

Research Article

Evaluation of Causes of Deferral among Blood Donors

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Abstract

Background: Blood safety is a major issue all over world-wide in transfusion medicine. For this reason, blood donor selection is important for the safety of donors and recipients as well as for maintaining an adequate blood supply. Detailed analysis of various causes for deferral of blood donors may help for medical personnel to curb the barriers that impede the blood donation. The aim of this study was to analyze the rate of deferral and evaluate the various causes of deferral in blood donors to achieving 100% acceptance.

Methods: This is an Observational descriptive record-based study over a time period of 1 year from January 2019 to December 2019. Donor acceptance criteria were followed according to the National guidelines for blood donation. Data were collected from the Donor deferral registry with respect to age and Gender. The causes of deferral were categorized as temporary and permanent

Result: A total of 9059 donors presenting to the blood bank during the study period, 7713 (85.14%), were accepted for donation, and 1346 (14.86%), were deferred. Out of 1346 deferral, 898 (66.71%), were males and 448 (32.92%), were females. Among the deferred, 964 (71.48%), were deferred for temporary reasons and 382 (28.52%), for permanent reasons. Low haemoglobin was a common cause for temporary deferral (27.82%), and hypertension for permanent deferral (97.12%), constituting 27.56% of the total deferrals.

Keywords

- Blood donation
- Donor deferral
- Temporary cause
- Permanent cause

ABBREVIATIONS

BTS: Blood transfusion services; NACO: National AIDS Control Organisation; WHO: World Health Organisation

INTRODUCTION

In current medical and surgical practice, Blood transfusion is considered as an important life-saving practice in medicine, especially in cases of medical emergency [1]. Blood transfusion services (BTS), have the responsibility to collect blood only from donors who are at low risk for any infectious diseases that could be transmitted through the transfusion and who are unlikely to endanger their own health by blood donation. A meticulous process to assess the suitability of prospective donors is therefore essential to protect the safety and sufficiency of the blood supply, and safeguard the health of recipients of transfusion and blood donors themselves, while ensuring that suitable donors are not deferred unnecessarily [2].

The reports of National AIDS Control Organisation (NACO), state that in India the annual rate of blood donation is only 7.4 million against the annual requirement of 10 million units. The statistics from World Health Organisation (WHO), show that annually there are over 81 million units of blood are collected, but the developing nations contributes to only 39% of this magnitude where around 82% of world's population is living [3].

The blood transfusion service plays an important role in ensuring the supply of safe blood as and when needed. Hence it is

important to ensure that there is an adequate supply of safe blood, it is also essential that the blood collection process does not harm either the donor or the recipient [4]. Blood safety is ensured through the 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 [5]. However, donor selection processes might have negative impacts on the blood supply at the same time, as many deferred donors might not return to donate again. Thus an evidence-based donor selection process is needed so as to avoid unnecessary deferral of donors especially voluntary donors [6-8].

As there is changing trends in the deferral causes as well as deferral rate in different parts of the globe, this study aims to evaluate the deferral reasons in our center and compare these reasons and rates among different parts of the nation and the world, and tries to uncover the hindering factors behind the target of achieving 100% acceptance of blood donors.

MATERIALS AND METHODS

This retrospective study over a period of 1 year, included all the donors reporting for blood donation in the blood bank of Father Muller Medical College Hospital, Mangalore Karnataka (India), from 1st January 2019 to 31st December 2019. The blood donors were selected in our Blood bank based on Drugs and Cosmetic Act 1940 which is supplemented by Guidelines of Directorate General of Health Services guidelines, Ministry of Health & Family Welfare (2003), and NACO. Pre donation

screening was done using a medical history questionnaire followed by physical examination & Haemoglobin estimation. Data were collected from the Donor deferral registry concerning age and Gender. The causes of donor deferral were categorized as temporary and permanent, and data were recorded and presented in the form of tables.

