



Retrospective analysis of blood donor deferral pattern at a tertiary Care Centre

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Abstract

Blood transfusion plays an essential role in patient management and can be a vital, life-saving procedure. The provision of blood for transfusion largely depends on the availability of healthy voluntary blood donors but some of the blood donors are deferred from donating blood due to several reasons. In this study, causes of donor deferral were evaluated retrospectively from January 2015 to December 2017 at Blood transfusion department, PGIMS Rohtak, Haryana, India. Analysis of the deferrals showed that temporary deferral (76.19%) was more common than permanent deferral (23.81%). The most common reasons for permanent deferral in blood donors was hypertension and causes among temporary deferrals were anaemia, underweight, medication etc. Thus, it is important to evaluate the reasons of blood donor deferral. All the potential donors deferred for temporary reasons should be counselled and educated about the reason of deferral and encouraged to return again later to ensure the availability of safe and adequate supply of blood.

Keywords: *Blood donor, voluntary, Deferral.*

Introduction

Blood transfusion in both routine and emergency situations plays an essential role in patient management and can be a vital, life-saving procedure. The provision of blood for transfusion largely depends on the availability of healthy blood donors. Ensuring the availability of safe and adequate supply of blood and blood products is the main goal of blood transfusion services (BTS)

worldwide. This involves a number of processes including selection of appropriate donor population, screening of presenting donors and testing of donated blood units for the provision of safe and efficacious blood and blood components^[1]. To achieve this, blood should be collected from voluntary non remunerated blood donors (VNRD) who are at low risk for transfusion transmissible infections (TTIs)^[2]. The

National AIDS Control Organization's (NACO) statistics show that the annual rate of blood donation in India is about 7.4 million units, against the requirement of 10 million units^[3]. According to World Health Organization (WHO) figures, out of 81 million units of blood collected worldwide annually, developing countries contribute only 39% which have 82% of the world's population^[4]. An important role of blood bank is to ensure an adequate supply of blood, but also the blood collection process should not harm either the donor or the recipient. Predonation testing is an important part of managing donor's safety which include answering the questionnaire as well as testing that involves hemoglobin, blood pressure, and weight examinations. A large number of blood donors are prohibited from donating blood due to several reasons. Deferrals are divided into permanent and temporary. Deferral of a donor results in loss of atleast one precious unit from a truly willing person. Further the deferral of a first time donor may have a significant impact on his attempt for subsequent donations. Frequent and unnecessary donor deferral may lead to reluctance of some donors to return for future donation and loss of potential blood donors^[5]. Therefore the process of donor selection should be such that it ensures the safety and sufficiency of blood supply, safeguarding the health of the recipients of transfusion as well as that of the donors, and at the same time ensures that suitable donors are not unnecessarily deferred. This is achieved by having donor deferral criteria and stringent screening of collected blood for possible Transfusion Transmissible Infections (TTIs)^[6]. It is also very important to study and analyze various causes for donor deferral, in order to categorize them under temporary and permanent deferrals and to increase influx of the donors to donate blood without deferral. Hence, the present study was taken at Blood transfusion department, PGIMS Rohtak, Haryana to analyze and evaluate the reasons for donor deferral.

Material and Methods

This retrospective study was conducted by reviewing records of the donors reporting for blood donation from 1st Jan 2015 to 31st Dec 2017 at PGIMS, Rohtak Blood Transfusion Deptt. The study included data on 129418 blood donors that were registered during this period. Records of all pre-donation deferrals over the stated period above were obtained. Blood donor selection criteria were in accordance with the World Health Organization (WHO) blood donor selection and counseling guidelines. The donors were either classified as fit for donation or as unfit or deferred donors. NACO guidelines were used for deferral of blood donors.

Criteria for blood donation:

- Age between 18 and 65 years
- Hemoglobin not less than 12.5 years (by Cuso4 method).
- Pulse 60-100 with no irregularities.
- Blood pressure- systolic 120-140mmhg and diastolic 80-100mmhg
- Body weight not less than 45kg
- Temperature- oral not exceeding 37.5°c

Blood samples of these donors were screened for HBsAg, HCV, HIV by ELISA ,Malaria and syphilis by card test.

Data collection and Analysis: Data of all blood donors and pre-donation deferrals over the stated period were obtained using a pre-tested structured questionnaire designed for the study. The data were analyzed using SPSS window version 11.5 and Microsoft excel. Significant level was set at 5% ($p < 0.05$).

Results

The data of 129418 prospective blood donors, from January 2015 to December 2017, were studied out of whom 127323 (98.4%) were males and 2095 (0.02%) were females. Female population were found to have higher deferral rate than the male population (83.87% vs 3.45%) (Table -1)

Table 1: Frequency of whole blood donors at Blood Bank PGIMS Rohtak

Gender	Donors registered	No. of Deferrals	Deferral Rate
Males	127323	4398	3.45
Females	2095	1757	83.87
Total	129418	6155	4.76

6155 donors representing 4.76% of the entire donor population were deferred from donation for various reasons. The total number of male donors

and female donors deferred was 4398 and 1757, respectively (Table-2).

Table 2: Frequency of successful and deferral donors per year

Frequency of successful Donors	2015 40553(95.12)	2016 40293(94.81)	2017 42417(95.77)	Total 123263
Frequency of deferred Donors	2078(4.84)	2206(5.19)	1871(4.23)	6155(4.76)
Total	42631	42499	44288	124198

Table 3: Frequency of deferral donors based on gender

Year	Male	Female	Total
2015	1442	636	2078
2016	1498	708	2206
2017	1458	413	1871
Total	4398	1757	6155

Table 4: Frequency of temporary and permanent whole blood donors.

