



## A RETROSPECTIVE STUDY OF DEFERRED PROSPECTIVE BLOOD DONORS AT RIMS, RANCHI

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**ABSTRACT** **Background:** Blood is regarded as a “drug” under drug and cosmetics act, 1940. The criteria for prospective blood donor selection and deferral in India are provided by the Drugs and Cosmetic Act 1940 (and rules thereunder) supplemented by the Standards for Blood Banks and Blood Transfusion Services. Those subjects who do not fulfill the above criteria are considered deferred cases. **Aim of the study:** This study focuses on the reasons for temporary and permanent deferral and related epidemiological characteristics. **Material and method:** A record based study of deferred cases from 1st January 2020 to 30th June 2020 was undertaken. **Conclusion:** Most Deferred cases were males belonging to age group 21-30 years. Most common blood group among deferred cases was O positive and high blood pressure was found to be the most common factor for deferral. Among females donors low hemoglobin was the most common deferral factor.

**KEYWORDS :** Blood transfusion, voluntary donor, donor deferral, replacement donor, Transfusion transmissible infections (TTIs)

### INTRODUCTION

Blood transfusion is a life-saving intervention and plays important role in medical and surgical practice<sup>[1]</sup>. Despite the life-saving role of blood transfusion, the role of blood transfusion services is to ensure adequate availability of safe blood via donors that are in good health<sup>[2,3]</sup>. Blood comes from blood donors defined as “persons who donates either whole blood or blood products for transfusion” WHO provides a global estimate of 112.5 million blood donations yearly<sup>[4]</sup>.

Blood is regarded as a “drug” (under section 3(b) of the Drugs and Cosmetics Act, 1940) by the FDA and all the blood banks have to obtain a license from the FDA and follow the FDA guidelines. Blood donors can be of three types: (a) Voluntary donors are those who donate blood out of his/her own free will and on humanitarian grounds or out of sense of duty or responsibility towards the community. (b) A Replacement donor is a friend or a relative of the recipient whose donated blood unit is credited to the patient (predeposit donation). Blood unit that has been donated replaces the blood unit used for the patient. (c) Paid or professional donors donate blood for money<sup>[5]</sup>.

The criteria for prospective blood donor selection and deferral in India are provided by the Drugs and Cosmetic Act 1940 (and rules thereunder) supplemented by the Standards for Blood Banks and Blood Transfusion Services<sup>[6,7]</sup>. Those subjects who do not fulfill the above criteria are considered deferred cases.

Deferrals could be temporary or permanent<sup>[8]</sup>. Temporary deferral connotes that the prospective donor is deferred based on removable, time bound factor such as low hemoglobin, hematocrit and more, while permanent deferral implies that the prospective donor have non-removable, long lasting factor such as possibility for any of the transfusion-transmissible infections (TTIs)<sup>[9]</sup>.

All deferred donors are expected to be treated with respect and care in a confidential manner.

### MATERIALS AND METHODS

This was a retrospective record based study, performed in the Blood Bank, RIMS, Ranchi. Study Population included 265 deferred prospective blood donors from 1st January 2020 to 30<sup>th</sup> June 2020.

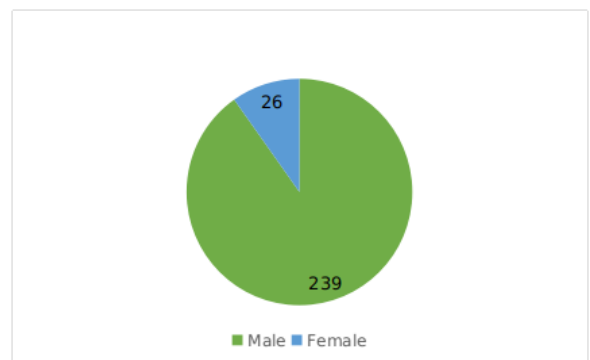
The blood donors were asked to fill a blood donors form which included relevant medical history as well as personal information of the donor. The donors were also evaluated for their weight, blood pressure, hemoglobin and blood group. Those prospective donors not fulfilling any one of the eligibility criteria were categorized as deferred cases and were included in our study. Our study does not include HIV, hepatitis B, hepatitis C, malaria and syphilis patients which is tested after blood collection from the donor.

Study procedure involved case reports having donors age, sex, blood group, and causes and type of deferral (temporary or permanent).

### RESULT

In the present study a total 265 blood donors were included having age group of 17-65 years, out of which 239 (90%) were male and 26 (10%) were female amounting to a male-female ratio of approximately 9:1.

**FIG.1: GENDER-WISE DISTRIBUTION**



**Table – 1 Age-wise Distribution**

Age group (years)	Total
<18	5
18-20	17
21-25	80
26-30	47
31-35	37
36-40	30
41-45	23
46-50	19
51-60	6
>60	1
Total	265

Median age of deferred donors in our study was 29 years. Most of the patients(30%) belonged to the age group of 21 to 25 years followed by 30 cases(17.7%) age group of 26-30 years. 62% of cases belonged to 21-35 years age group.

**Table – 2 Blood Group Profile Of Deferral Cases**

Blood Group	No. of Donors
O+	93
B+	91
A+	48

AB+	26
O-	3
AB-	2
A-	1
B-	1
TOTAL	265

Most of the deferred cases belonged to O+ve blood group(35%) followed by B+(34%) and A+(18%).

