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ANALYSIS OF BLOOD DONOR DEFERRAL IN A TERTIARY HOSPITAL BASED BLOOD BANK FROM NORTH EAST INDIA

[1]Sarat Das, [2]Valina Brahma, [3]Shemim Rahman, [2]Kusum Borsaikia
[1]Associate Professor, Department of Pathology, Jorhat Medical College & Hospital, Jorhat, Assam, India
[2]Assistant Professor, Department of Pathology, Jorhat Medical College & Hospital, Jorhat, Assam, India
[3]Medical Officer, Blood Bank, Jorhat Medical College & Hospital, Jorhat, Assam, India
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Corresponding author: Valina Brahma

Abstract:

Background: The blood donor selection is a very important step for safe and healthy blood transfusion. During the stringent process of donor selection, the donors who are disqualified for donating blood are called deferred donors. Donors may get deferred due to temporary or permanent causes. The rates and reasons of donor deferral vary from region to region. This study was carried out to know the reasons of donor deferral and deferral rates in our blood bank.

Methods: This retrospective study was conducted in a tertiary hospital based blood bank from North East India for a period of one year between January 2018 and December2018. All blood donors were screened as per guide lines of the National AIDS Control Organisation (NACO) provided in Standards for Blood Banks and Blood Transfusion Services under the Drugs and Cosmetic Act 1940. The relevant data and information of the deferred donors were retrieved and analyzed from the donor deferral register.

Results: A total of 14078 potential blood donors were studied in this study, out of which 1365 were deferred. Total donor deferral rate was 9.69%. The most common cause of deferral amongst blood donors was anaemia (Hb<12.5 gm/dl) comprising 54.58%.

Conclusion: Knowledge of donor deferral reasons and incidence in a particular region is very important in developing better strategies to minimize the loss of precious blood donors. It will ensure safe and quality blood and blood products for the recipients.

Keywords: blood donor deferral, temporary deferral, permanent deferral, anaemia.

Introduction:

Blood transfusion is considered as an important life-saving treatment in medical field, especially in medical emergency. It saves millions of lives. It should be safe and healthy. Therefore, blood donor selection is a cornerstone for blood transfusion to safeguard the health of both donors and recipients.[1] During the stringent process of donor selection, the donors who are disqualified for donating blood are called deferred donors. Donors may get deferred due to temporary or permanent causes. The rates and reasons of donor deferral vary from region to region.[2] This study was carried out to know the reasons of donor deferral and deferral rates in our blood bank.

Materials and Methods

This retrospective study was conducted in a tertiary hospital based blood bank from North East India for a period of one year between January 2018 and December 2018. All blood donors were screened as per guide lines of the National AIDS Control Organisation (NACO) provided in Standards for Blood Banks and Blood Transfusion Services under the Drugs and Cosmetic Act 1940.[3] Each donor was evaluated by the questionnaire, medical examination, body weight, age, blood pressure(BP), pulse, temperature, haemoglobin(Hb) estimation and transfusion transmitted infection(TTI) screening tests. Cut-off value for Hb was 12.5 gm/dl, body weight not <45 kg, systolic BP 100-180 mmHg, diastolic BP 50-100 mmHg, and age 18-60 years. Haemoglobin estimation was done by Hemocue and hepatitis B virus (HBV), hepatitis C virus (HCV), human immunodeficiency virus (HIV) tests were performed by Enzyme linked immunosorbent assay (ELISA) ; Syphilis by rapid plasma reagin test & malaria by rapid kit test. The relevant data and information of the deferred donors were retrieved

and analyzed from the donor deferral register. Deferred donors were categorized as temporary & permanent according to the causes. It was done to help in counselling and making temporarily deferred donor to become a healthy donor in future.

Result

A total of 14078 potential blood donors were registered for donation of blood during the study period of one year from January 2018 to December 2018. Out of which, 12713(90.31%) were accepted for blood donation and 1365(9.69%) were deferred for various reasons. There were 13746 male registered donors of which 12446(90.54%) donated and 1300(9.46%) were deferred. Out of 332 female donors, 267(80.42%) were accepted for donation and 65(19.58%) were deferred.

Table 1: Demographic profile of Donors

Donor	Male	Female	Total (%)
	Number (%)	Number (%)	
Registered	13746 (97.65)	332 (2.35)	14078 (100)
Donated	12446 (90.54)	267 (80.42)	12713 (90.31)
Deferred	1300 (9.46)	65 (19.58)	1365 (9.69)

In this study, total donor deferral rate was 9.69%. Deferral rate of male donor was 9.46% and female donor deferral rate was 19.58% [Table 1].

Table 2: Deferral profile of donors

Deferral type	Total number	Deferral percentage	Deferral rate On total registration
Temporary	1207	88.42	8.57%
Permanent	158	11.58	1.12%
Total	1365	100	9.69%

A total number of 1207(88.42%) donors were deferred for temporary causes and 158(11.58%) were deferred for permanent causes [Table 2].

