health care system which saves many lives annually across the globe. Shortage of blood donors is a problem faced by all the blood banks. Many donors are deferred either due to temporary or permanent causes which differ across the blood banks.

**Materials and Methods:** The study was carried out on 1646 donors which came to the blood bank.

**Results:** Total 194 donors were deferred out of 1646 registered donors due to different reasons, anaemia followed by intake of medicines were found to be most common causes of deferral and males were deferred more as compared to the females.

**Conclusion:** The donor deferral rate in the present study was 11.78 with anaemia as the most common cause of deferral followed by intake of medicines. The temporarily deferred donors need to be closely followed up to ensure their contribution in the blood banks after the treatment of their causes.

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## 1. Introduction

Blood Transfusion Services (BTS) is the vital part of modern health care system without which efficient medical care is impossible. The aim of blood transfusion services is to provide effective blood and blood products which are as safe and adequate to meet patients 'need.

The development of blood transfusion services is based on the recommendations of the International Society of Blood Transfusion and Immunohematology (ISBTI) and the WorldHealth Organization (WHO). The blood transfusion services should be based on voluntary and non- remunerated blood donors, family and replacement donations should be relied upon in majority of the cases. There should be a national strategy for screening of the donated blood for transfusion transmitted infections like HIV 1 and 2, Hepatitis B and C, syphilis and malaria. There should be a proper legislation which maintains the smooth functioning of the blood bank, good laboratory practices must be

followed by all the staff in a blood bank so as to protect the health of both blood donors and recipients of blood and its products. Adequate supply of blood and its components like whole blood, red blood cells, platelets, fresh frozen plasma (FFP), cryoprecipitate (Factor VIII) and plasma should be available to meet the patient's requirements. A register of voluntary non-remunerated blood donors should be maintained in the blood bank and a blood bank officer must be appointed to ensure proper implementation of blood donation programme and smooth functioning of the centre. The staff should be regularly trained in aspects of donor education, motivation, recruitment and selection, safe blood collection procedures and care of blood donors, blood grouping, compatibility testing, components preparation and the issue of blood and its products for transfusion.

There should be cooperation between the blood transfusion services, health services and hospitals, educational institutes, religious, social and industrial organizations, mass media and the general public of the region where the blood centre is located.

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Blood Transfusion Services in a country may be centralized, regionalized, hospital based or some combination of them. Once a system has been established in a region it is difficult to change. The size, history, culture, political structure, level of economic development and administrative control effect the evolution of blood transfusion services.

Estimation of donor requirement is essential for the development of blood transfusion services. Estimates of need may be based on fixed percentage (5 % recommended by WHO) of the population but this assumption ignores the disparity between the size of population and the number of hospital beds in an area. Estimate of blood needs on the number of hospital acute beds is more realistic. The figure may vary from 5-15 units per bed per year. The lower ratios apply to hospitals where blood is needed in the management of bleeding as a complication of pregnancy or trauma or simple surgery. The higher ratios apply to hospitals with more specialized facilities like oncology, open-heart surgeryrenal dialysis/transplant or replacement therapy in thalassaemia, hemophilia, leukemia and other blood disorders.

Donor's recruitment is critical to the success of supply of safe and adequate blood and its products to meet patients need and the first and most important step to ensure blood safety is proper selection of blood donors.<sup>1,2</sup> The donors should be in good health so as to avoid any adverse effects to themselves or the recipients of their blood and blood products. Usually, the blood collected from voluntary blood donors or friends/relatives of the patients is the safest.

To ensure safe blood, donor selection is a crucial step in the process and it involves the following aspects:

1. Registration, consent of the donor, and demographic details
2. Medical history
3. Limited physical examination
4. Simple laboratory tests

The donors are selected based on the national guidelines for the donor selection criteria which are framed taking in account all the above aspects.<sup>3,4</sup> All donors must be given educational materials informing them of high-risk activities for HIV transmission, of the clinical signs and symptoms of HIV infection and AIDS and of the importance of refraining from blood donation if they have been engaged in these activities or experienced signs and symptoms.