RESULTS

A total of 9059 registered donors were screened during the study period of one year. Out of them, 7713 (85.14%), were selected for blood donation and 1346 (14.86%) (Table 1), were deferred. Regarding the gender distribution among the donors donated blood, 7235 (93.80%), were males and 478 (6.20%), were females. Overall men 898 (66.71), were deferred more than the women 448 (32.29%). But women had high deferral rate (448/926; 48.38%), compared to Men (898/8133; 11.04%). Most of the deferral was in the age group of 18 – 30 in both males (52.38%), and females (77.68%) (Table 2). Overall among deferral, Temporary deferral (71.48%), was common than the Permanent deferral (28.52%). The causes of Temporary and Permanent deferral and their relative proportions were shown in Table 3 and 4. Anemia with low haemoglobin was the most common cause of temporary deferral (27.82%), in both male and females constituting 19.91% of the deferrals. Hypertension was the commonest cause of Permanent deferral (97.12%), constituting 27.56% of the deferrals.

DISCUSSION

Donor selection has vital importance in blood banking and transfusion medicine. Judicious selection of accurate donors plays an important role in the success of safe transfusion practice and it will help to avoid preventable wastage of blood and its products.

Most of the donors were males (93.80%); women accounted for only (6.20%), of the donors. The present study showed that female donors (32.29%), were deferred more frequently than male donors (10.23%), which might be due to the wide prevalence of anemia in female donors. The overall deferral rate (14.86%), of

donors in this study is similar to that of similar studies from India and other countries.

Donor deferral (14.86%) in the study was very much similar to Vimal et al., were reported a deferral rate of 14.8% in their 4 years study⁽³⁾, and Lim et al, a study showed a deferral rate of 14.4% [9], and Iqbal et al., reported deferral rate is 12.9% [10]. Our study shows temporary deferral (71.48%), was more common than permanent deferral (28.52%). This finding is similar to that of other studies by Custer et al. (68.5%) [11], and Rehman S et al, (63.70%) [4].

Anemia with low haemoglobin (27.82%), was the commonest cause of temporary deferral in our study and this was the commonest cause of temporary deferral in most similar studies. Sareen et al (39.42%) [12], Chauhan et al (24.11%) [13], and Ahmad N et al. (34.07%) [14]. The probable causes of anemia could be poor nutrition, hookworm infestation, low socioeconomic status, repeated pregnancies, and ignorance [15]. Besides these causes, many studies have proved that regular blood donation can itself significantly contribute to the depletion of iron stores leading to iron deficiency anemia [16].

In our study, most of the deferred donors (52.34%), were of the age group 18-30. Many similar studies, like Sareen RN et al., reported 60.5% [17], Arundhathi S et al., reported 57.82% [15].

The other causes of temporary deferral noted in our study are under medications (11.49%), menstruation (11.2%), alcohol intake (8.89%), and lack of sleep (6.54%). A study by Kapse V et al., reported under medication was 10.89% [18], Vimal et al., reported 9.2% [3], and Purohit A et al., 9.10% [19]. Arundhathi S et al, reported menstruation was 10.56 % [15], and Rajendra et al., shows 4.6% [17]. Sahni N et al., reported alcohol intake was 5.48% [6], John F et al., reported 8.84% [20], and Awasthi s et al., reported 13% [21], lack of sleep reported by AI Nouri et al., 5.8% [1].

Hypertension (97.12%), was the predominant cause for permanent deferral but accounted for 27.56% among total deferrals. Our results correlated with a study by Bahadur S et al., reported with 29.4 % [22]. The most common cause of permanent deferral in our study was hypertension, followed by diabetes. This is correlated with the study done by Malini KP et al [23]. Comparisons of total deferral rate of similar studies from various countries showed in Table No 5.

