



Analysis of Donor Deferral in 101 Voluntary Blood Donation (VBD) Camps by Tertiary Care Hospital of North-Western India

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INTRODUCTION

Safe Blood banking in INDIA is upcoming modern medicine. Stringent pre-screening of the blood donors is essential to ensure quality of donors and to avoid risk of transfusion transmitted diseases to the recipient. Donor deferral is bad experience for both the blood donor as well as the blood bank and leaves them with negative feelings for blood donation process. These donors are less likely to return for blood donation in future ^{[1][2]}. Thus, every blood centre has to balance between acceptable quality and desired quantity.

The criteria for prospective blood donor selection and deferral in India are provided by the Drugs and Cosmetic Act 1940 ^[3].

It is very essential to study and analyze the reasons for such deferral among prospective donors in order to categorize them into temporary and permanent deferrals and to find the causes in particular region. Few studies done in India in the past have provided different common reasons for deferral of whole blood donors, highlighting differing demographic profile in different parts of the country. ^[4,5,6,7]

The objective of this study is to assess the current rate and reasons for donor deferral in north western India so that temporarily deferred donors with corrective reasons can be identified, properly informed and guided to improve their quality and thus later on donate blood. So the study was done in 101 Voluntary Blood Donation (VBD) camps over a period of 5 months at blood bank, SMS Hospital, Department of Immunohaematology and Blood Transfusion SMS HOSPITAL, JAIPUR.

MATERIAL & METHOD

Volunteer Donor Data was analyzed retrospectively from the records maintained by the blood bank in 101 Voluntary Blood Donation (VBD) Camps from 1-05-2015 to 25-09-2015. Voluntary Donors presenting at outdoor locations were included in the study.

Standard Operating Procedures(SOP) based on Drugs and Cosmetic Act 1940 amendment 1945 was followed by medical officers of our blood bank. Proper detailed history, counseling & physical examination (pre-tested structured questionnaire) was done for donor selection and deferral.

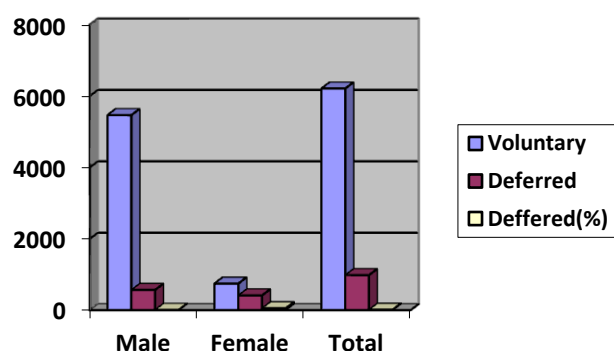
The cutoff for hemoglobin (Hb) was 12.5 gm/dl by the finger prick method; all male donors were screened for Hb using CuSO₄ and all female and doubtful values for male donors (on CuSO₄) were confirmed for correct Hb by Hemocue Hb 201+ (HemoCue AB, Angelholm, Sweden).

Donors with systolic blood pressure & diastolic B.P. (B.P. as measured by mercury syphgmanometer) greater than 140mm Hg & 100 mm Hg were rejected. (SOP followed in camps).

There was no compulsion to donate blood. Refreshment was provided to donors by the camp organizers. First time and repeat donors were not segregated for simplicity of analysis. Deferral reasons were analyzed amongst Voluntary, Male-female and various age group categories, Temporary-Permanent deferral and its causes.

