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### Original Article

## Analysis of Blood Donor Deferral causes in Solapur district

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#### ABSTRACT

**Abstract:** Background: Potential blood donors may be unable to donate blood for several reasons. To ensure the safety of blood supplied by the blood bank to patients, it is paramount that all blood donors are in good health. A shortage of safe blood donors is frequent and it is important to understand and analyze the causes of deferral of potential donors. Objectives: To evaluate the rate and major reasons of blood donor deferrals. Methodology: Data presented for donation in a blood centre and outdoor camps from Sept. 2012 to Aug. 2013 among different age groups of both the sex were collected. The deferrals will be based on an interview, detailed physical examination and hemoglobin estimation, and the same were noted in a standard blood bank questionnaire and consent form. Donor eligibility criteria were followed according to the National guidelines for blood donation. Donors who were deferred were analyzed according to their age, sex, occupation, and reason for deferral. Results : 205 blood donors were deferred out of 5185 presenting for donation during the study period. Incidence of deferral was 3.95 %. Most common reasons for deferral were low Hb (64.9%), Medication (8.8%), donated within 3 months (4.9 %), hypertension (4.4%) and others (3.4%). Majority of them (92.2%) were being deferred for temporary reasons. Permanent deferral accounted for 7.8 % with hypertension being the most common cause (56.2 %) in this category. Most of these deferred donors (65.8 %) were of age 18-30 years. Conclusions: A deferral study in blood donors may shed light on the health status of the general population which may affect the blood supply. Most of temporary deferral donors will return for donation in future. Knowing temporary causes of deferral and proper inspiration is need for optimizing donor recruitment and retention.

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### 1. Introduction

Blood safety is ensured through selection of appropriate donor populations, screening of donors, testing of donated blood units as well as blood transfusion practice. Initiatives over the past two decades to reduce the risk of transfusion transmitted disease and to protect donor safety have created a corresponding reduction in the donor population [1]

Through screening of donors is easy, cost effective method to reduce risk of transfusion transmitted diseases. Blood transfusion saves lives and improves health, but millions of patients who need transfusion do not have timely access to safe blood.

If 1-2% of population donates blood, it will be more than sufficient to meet the need of a country like India; the requirements

are higher in countries with more advanced health-care systems [2]. NACO statistics show that the annual rate of blood donation in India is about 8 million units, against the requirement of 10 million units [3].

India faces a whopping blood deficit of approximately 30-35 per cent annually. The country needs around 10 million units of blood every year but manages a merely 5.5 million units. The state of Maharashtra contributes about 10 lakhs units, with 23% of the country's collection [4]. 94 % of blood donations in the county are made by men while women contribute only six per cent, as reported in the WHO global database on blood safety updated in June 2011. Donor deferral is defined as an individual who presents to a blood collection center and is deferred [5]. Blood donors are deferred either permanently or temporarily. Individuals disqualified from donating blood are known as 'deferred' donors. Blood donor deferral is a painful and sad experience for the blood donor as well as the blood center screening the donor.

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A donor must be free from any blood transmissible disease, as far as it can be determined by health history and medical examination as per the Drugs and Cosmetics act which governs the blood transfusion services in India.

Potential blood donors may be unable to donate blood for several reasons. To ensure the safety of blood supplied by the blood bank to patients, it is paramount that all blood donors are in good health. A shortage of safe blood donors is frequent and it is significant to understand the causes of deferral of potential donors to improve recruitment campaigns aiming at the quality and availability of donors.

A few studies in India in the past have provided different common reasons for deferral of blood donation highlighting differing demographic profile in different parts of the country[6].

Objectives: To evaluate the rate and major reasons of blood donor deferrals.

**Material and Methods:**

This is a retrospective study carried out in the Blood Bank of our centre from Sept-12 to Aug-13. The study involved donors who have donated blood at outdoor voluntary blood donation camps and at the blood bank.

The data taken from the donor registry and questionnaires were compiled and analyzed. Prior to donation, donors were counseled and asked to fill a medical history questionnaire.

Donors were screened for hemoglobin level, blood pressure, weight and all the donors were instructed to undergo thorough medical systemic examination. Donor eligibility criteria were followed as per our National guidelines. Hemoglobin estimation was done with copper sulphate solution method.

Deferred donors data was analyzed with respect to age, sex, occupation, place and causes for deferral which were also categorized into permanent and temporary causes based on the curability of the condition. The protocol was approved by Institutional Ethical committee.

**Statistical analysis:**

Descriptive statistics was used to present the data. Chi-square test and z-test were used to determine the statistical significance. A p-value less than 0.05 were considered as significant

**Results:**

During the study period the total numbers of donors presented for blood donation were 5185. Of the total donors who were willing for blood donation, 205 (3.95%) donors were deferral. Incidence of deferral was 3.95 %.Mean age of deferral donors was 28.9 ± 11 yrs.

Table-1: Majority of donors deferred (7.8%) were in the age group 18-30. From the table, it is understood, Deferral percentage increased significantly (p<0.01) with increase in age of donor.

Table-2: Significantly more female donors were deferred as compared to male donors (17.88% Vs 2.4%; p<0.0001).

Table-3: Most common reasons for deferral were low Hemoglobin (64.9%), history of antibiotic/medication use (8.8%), donated within 3 months (4.9%), and hypertension (4.4 %).

