 DOI: 10.18231/2394-6792.2017.0027

Blood donor deferrals in a tertiary care teaching hospital blood bank in Bangalore - A retrospective study

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Abstract

Background: Transfusion of blood is a regular procedure in day to day outpatient and in-patient operations in the hospitals. However, what is of concern is, unavailability of sufficient blood in terms of quantity and quality on day to day basis, there by endangering a great number of lives that could otherwise be saved quite easily. This has been seen to be a global concern but more severe in developing countries. Screening of blood from donors for safety is vital step in preventing transfusion related infections and reactions. In this process, a number of donors are rejected for a variety of reasons, where some are temporarily deferred and some permanently. Paucity of donors has always been a problem faced worldwide.

Aim: This study aims to quantify the blood donor deferrals and analyse the reasons of deferring in a tertiary care teaching hospital blood bank.

Methods: A two-year retrospective review of blood donor data present in Dr. B.R. Ambedkar teaching hospital blood bank is undertaken.

Results: A deferral rate of 7.2% was noted in the study (92/1267). 100% were replacement donors. Female donors constituted 11.6% of the entire donor population. Hypertension was the main reason of permanent deferral and history of taking medicine in the recent past was the main basis among the temporary deferral. Other reasons identified for donor deferral were anemia and low blood pressure (BP) accounting for 19.2% each.

Conclusion: Deferral rate observed in the retrospective analysis of two-year data matched with findings of other studies conducted elsewhere. However, the grounds of deferral varied due to non-practice of a standardized donor selection criteria in general.

Keywords: Blood donors, Blood safety, Donor selection, Volunteer, Donor deferral.

Introduction

Transfusion of blood is a regular procedure in day to day outpatient and in-patient operations in the hospitals. However, what is of concern is, unavailability of sufficient blood in terms of quantity and quality on day to day basis, there by endangering a great number of lives that could otherwise be saved quite easily. This has been seen to be a global concern but more severe in developing countries. Screening of blood from donors for safety is vital step and in this process, a number of donors are rejected for a variety of reasons, where some are temporarily deferred and some permanently. Paucity of donors has always been a problem faced worldwide. It is now increasingly desired that most blood donation should be from voluntary, non-remunerated blood donors.[(1)] But the situation is that the family / replacement donors still contribute to more than 45% of blood collected in India.[(2)] Blood transfusion services have the responsibility of collecting blood only from donors who are at low risk for transfusion transmissible infections (TTIs) and who are unlikely to jeopardize their own health.[(2)] Safe and adequate supply of blood and products is a major health issue faced globally. According to national AIDS control organization (NACO) statistics, the annual requirement is 12 million units in India.[(3)] Proper Screening of blood from donors for safety is vital step in preventing transfusion related infections and reactions, and to reduce the unnecessary rejections of donors which can be psychologically stressful to donors.[(4)]

The rate and reasons of deferral differs from region to region and center to center. There are large number of healthy individuals who are not suitable to donate blood and they are labelled as "deferred" donors. A donor is usually deferred due to temporary or permanent reasons. A temporarily deferred donor is deferred for a specific time period, but most often these prospective donors are then less likely to return in future for donation thinking they have been deferred for life time.

In general, voluntary blood donors are healthy but a fraction of all categories of blood donors, e.g., volunteer donors, replacement donors etc., may be unsuitable to donate safe blood. Therefore, it is the responsibility of Blood collection team at blood banks to distinguish unfitting donors and defer them as appropriate, either temporarily or permanently. However, frequent and unnecessary donor deferrals (in particular temporary deferrals) will demotivate the donors for re-donation in future and can cause shortage of blood in blood banks.[(5-6)] Knowledge of the rate and reasons for donor deferral is quite essential as this can be a guide to donor recruitment strategy in future. The objectives of the present study are to quantify the blood

donor deferrals and analyse the reasons of deferring blood donors in a tertiary care teaching hospital blood bank. The implications of this study are to provide help in instituting a more efficient way of selecting donors and curtailing unnecessary deferrals, in order to ensure safe and sufficient blood storage at blood banks and also building a positive relationship with donors.

Materials and Methods

A retrospective record based study of blood donors in a teaching hospital blood bank at Dr. B. R. Ambedkar medical college, Bangalore was carried out. The donor data from blood bank records pertains to period from January 2014 to December 2015 (2 years). Every donor was evaluated on the basis of medical history, physical examination, hemoglobin estimation, weight, age, blood pressure, pulse rate, temperature. Criteria laid down by the NACO guidelines were followed.

The criteria for blood donors was

1. Age 18-60yrs.
2. Hemoglobin not less than 12.5g/dl.
3. BP systolic 100-180mm/hg.
4. Diastolic 50-100mm/hg.
5. Temperature - oral temperature not exceeding 37.5 c.
6. Body weight not less than 45kg.
7. No tattoo history in past 6 months.
8. Past 48hrs medication- not taken any antibiotics or any other medications (allopathy or Ayurveda or Siddha or Homeopathy).
9. In past 24 hrs should not have consumed alcoholic beverages.
10. Women not during menstrual cycles.
11. Purple spots on the skin.