RESULTS

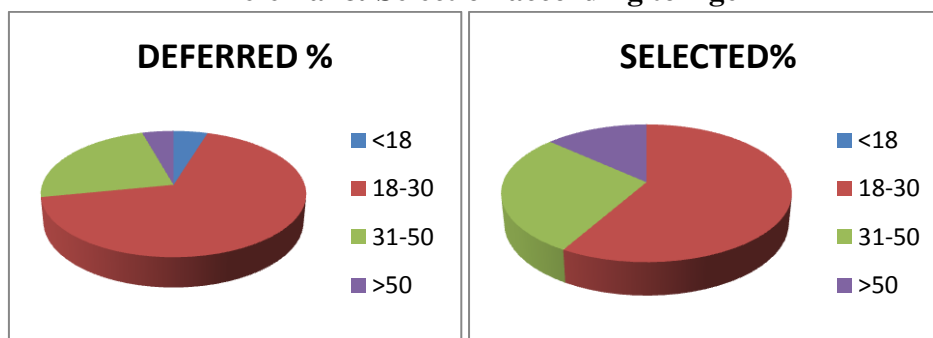
Profile of donor population



Donor category	Male	Female	Total
Voluntary	5463	745	6208
Deferred	568	415	983
Deffered(%)	10.4	55.7	15.8

Out of 6208 people who had come for blood donation, 5463 were males (88%) and 745 were females (12%)

Deferral & Selection according to Age



Age group (in years)	Deferred % (n)	Selected % (n)
<18	4.8	NIL
18-30	67.1	58.9
31-50	23.7	28.6
>50	4.4	13.5
TOTAL	100%(983)	100%(5225)

Mainly donors Deferred as well as Selected the most were in age group of 18-30

Table: Causes of Deferral based on gender

Causes	Male (%)	Female (%)
Low Hb	35.2	64.8
Low Weight	65.3	34.7
Medication	85.9	14.1
Menses	NIL	100
Donation within 3 months	96.7	3.3
Surgical causes	83.3	16.67
Hypertension	95.7	4.2
Under age	57.4	42.6
Alcohol & smoking	96.9	3.1
Venepuncture problem	22.2	77.8
Hep B & Hep C	92.3	7.7
Others	81.8	18.2
Total	57.8	42.2

Low Hb & Venepuncture Problem were main causes of Deferral in females

Table: Causes of Deferral (Permanent & temporary)

Causes	Temporary (%)	Permanent (%)
Low Hb	39.7	
Low Weight	12.7	
Medication	11.4	
Menses	6.9	
Donation within 3 months	6.1	
Surgical causes	4.9	
Hypertension		4.8
Under age	4.7	
Alcohol & smoking	3.3	
Venepuncture problem	1.8	
Hep B & Hep C		1.3
Others	1.2	1.2
Total	92.7	7.3

Low hb, low weight & donors on medication were main temporary causes.

Hypertension was main permanent cause.

DISCUSSION

Blood donor suitability criteria based on science, informed medical opinion, and regulatory rules influence donor demographics and lead to specific deferral patterns.^[8] Donor deferral rates in blood centers vary from 5 to 24%^[9] leading to huge losses in terms of blood units for transfusion.

We undertook this study to obtain the incidence of deferral in our voluntary blood donors in north western region of Rajasthan and to analyze the

causes of deferral with an aim to ensure quality of donors and to avoid risk of transfusion transmitted diseases to the recipient.

In our study, we segregated donors after detailed medical history, questionnaire and physical examination on basis of Voluntary Male-female, various age group categories, Temporary-Permanent deferral and its causes.

Deferral incidence in our study is **15.83%**. Chaudhary *et al* (16.4%)^[6], Bahadur and colleague (9%)^[5], Naveen agnihotri (11.2%)^[10], Custer *et al* (13.6%)^[11], Variation in deferral percentage which probably reflects the regional diversity^[12] and marked variation in whole blood donor eligibility criteria internationally.^[13]

Deferral knowledge also helps in calculating the eligible and potential blood donor pool in different regions and state blood transfusion councils and regional blood centers can act as nodal centers for collecting such data so as to obtain national statistics. The eligible donor pool may vary from the potential donor pool which is usually calculated on the basis of age alone (population between 18 and 60 years of age). This was highlighted by William Riley and colleagues in their study that if age alone is taken as the criteria, overestimated eligible donor prevalence (calculated using deferral incidence) by approximately 59 percent.^[14]

Like most of other studies done in the past^[15, 11,15,16] the most common reason for deferral in our blood donor population was low hemoglobin (39.7%) of total deferral donors. Nearly 65% of these anemic donors were females highlighting the prevailing anemia in general population among females.