**Table – 3 Frequency Distribution Ofcauses Of Deferral**

Causes of deferral	Total
High BP	67
Low Hb	39
Alcohol intake	35
Low BP	24
Recent infection	18
On Medication	17
Tattoo	6
Recent surgery	4
Menstruation	6
Underage	5
Jaundice	6
Dental extraction	4
Ear piercing	4
Miscellaneous	17

Most common cause of deferral among donors was high blood pressure(25%) i.e. more than 140 for systolic and more than 100 for diastolic. This is followed by low hemoglobin(15%) i.e. less than 12.5 gm%, Chenna et al found low hemoglobin (48.1%) followed by hypertension (16.4%) as the 2 most common causes for deferral<sup>[10]</sup>. Okoroiwu et al also found anemia as the most common cause of deferral<sup>[11]</sup>. Other common causes of deferral included alcohol intake in last 72 hours(13%), history of recent infectious disease like typhoid, malaria, dengue and skin infection(6.7%) and history of drug intake like antibiotics and anti-thyroid drugs(6%).

Miscellaneous cause include chest pain, chickenpox, breast feeding, anxiety, marijuana addiction, uncontrolled diabetes, hydrocele, dysrhythmia, lack of sleep, muscular dystrophy, obesity, professional donor, recent tetanus toxoid injection and included 1 case each.

Most common cause of deferral among females was low hemoglobin (7 cases) followed by ongoing menstruation (6 cases) and low blood pressure(4 cases). Chauhan et al observed that the prevalence of anemia among female donors was higher than male donors (26.4% vs. 1.1%)<sup>[2]</sup>.

Most common cause of deferral in males was high BP. Causes of permanent deferral was cardiac disease(2 cases) and leprosy(1case).

In our study three category of deferral can be inferred. Category 1 including those conditions which cause physiological limitation to the prospective donor like low BP, low Hb, underage, underweight, menstruation and breastfeeding. Category 2 includes disease conditions which increases risk to donor like high BP, recent surgery, jaundice, uncontrolled diabetes and cardiac diseases. Category 3 includes those causes of deferral which increases risk to the recipient like recent infection, medication, tattoo, ear-piercing, jaundice and dental extraction. The respective percentage in our study of category 1, 2 and 3 are 36%, 29% and 35% .

## CONCLUSION

Deferred cases include males in much higher proportion than female (9:1) which could be due to excessively more number of male donors than female donor.

Median age of deferred donors in our study was 29 years. Most of the deferred donors(30%) belonged to the age group of 21 to 25 years followed by 30 cases(17.7%) age group of 26-30 years.

Most of the deferred cases belonged to O+ve blood group(35%) followed by B+(34%) and A+(18%). This may reflect the actual blood group frequency distribution of all the blood donors including those who are not deferred.

Most common cause among males was high blood pressure followed

by alcohol intake and low hemoglobin which underscores the unmet need of regular basic health check-ups and nutritional supplementation in the local population and community education regarding the alcohol free period required before blood donation.

Among female donors most common cause was low hemoglobin followed by ongoing menstruation and low blood pressure which again underscores the need for nutritional supplementation and regular health check-ups among the female population.

Causes of permanent deferral observed in our study was cardiac diseases and Leprosy. Also category 1 cases, i.e. conditions causing physiological limitation to donors was most common cause of deferral followed closely by category III, i.e. condition causing increases risk and disease transmission in recipients.

## REFERENCES:

- [1] Okoroiwu HU, Okafor IM. Demographic characteristics of blood and blood components transfusion recipients and pattern of blood utilization in a tertiary health institution in southern Nigeria. *BMC Hematol.* 2018;18:16.
- [2] Chauhan DN, Desai KN, Trivedi HJ, Agnihotri AS. Evaluation of blood donor deferral causes: a tertiary-care Centre-based study. *Int J Med Sci Public Health.* 2015;4(3):289–392. [3]Chauhan C, Chauhan R, Awasthi S, Dutta S, Joshi H. Pattern and outcome of donor deferral-? Need of hour. *Int J Res Med Sci.* 2018;6(1):289–92
- [4] World Health Organization. Global status report on blood safety and availability 2016. Geneva; 2016.
- [5] Collection of donor blood, processing and storage, in: *Essentials of clinical pathology*, Kawthalkar SM (ed.), New Delhi, 1st edition, Jaypee brothers medical publishers; 2010:341-346.
- [6] Drugs and Cosmetic Act. [Last accessed on 2015 Sep 05]. Available from: <http://www.cdsc0.nic.in/writer/readdata/DrugsandCosmeticAct.pdf>.
- [7] Standards For Blood Banks & Blood Transfusion Services, National AIDS Control Organization, Ministry of Health and Family Welfare, Government of India, New Delhi. 2007. [Last accessed on 2015 Sep 23].
- [8] World Health Organization (WHO). Donor selection guidelines on assessing donor suitability for blood donation. Luxembourg: WHP cataloguing-in-publication data; 2012. p. 35.
- [9] Aneke CJ, Ezech UT, Nwosu AG, Anumba EC. Retrospective evaluation of prospective blood donor deferral in a tertiary hospital-based blood bank in south-East Nigeria. *J Med Tropics.* 2016;18(2):103–7.
- [10] Chenna D, Shastry S, Murugesan M, Baliga PB. Implication of deferral pattern on the donor pool: Study at a Tertiary Care Hospital. *J Appl Hematol* 2015;6:111-4.