Many donors are unable to donate blood because of various reasons either temporary or permanent. This leads to shortage of blood and blood products in the blood banks. Therefore, it is necessary to understand the reasons for deferral of blood donors as temporary donors can be treated for the causes if possible, for e.g. low haemoglobin can be treated with iron tablets, hypertension or fever can be treated with drugs, so these donors can donate blood in future after

the reason for their temporary deferral is cured. Our study was done to understand the causes of temporary deferral of donors coming to our blood bank and in turn provide safe blood and its products to the patients.<sup>5,6</sup>

## 2. Materials and Methods

The study was carried out retrospectively at our blood bank of a tertiary care hospital from 1<sup>st</sup> August 2019 to 30th September 2020. All the donors coming to the blood bank were evaluated on the basis of age, weight and overall well being, medical and family history, blood pressure, pulse rate and temperature were recorded, detailed menstrual and gynaecological history taken for female donors. Donor questionnaire was filled by all the donors and after that physical examination followed by haemoglobin estimation by 5 part differential Siemens cell counter method was done. The cut off for haemoglobin was 12.5gm/dl. The weight of all the donors was above 45 kgs and age was between 18 – 60 years. The systolic blood pressure between 100 and 150 mm of Hg and diastolic pressure between 60 and 80 mm of Hg was considered to be in the acceptable range. The pulse rate between 60 to 100/minute was considered acceptable and the local skin site was examined for any lesion. Donor deferral data was analysed with respect to gender and temporary and permanent causes of deferral.

## 3. Results

A total of 1646 donors came to the blood bank to donate blood out of which 1572(95.5%) were males and the rest 74(4.49) were females. Of the total 1646 registered donors, 194(11.78%) donors were deferred due to various causes. 152(78.35%) were males and 42(21.65%) were females amongst the 194 deferred donors. Percentage of deferral among total 1646 of registered males and females were 9.66% and 56.75% respectively.

Any donor fulfilling the criteria of permanent deferral was not found during this period. In others category we included persons in fasting state, history of blood donation in previous three months, persons suffering from thalassaemia minor with low hemoglobin, non availability of a particular group for a patient and patients having fever.

## 4. Discussion

The study at blood bank of a tertiary care hospital was done with the purpose of providing safe blood to the patients admitted here and it was found out that 194 donors were deferred out of 1646 registered donors for different reasons. The percentage of deferred donors is 11.78% and the percentage of male and female deferred donors are 9.66% and 56.75% respectively. Total 194 donors were deferred; anaemia was the most common cause for temporary deferral followed by intake of medicines. The incidence of deferral among females is more as compared to the males. The high

**Table 1:** Gender based donor deferral profile

Gender	Number of registered Donors	Number of deferred donors	% of deferred donors
Male	1572 (95.5%)	152 (78.35)	9.66% (n=1572)
Female	74 (4.49%)	42 (21.64)	56.75% (n=74)
Total	1646	194	11.78%

**Table 2:** Causes of temporary deferral

S. No.	Cause of deferral	Number of cases deferred	% of deferral
1	Low haemoglobin	113	58.24
2	Medicines	13	6.7
3	Fever	10	5.1
4	Hypertension	10	5.1
5	Surgery	09	4.6
6	Low weight	10	5.1
7	Vaccination	08	4.1
8	Diabetes	02	1.0
9	Alcohol	03	1.54
10	Tattooing	08	4.1
11	Jaundice	01	0.5
12	Malaria	01	0.5
13	Open wound	04	2.0
14	Allergy	02	1.0

incidence in females is due to prevalence of anaemia in the females of reproductive age group and less enthusiasm amongst females regarding blood donation. Looking at the prevailing trends, females must be encouraged for blood donation by awareness educative programmes in the colleges and measures should be taken for correction of anaemia amongst them.

Donor counselling and screening through questionnaire before donation is an important process to ensure blood safety and to recruit and retain voluntary non remunerated blood donors.