Efforts are needed to address the issue of anemia in prospective blood donors at the regional, state, and national level and efforts are warranted on the lines of National Anemia Action Council (NAAC), Blood Center of Wisconsin^[17]. Govt of Rajasthan is proposing elemental iron tablets for voluntary blood donors for period of 100 days.

The second most common reasons for deferral found in our study was low weight (12.7%) which matched with study of Bahadur and colleagues^[5].

Third most common cause was that donors were undergoing specific medications at time of donation hence were deferred.

Studies have found different common reasons for deferral in blood donors reflecting on the variation in donor population and eligibility criteria used in different parts of the world. Kwa *et al*^[18] (poor vein and underweight donors), Charles *et al*,^[19] (low Hb and Hypertension), Zou *et al*,^[1] (travel to malaria area and miscellaneous blood exposure), and Rabeya *et al*,^[20] (high blood pressure and medical illness) have cited various other common reasons for deferral in respective study population. In India, Bahadur and colleagues^[5] in their study with predominantly replacement donors (99.4%) found low Hb as the most common cause of deferral (32.9%). However, second and third most common reasons in their study were low weight (26.6%) and history of jaundice/ hepatitis (8.1%). Similarly in another Indian study by Chaudhary and colleagues^[6] low weight (32.3%) and low Hb (18.6%) were respectively the two most common reasons for the deferral.

Hypertension (65%) is the leading cause of permanent deferral in our study can lead to deferral of a significant percentage of prospective blood donors as evident in our study and another by Bahadur *et al*^[5]. Any donor suffering from hypertension when bleed, the sudden removal of 450 ml of blood may precipitate a cerebral catastrophe.^[21]

Nonetheless, it can be safely said that more studies on larger number of donors are needed to further test the impact of knowledge of deferral criteria in prospective blood donors. The deferral of donor due to any reason has a very negative impact and many temporarily deferred potential donors do not return to donate blood in the future. Dorothy *et al*^[22] supported this view that medical examination may actually serve as an incentive for future repeat donations. All selected or deferred donors who are given an explanation feel motivated to check their eligibility to donate blood and return for future donation.

Since Camps organized at public places and people want to donate with zeal and excitement so

we found that donor wanted to donate again within period of 3 months (6.1%) and females usually forget about their menstrual status (6.9%) and few about their minor and major surgeries (4.9%). So proper screening detailed history and counseling of donor, donation should be done so as to provide healthy and safe blood. Recruitment strategies thus need to take into consideration high deferral rate in all these cases especially when camps are planned at places with higher proportion of donors below 30 years of age (65.9%). Health authorities should also implement policies for the preventive measures to decrease the incidences of common deferral causes as this reflects the health status of the society.

CONCLUSION

Salient findings in our study on predominantly 6208 voluntary blood donors in 101 VBD camps are as follows.

- Total donors deferred were 983 (15.83%).
- Most common reasons for deferral were low Hb (39.7%), under weight (12.7%), and history of antibiotic/medication use (11.4%).
- Male(568)donors were more deferred as compared to female(415) donors.
- Female deferral rate(55.7%) was 5 times more than male(10.4%)
- Temporary deferral rate(92.7%) much more than permanent deferral rate(7.3%)
- 18-30 yrs age group was associated with higher deferral in prospective blood donors.
- This study had limited power owing to the small sample size; however these findings still provide pointers to the blood-banking community for future action.
- Determine incidence of donor deferral at state and national level.
- Educate, motivate, and treat donors deferred due to anemia/low Hb, so that they can be recruited again.
- Rationalize and revalidate deferral criteria based on studies done in Indian

population; for example criteria for Hb cutoff and criteria for acceptable B.P.

- Create awareness (using IEC material) about deferral criteria, statistics, and duration among prospective blood donors.
- Modify recruitment strategy according to locally and regionally prevalent donor demographics.

Effective measures thus need to be initiated to address the issue of lost donors in terms of “how much” and “why.” It is high time to take stock of the present and future precious blood units lost due to these deferrals.

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