The donors were classified as suitable for donation, temporarily unsuitable and permanently unsuitable for donations, specifying the basis for deferral. Details of all who were deferred were recorded in the deferral register. Blood donor selection criteria were in accordance with NACO blood donor selection guidelines.[7] Data was analyzed using MS office excel software. Results are expressed using proportions and a Z test for proportion (single sample) is applied and the 95% confidence intervals for temporary and permanent deferrals is are calculated.

Results

A total of 1267 blood donors came to donate the blood during the study period, of whom, 1120 (88.4%) were males and 147 (11.6%) were females. Of the total donors, 7.2% (92) were deferred. Among the deferred donors, 86.3% (85) were male. Percentage of deferral among total number of registered males and females was 7.5% and 4.7% respectively. Table 1 shows the deferrals by gender and further, Table2 shows the distribution of deferred donors by type of deferral (temporary or permanent).

Table 1: Deferral proportions by gender (n=1267)

Gender	No. of registered	No. of deferred	% of deferrals
Male	1120	85	7.5%
Female	147	7	4.7%
Total	1267	92	7.2%

Table 2: Distribution of blood donor deferral by type of deferral (n=92)

Type of deferral	Total	Percentage (%)	95% CI; P value
Temporary	52	56.5	45.6% - 66.81%; Z=22.665; p<0.0001
Permanent	40	43.5	33.19% - 54.25%; Z=16.944; p<0.0001
Total	92	100	

Table 3 shows the major and minor reasons among the temporarily deferred group. Among the temporary deferred, use of medication (19.2%) was the leading cause, followed by anemia (10.9%) and low BP (10.9%). Table 4 shows the causes of permanent deferral in this study. Among the permanently deferred, hypertension was the leading cause (97.5).

Table 3: Distribution of causes of temporary deferrals (n=52)

Cause of temporary deferral	No. of deferrals	Percentage (%)
Recent Medication history	18	34.6
Low Hemoglobin	10	19.2
Low BP	10	19.2
Tattoo	5	9.6
Underweight	3	5.8
Alcohol	2	3.9
Skin lesions	2	3.9
Viral fever	1	1.9
Menstruation	1	1.9
Total	52	100

Table 4: Distribution of causes of permanent deferrals (n=40)

Cause of permanent deferral	No of deferrals	Percentage (%)
Hypertension	39	97.5
Epilepsy	1	2.5
Total	40	100

Discussion

A standardized and efficient way selecting suitable blood donors is unquestionably vital in preventing untoward transfusion related issues and securing a high quality blood collection practices. However, unnecessary deferral of blood donors results in the loss of potential donors, particularly in a society like ours where the culture of blood donation is still very poor. Donor deferral rates in regional blood centers vary from 5-24% and a less restrictive criterion can be used for donor selection without compromising donor safety.[8,9]

88.4% of the donors were males, which shows that number of females for donation was small, similar to that observed in another study by Pandey et al.[10] Among 1267 blood donors, 92(7.2%) cases were deferred due to various reasons, similar to that noted in a study conducted at Tumkur, Karnataka.[11] The deferred 92 cases were categorized into temporary constituting 56.5% and permanent 43.5%. Similar rates of deferral have been found in a study by Rehman et al with temporary deferrals comprising 63.73% and permanent deferral proportion of 36.3%.[12] However, Arslan et al in their study reported a very small rate of deferral of 10% due to permanent causes compared to the present study, and a very high rate of 90% due to temporary causes.[13] Custer et al, reported 68.5% temporary and 31.5% permanent deferral.[14] Among the 92 deferred cases, medication use was the commonest cause of temporary deferral constituting 34.6% cases, followed by anemia and low BP (19.2%) as shown in Table 2.

Leading cause of permanent deferrals was hypertension constituting 97.5%, followed by just one case of epilepsy in our study. In one of the studies conducted in Canada, 2% of the blood donors did not meet the minimum acceptable hemoglobin level criteria for eligible donors.[15] A large study that analysed rates and reasons of deferral in Saudi Arabian region noted a deferral rate of 19.2% (6508/33,900). In concurrence with our study it noted that majority of the donors were replacement donors (49.8%) and males. With respect to reasons of deferral, recent history of ingestion of medicines, low haematocrit, underweight, and low BP were the main reasons of deferral. High BP and high temperature and recent donation (less than 8 weeks before) were the other contributing factors for deferral.[16] It can be noted that compared to the Canadian study, the deferral rate is much higher in developing countries (2% Vs 19.2%).[15-16]

Conclusion

Blood donor deferral rate observed in this retrospective analysis of two-year data (7.2%) matched with findings of other studies conducted elsewhere. However, the grounds of deferral varied due to non-practice of a standardized donor selection criteria in general. Furthermore, hypertension was the major reason for permanent deferral, while medication for temporary deferral of donors. Temporarily deferred individuals must be informed about the reason as well as the period of deferral. They must be given counselling to help them overcome the problem before the next visit, this way we could reduce rate of deferral due to temporary causes.

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