The overall deferral rate in our study was 11.78% which was consistent with other studies done in India by Agnihotri<sup>7,8</sup> (11.6%, low haemoglobin), Rehman et al,<sup>9</sup> (12.4%, low haemoglobin), Bahadur et al<sup>10</sup> (9%). The donor deferral rate in our study was comparable to various American and European studies: Zou,<sup>11</sup> et al had a deferral rate of 12.8% in their study of American Red cross blood service and Custer, et al showed a deferral rate of 13.6% in a European study conducted by Lawson-Ayayi. Donor deferral rate in different studies in India as well as across the world varies from 5.19% to 35.60%.<sup>10,12–15</sup>

## 5. Conclusion

It is necessary to analyse the donor deferral criteria region wise in different blood banks so as to develop a safe pool of blood donors and to bring back donors which have been deferred due to temporary causes. It is necessary to minimise loss of blood donors and to keep them motivated. Low haemoglobin was the most common cause for temporary deferral in our study as well as in many other

studies so combining anaemia prevention and treatment in donor recruitment strategies can help regain the donors and develop a healthy blood donor pool. Regular blood donors make the best group of blood donors and efforts must be taken to increase awareness among deferred donors and to encourage them for future donations to prevent loss of useful units of blood.

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## 7. Conflicts of Interest

There are no conflicts of interest.

## References

1. Blood donor Selection; Guidelines on Assessing Donor Suitability for Blood Donation. Geneva: World Health Organization; 2012.
2. Saran RK. Organization of Blood Transfusion Services: Transfusion Medicine Technical Manual. In: 2nd Edn. WHO DGHS guidelines. Ministry of Health and Family Welfare; 2003. p. 1–6.
3. Newman B. Blood Suitability and allogenic whole blood donation. *Transfusion Med Rev J.* 2001;15(3):234–44.
4. Eder A, Bianco C. Screening blood donors: Science, reason, and the donor history questionnaire. Bethesda: American Association of Blood Bank; 2007.
5. AABB, Standards for Blood Bank and Transfusion Service. In: 26th Edn. Bethesda: American Association of Blood Bank; 2009.
6. Saran RK. Transfusion Medicine Technical Manual, Directorate General of Health Service. In: 2nd Edn. New Delhi: Govt. of India; 2003.
7. Chaudhary RK, Gupta D, Gupta RK. Analysis of donor-deferral pattern in a voluntary blood donor population. *Transfus Med* .

- 1995;5(3):209–12. doi:10.1111/j.1365-3148.1995.tb00230.x.
8. Agnihotri N. Whole blood donor deferral analysis at a center in Western India. *Asian J Transfus Sci* . 2010;4(2):116–22. doi:10.4103/0973-6247.67035.
  9. Rehman S, Arif SH, Mehndi G, Mirza S, Saeed N, Faraz Y, et al. The Evaluation of Blood donor deferral causes:A Tertiary Care Center Based Study. *J Blood Disord Transfus*. 2012;3:131.
  10. Bahadur S, Jain S, Goel RK, Pahuja S, Jain M. Analysis blood donor deferral characteristics in Delhi, India. *Southeast Asian J Trop Med Public Health*. 2009;40:1087–91.
  11. Zou S, Musavi F, Notari EP, Rios JA, Trouern-Trend J, Fang CT, et al. Donor deferral and resulting loss at the American Red Cross Blood Services. *Transfusion*. 2001;48:2531–40.
  12. Kulkarni N. Analysis of donor deferral in blood donors. *J Evol Med Dent Sci*. 2012;1:1076–82.
  13. Arslan O. Whole blood donor deferral rate and characteristics of the Turkish population. *Transfus Med*. 2007;17:379–83.
  14. 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;20(1):11–4. doi:10.1111/j.1365-3148.2009.00968.x.
  15. Lim JC, Tien SL, Ong YW. Main causes of pre donation deferral of prospective blood donor in Singapore Blood Transfusion service. *Ann Acad Med*. 1993;22:326–31.

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