CONCLUSION

This study showed that the incidence of donor deferral was 14.86% and most of the donors were young with the majority being students and voluntary donors. In order to meet the demand for blood and its products, proper assessment of the donors at the time of donor selection is important to ensure a safe blood supply. The blood bank should endeavour to recruit new donors and should retain existing donors. The donor deferrals can be reduced by creating awareness and educating donors regarding blood donation. Defining and educating the donor selection criteria to the community by the medical professionals and creating awareness and self-motivation from the donors are the key factors behind achieving 100 percent acceptance of blood donors.

Table 1: Gender distribution of registered, deferral and selected donors.

Donors	Male	Female	Total
Registered	8133 (89.77%)	926 (10.23%)	9059
selected	7235 (93.80%)	478 (6.20%)	7713 (85.14%)
Deferred	898 (66.71%)	448 (32.29%)	1346 (14.86%)

Table 2: Age group of deferred donors and their percentage.

Age in years	Male		Female	
	Number of donors	Percentage of deferrals	Number of donors	Percentage of deferrals
< 18	2	0.22	3	0.67
18-30	470	52.34	348	77.68
31-40	241	26.84	55	12.28
41-50	155	17.26	32	7.14
51-60	30	3.34	10	2.23
Total	898	100	448	100

Table 3: Cause of temporary deferrals with their relative proportions.

Causes	Number	Temporary deferrals (%)	Total deferrals (%)
Low Haemoglobin	268	27.82	19.91
Menstruation	108	11.2	8.02
Medication	110	11.49	8.18
Less Sleep hours	63	6.54	4.68
Alcohol intake	68	7.06	5.05
Surgery	46	4.78	3.41
Low BP	26	2.7	1.93
Dental extraction	24	2.5	1.79
Fever	26	2.7	1.93
Vaccination	25	2.6	1.85
Skin allergy	18	1.9	1.33
Cold	15	1.55	1.11
Antibiotics	15	1.55	1.11
Tattooing	14	1.42	1.05
Dengue	13	1.36	0.96
Smoking	13	1.36	0.96
Allergy	10	1.03	0.75
Malaria	9	1	0.66
Recent donation	7	0.72	0.52
Headache	7	0.72	0.52
Underweight <45	6	0.62	0.45
Chicken pox	6	0.62	0.45
Kidney stone	5	0.51	0.38
Under age <18	5	0.51	0.38
TT injection	5	0.51	0.38
Cough	5	0.51	0.38
No proper vein	4	0.41	0.3
Not willing to donate	3	0.31	0.22
High haemoglobin	3	0.31	0.22
Fungal Infection	3	0.31	0.22
H/O Tuberculosis	3	0.31	0.22
Fasting	3	0.31	0.22
Back pain	2	0.2	0.15
Trauma	2	0.2	0.15
Typhoid	2	0.2	0.15
H/O ring worm	2	0.1	0.15
Chicken gunya	2	0.2	0.15
Miscellaneous	16	1.66	1.19
Total	964	100	71.48

Table 4: Cause of permanent deferrals with their relative proportions.

Causes	Number	Permanent deferrals (%)	Total deferrals (%)
High BP	371	97.12	27.56
Uncontrolled Diabetes	4	1.05	0.3
asthma	4	1.05	0.3
Seizures	2	0.2	0.15
Hepatitis	1	0.26	0.07
Haemophilia	1	0.26	0.07
Brain tumor	1	0.26	0.07
Total	382	100	28.52

Table 5: Comparison of Total deferral rate of similar studies from various countries.

Study	Study Period	Total donor screened	Total Deferral rate	Country
Ahmad et al [14]	7 years	7,806	12.6	India
Vimal et al [3]	4 year	9557	14.87	India
Iqbal et al [10]	8 months	3348	12.9	Multan
Awasthi et al [21]	2 years	3388	10.4	North India
Bobati et al [24]	1 year	8894	8.62	India
Taneja et al [25]	1 year	24062	17.1	India
Rabeya et al [26]	1 year	4138	5.6	Malaysia
Lim et al [9]	4 years	278401	14.4	Singapore
Arundhathi S et al [15]	2 years	4071	9.9	India
Present study	1 year	9059	14.86	India

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