Majority of them (92.2%) was being deferred for temporary reasons. Permanent deferral accounted for (7.8%) with hypertension being the most common cause (56.2%) in this category.

**Table-1: Distribution of donors according to age group**

Age	Total donors	Deferred donors Number (%)
18-30	1670 (32.3%)	130 (7.8)
31-40	1543 (29.7%)	33 (2.1)
41-50	1470 (28.3%)	25 (1.7)
51-60	502 (9.7%)	11 (2.2)

$\chi^2$  -value=94.9, p<0.01 for linear trend

**Table-2: Distribution of donors according to gender**

Gender	Total donors	Deferred donors Number (%)
Male	4665 (90%)	112 (2.4)
Female	520 (10%)	93(17.88)

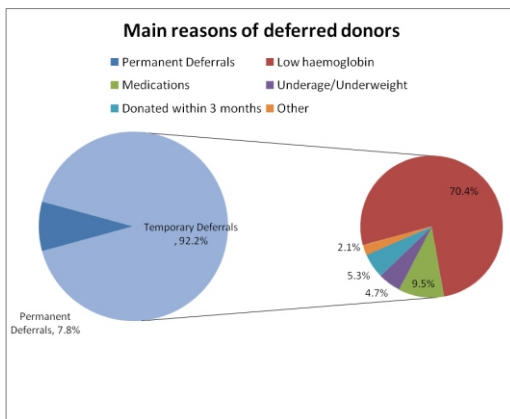
z-value=81.5, p<0.0001

**Table-3: Distribution of temporary deferral**

Temporary deferral	No. of cases (%)
Alcohol intake	3 (1.6)
Allergy	2 (1.1)
Donated within 3 months	10 (5.3)
Drug addicted	1(0.5)
F/H jaundice	1 (0.5)
Fever	2 (1.1)
Hepatitis	1 (0.5)
Lactation	1 (0.5)
Low Hb	133 (70.4)
Medication	18 (9.5)
Surgical cause	3 (1.6)
Underage / Underweight	9 (4.7)
Tatto	1 (0.5)
Others	4 (2.1)

**Table-4: Distribution of deferral causes according to occupation**

Occupation	Permanent (%)	Temporary(%)	Total
Business	3 (18.8)	16 (8.5)	19
Driver	1 (6.2)	5 (2.6)	6
Farmer	4 (25)	9 (4.8)	13
Housewife	0	10 (5.3)	10
Retired	1 (6.2)	0	1
Security	0	1 (0.5)	1
Service	4 (25)	25 (13.2)	29
Student	0	76 (40.2)	76
Worker	3 (18.8)	47 (24.9)	50

**Figures:****Discussion:**

The donor screening process is of the most important steps in protecting the safety of the blood supply. Donor selection is based on medical history & limited physical examination done on the day of donation to determine whether giving blood will harm the donor or if transfusion of the unit will harm to the recipient. The donor selection process results in deferral or rejection of potential blood donors [7,8]. Donor deferral rates in blood centers vary from 5-24% [9] leading to huge losses of available blood units for transfusion in the nation every year.

We under took this one year retrospective study to analyze frequency & major reasons for blood donor deferrals. In our study, we segregated donor deferrals on the basis of medical interview or physical examination.

In present study, the donor deferral incidence was found 3.95% which was similar to that observed by B.Unni Krishnan etal [16] and Rabeya etal [10]. However, most of the author cited high deferral incidence in their donor populations [1, 11-13]. Such varied differences in donor deferral rate could be due to regional diversity [14] and marked variation in whole blood donor eligibility criteria internationally [15].

In present study, 17.8% female donors were temporary deferred more frequently than male donors, which might be due to wide prevalence of anemia in female donors.

Next reason for temporary deferral in our study was due to consumption of medication in the past 12 hours (9.5%), similar finding were found by B.Unnikrishnan etal [16].

The donors in this study are young, 62% were under age of 40 and males formed 90% of the donor population. Students by Virtue of their education are more aware of the importance of blood donation. But the worrisome fact is large number of students were rejected i.e. 54.8% of females & 22.3% male, because of low Hb (anemia). So still there is need of medical education for this young people who are aware of their social responsibility. Corporate social responsibility is a new concept that has risen amongst the corporate sector and they do their part by organizing blood donation drive. In this category, large number of employees (30.4% male & 17.2% female) was rejected temporarily because of unawareness about their health.

So there is need to concentrate these two groups of population (Students & Workers) as they are having major contribution in blood donation drive.

Deferrals lead to loss of precious donors & blood units available for transfusion purposes knowledge of rate & causes of donor deferral can guide the recruitment strategy for WBD.

**Conclusion:**

Our study showed that the incidence of donor deferral was 3.95% and the majority of the donors were young being students and workers. Temporary deferrals were more compared to permanent deferrals.

Our results showed that the major causes for temporary deferral were low hemoglobin followed by underage / underweight in females and low hemoglobin followed by medication in males. Perhaps with proper nutritional advice and follow up, we hope to be able to reduce the percentage of temporary deferral due to low hemoglobin.

Increased public education and by giving clear explanation for the reason of deferral, we can decrease unnecessary deferrals.

These motivated voluntary blood donors who are temporarily deferred can become regular donors when properly followed, thereby increasing the donor pool as we always need donors.

If national average can be raised to 8 voluntary blood donors per 1000 population, there would not be any shortage of blood for the country.

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