Type of Deferral	No. of deferrals	%age of deferrals
Temporary	4690	76.19
Permanent	1465	23.81
Total	6155	100

Table 5: Causes of permanent deferrals with their relative proportions.

Reasons	Males	Females	%age
Chronic hypertension	1050	7	72.15
Epilepsy	161	0	11
Diabetes on insulin	58	5	4.3
Heart disease	59	0	4.1
Asthma	65	5	4.8
Thyroid disease	2	27	1.9
High risk behavior	26	0	1.8
Total	1421	44	1465

Most common cause of permanent deferral was hypertension (72.15%) followed by epilepsy (11%).

Table 6: Causes of Temporary Deferrals and their relative proportions

Reasons	Males	Females	%age
Anaemia	1145	1038	46.5
Underweight	723	130	18.3
Menstruation	0	525	11.2
Drug intake	552	2	11.8
Alcohol intake	178	0	3.8
Dengue/Malaria	191	4	4.2
Jaundice	12	0	0.2
Tuberculosis	6	0	0.1
Recent donation	32	0	0.7
Surgery	24	0	0.5
Fever	33	5	0.8
Dogbite	8	0	0.2
Allergy	27	3	0.6
Underage	26	6	0.7
Others	20	0	0.4
Total	2977	1713	4690

The most common cause for temporary deferral was low hemoglobin (46.5%), followed by donors who were underweight (18.3%) and on medication in the past 72 hours (11.8%). Less common causes were h/o fever, under age, history of malaria/dengue in the past six months, h/o menstruation in females and tuberculosis.

Discussion

The present study evaluates the donor deferral rate and reasons of donor deferral at PGI Rohtak blood transfusion department. The data of 129418 prospective blood donors, from January 2015 to December 2017, were studied out of whom 127323 (98.4%) were males and 2095 (0.02%) were females. 6155 donors representing 4.76% of the entire donor population were deferred from donation for various reasons. The total number of male donors and female donors deferred was 4398 and 1757, respectively (Table-2). An appropriate process of donor selection is the key for achieving safety in blood transfusion. The main aim is to protect and safeguard the health of both the donor and the recipient of blood and blood products. Across the world, previous studies have reported deferral rates ranging from 5.19–35.6% [7]. The deferral rate in our study was 4.76% which is comparable to study done by Girish et al with deferral rate of 5.19% [7] and Rabeya et al [8] with deferral rate of (5.6%). Different rates of donor deferrals as reported by various studies may occur from one region to another and also from one blood center to another even within the same region. While some studies reported rates as low as between 4–6% [9,10], others have reported rates as high as between 15–21% [11,12]. The deferral rate in our study was lower because most of the blood donors were VNRBDs who are considered as safe and healthy and also belong to rural Haryana who mostly have healthy diet regimen. Variations in deferral rates are also caused by multiple factors such as different donor selection criteria used in the different studies like weight, age, hemoglobin levels, blood donation interval, high risk sexual activities and endemicity of

transmittable diseases. In our study most of the donors were males (98.4%); women accounted for only 0.02% of the donors. This difference may be due socio-cultural factors, ignorance and lack of awareness or motivation causing less females approaching for blood donation. Deferral rate of female donors (83.87%) was significantly higher than male donors (3.45%) which might be due to wide prevalence of anemia in female donors. These findings are similar to another study in which female donors constituted a high proportion (90.8%) of the deferred population [6]. Many other studies especially those from developing countries also reported similar observations [13,14]. The reason for low hemoglobin in female donors can be attributed to poor nutrition coupled with the monthly menstrual blood loss. Thus, adequate nutritional advice with iron supplements should be given to female donors. The donor deferral population was categorized into temporary and permanent deferrals. Among the deferrals, temporary causes (76.19%) were more common as compared to permanent causes (23.81%). The most common cause of temporary deferral in both males and females was anemia (46.5%) in our study which was similar with other previous studies [15,16]. This supports the fact that the prevalence of clinical and subclinical anemia is very high in developing countries like India. Low hemoglobin is a curable condition thus implementation of screening programmes and treatment for anemia with iron supplements can reduce the burden of low hemoglobin deferrals and can produce more healthy donors [17]. The other common causes remained diverse among different studies depending on the community based demographical factors. In addition to anemia, underweight and consumption of medication in past 72 hours were also common reasons for temporary deferrals of donors in this study. These findings are similar to the study done by Rehman et al [18]. Other reasons included fever, underage, jaundice, malaria, dengue, diabetes, hypotension, tuberculosis, heart disease, animal bite, psychiatric disorder were also found to cause

deferral. In our study hypertension was the most common cause of permanent deferral and it constituted to 72.15% of the total permanent deferrals similar to other studies [14,19]. This is because most of our donors are from the rural community and they lack awareness about signs and symptoms of hypertension and seldom go for annual checkup. A proper track for follow up of temporarily deferred donors should be made in the blood bank so that these donors can be recruited back in donor pool after appropriate management of reason of deferral.

Conclusion

The key to achieve the ever rising demand for blood and blood products is the effective recruitment of new donors and maintenance of existing donors. All the potential donors deferred for temporary reason should be counselled and educated about the reason of deferral and encouraged to return again later to improve the efficiency of blood donation programmes. The community should be educated about the significance of blood donation and about the myths and social stigma associated with blood donation to reduce the deferral rate via social awareness programmes. Also confidentiality of history taking and examination of donors should be ensured, that will help them to answer the questions honestly and curb the barriers that impede the donation. Similar studies with a larger sample size at different parts of the nation are required to identify the deferral rate and its root cause at a national level as this can guide future donor recruitment strategies.

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