Table 3: Reasons of Temporary Deferral

Reasons	Total number	Percentage (out of 1207)	Percentage on total deferral (out of 1365)
Anaemia(Hb<12.5mg)	745	61.72	54.58
Alcohol consumption	218	18.06	15.97
Underweight(<45kg)	49	4.06	3.59
Hypertension	44	3.65	3.22
Allergic disorders	39	3.23	2.86
Tattoo	27	2.24	1.98
Skin lesions	17	1.41	1.25
Lack of sleep	14	1.16	1.03
Vaccination	12	0.99	0.88
Underage(<18 years)	12	0.99	0.88
Inadequate collection	10	0.83	0.73
Frequent donation	6	0.50	0.44
Chicken pox	6	0.50	0.44
History of malaria	3	0.25	0.22
Menstruation	3	0.25	0.22
Diabetes	2	0.17	0.15
Total	1207	100	88.42

Out of total 1365 deferred donors, 745(54.58%) were deferred temporarily because of anaemia (Hb<12.5mg), 218(15.97%) for alcohol consumption within 24 hours before donation, 49(3.59%) for underweight (<45kg) and 44(3.22%) for hypertension [Table 3].

Table 4: Reasons of Permanent Deferral

Reasons	Total number	Percentage (out of 158)	Percentage on total deferral (out of 1365)
Hepatitis B	54	34.18	3.96
Hepatitis C	39	24.68	2.86
Syphilis	32	20.25	2.34
HIV	30	18.99	2.20
Cardiac disease	2	1.27	0.15
Neurological disease	1	0.63	0.07
Total	158	100	11.58

There were permanently deferred donors, 54(3.96%) due to Hepatitis B, 39(2.86%) due to Hepatitis C, 32(2.34%) due to Syphilis and 30(2.20%) due to HIV [Table 4].

Discussion

The blood donor selection is a very important step for safe and healthy blood transfusion. During the proper selection process, some donors get deferred because of various permanent and temporary causes. The rates and reasons of donor deferral vary from region to region. Our study was carried out to know the reasons of donor deferral and deferral rates.

The donor deferral rate reported in our study was 9.69% which is comparable to the study of Awasthi S *et al* showing the deferral rate of 10.4%.[4] Different Studies done by E. Sabari Priya, Shrivastava M *et al*, Shah A *et al*, Mulla FI *et al*, and Aneke CJ *et al* observed donor deferral rates of 6.5%, 11.5%, 17.39%, 13.02% and 32.50% respectively in their literatures from various parts of India as well as Internationally.[5,6,7,8,9] These variations of donor deferral rates may be because of different donor selection criteria, variations in prevalence of anaemia and TTIs in general populations of the different study locations.

Our study observed higher number deferral of female donor (19.58%) than male donor(9.46%) similar to other studies done by E. Sabari Priya, Chauhan DN *et al* and Patel S *et al*.[5,10,11] There were recorded permanent deferral (11.58%) and temporary deferral (88.42%) in this current study. In the past study from South India, Sundar P *et al* also reported about 16% permanent and 84% temporary deferral.[12]

The overall most common cause of deferral amongst blood donors in our study was anaemia comprising 54.58% which is comparable to the study done by Agnihotri N showing 55.8% deferral due to low haemoglobin.[13] Like our study, most of other studies done in past were shown low haemoglobin as a main reason for deferral of blood donors.[14,15,16,17,18] This indicates a high prevalence of anaemia(particularly iron deficiency anaemia) in our population. The major causes of anaemia may be nutritional deficiency, worm infestation and frequent blood donation. A single unit of blood donation has been shown to result in depletion of iron up to 236 mg from body stores.[19] So, an adequate temporary deferral system for prospective donor with low haemoglobin is very essential to reduce the burden of anaemia, particularly iron deficiency anaemia in these population. The donors deferred due to anaemia should be given advice on proper nutritious diet, iron supplements and antihelminthic drugs along with awareness health programmes in the community level.

Alcohol consumption in last 24 hours prior to donation of blood was the second most common temporary cause of deferral in our study similar to other past studies.[5,10,14,] Public awareness programme and adequate information regarding ill effects of alcohol intake, importance of blood donation and eligibility criteria should be given to the people which can minimize the donor deferral due to alcohol consumption. Other less common reasons of deferral in this study were underweight (3.59%), hypertension (3.22%), allergic disorders (2.86%) and tattoo (1.98%). To reduce the loss of precious donor, regular health check-up, proper management and follow up can be carried out especially for temporarily deferred donors so that they can be reverted back to donor pool. For this, blood bank staffs including medical officer, counsellor and nurse can be trained properly.

Permanent deferral observed in our study was 11.58% out of total deferral. Hepatitis B infection was the most common cause of permanent deferral consisting 3.96% followed by Hepatitis C infection (2.86%). It was earlier reported in past study that Hepatitis B infection was a major factor for permanent deferral of donors among Indian population.[20] Therefore, public should be educated about vaccination and route of transmission of HBV and HCV infection through distribution of Information, Education and Communication pamphlets which can reduce the prevalence of both HBV and HCV infections.

Conclusion

Knowledge of the reasons and incidence of donor deferral in a particular region would help greatly in blood donor recruitment efforts especially temporarily deferred young adult donors who can be returned back to donor pool. This will help in developing better strategies to minimize the loss of precious blood donors. It will also ensure safe and quality blood and blood products for the recipients along with safety of blood donors.

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