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Research Article

AN AUDIT OF THE DEMOGRAPHIC PROFILE OF DEFERRED BLOOD DONORS FOR ANALYSIS OF DONOR DEFERRAL PATTERN IN REGIONAL BLOOD TRANSFUSION CENTRE IN DELHI

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ABSTRACT

Blood banking is backbone of health care services. Despite high demand of blood and blood products in our country there is shortage of supply of the same.
This study evaluates the causes of deferral in prospective donors and suggests modification in selection criteria and other practices according to the type of population.
Prospective donors coming to the blood bank, Guru Teg Bahadur Hospital, Delhi from January 2014 to July 2015 were included in the study.
In nineteen months, total of 57,278 prospective donors were screened for their eligibility to donate blood. 4,232 donors (7.3% of total screening) were deferred and the most common causes of deferral were anaemia, medication/ alcohol intake, infection and allergic symptoms, chronic medical illnesses and presentation for donation before the recommended time gap of three months.
This study recommends initiatives to be taken for public awareness and education about safe blood transfusion practices and encouraging regular voluntary blood donation. It also suggests revision of certain criteria for screening of a prospective blood donor with respect to the Indian population.

INTRODUCTION

Background

Blood banking is an important part of a hospital and health care services. Requirement of blood and its components is particularly high in India owing to high incidence of peri-partum haemorrhages, infectious diseases like Dengue and Malaria, cancer etc.

Donor registration and screening is a pre-requisite for ensuring safe blood supply. Registration of the donor provides detailed demographic information about the prospective donor. It helps to exclude donors who might be capable of transmitting disease to the recipient of their blood. At the same time it also ensures that the donor is healthy and blood donation would not cause any detrimental effect to the donor. Donor can be accepted and proceed for phlebotomy or can be deferred which can be either temporary deferral or permanent deferral. Deferrals can be categorized as temporary short term (1-56 days), temporary long term (57-365 days), and multiple years/permanent (more than 365 days). Temporary deferred donors are advised to wait for a specified period before trying to donate again. Permanents deferral is given to those persons who cannot be accepted as a blood donor under any circumstances. In our country, there is a wide gap between the demand and the supply for blood and blood products. The donor deferral criteria has been adopted from the developed countries, however, sufficient "in-house" data and its scientific validation are still required to test the applicability of these criteria in Indian blood donors [1]. In the literature there are not many studies on the demography of the prospective donors in the Indian scenario. Hence, there is a need to evaluate the donor deferral pattern for better applicability of selection criteria in Indian set up to decrease the donor deferral rate. At the same time some changes in routine practices can improve self image of the donors and motivate them to donate on a regular basis.

Objective of the Study

To evaluate the causes of deferral in prospective donors and to suggest modification in selection criteria and other practices

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according to the type of population that may reduce the number of deferrals and eventually increase the pool of regular repeat voluntary donors.

PROCEDURE (MATERIAL AND METHODS)

Prospective donors coming to the blood bank, Guru Teg Bahadur Hospital, Delhi from January 2014 to July 2015 were registered and screened for blood donation. All the deferred candidates were included in the study. Their registration form indicating the cause of deferral were preserved and evaluated.

RESULTS AND OBSERVATIONS

In nineteen months (Jan 2014 to July 2015) a total of 57,278 prospective donors were screened for eligibility for blood donation. The number of successful donations including replacement and voluntary was 53,046. A total of 4,232 cases were deferred constituting almost 7.3% of total screened donors. The most common causes of deferral were anaemia, patients on medication or who had alcohol intake in the past 24 hours, patients with infection and allergic symptoms, chronic medical illnesses and presentation for donation before the recommended time gap of three months. (Table 1-5, Fig. 1)

Table 1 JANUARY 2014 to JULY 2015 (19 MONTHS)

Total number of donors screened: 57278								
Total number of successful donation: 53046								
Total number of deferrals: 4232								
Cause of deferral	**Anemia**	**Alcohol**	**Drug intake**	**Illness**	**Infection/Allergy**	**Weight<45kg**	**Age<18or>65**	**Others**
Number	2221	359	509	402	157	141	42	401

Table 2: ANAEMIC (2221)

Hb (gm%)	AGE (yrs)/ SEX						
	18-30		31-45		>45		*SUM*
	Male	Female	Male	Female	Male	Female	
<8	3	32	6	24	0	2	67
8-9.5	21	79	8	40	4	14	166
9.5-10.5	38	194	13	56	5	34	340
10.5-11.5	112	224	53	177	15	36	617
11.5-12.5	260	318	124	227	24	78	1031
SUM	434	847	204	524	48	164	2221

Total Females: 1518
Total males:703
18-30 yrs:1281
31-45 yrs: 728
>45 yrs: 212

Table 3 Common Drugs responsible for deferral

Drug	Number (509)
NSAIDS	261
Antibiotics/Antifungal/Antihelminthic	131
Antitubercular	33
Thyroxin	21
Antiepileptic	18
Immunosuppressant	13
Others/Unknown	32

Table 4 Medical conditions causing deferral

Illness	Numbers (Total: 402)
Jaundice	78
Uncontrolled Hypertension	61
Tuberculosis	50
Typhoid	49
Epilepsy	36
Hypo/Hyperthyroid	41
Uncontrolled Diabetes	28
Urinary calculi	29
Others (CAD, CVA, RHD)	30

In the present study, anaemia was the most common cause of deferral. More than half (52.5%) i.e. 2221 out of 4,232 prospective donors were found to be anaemic and could not donate blood.

Table 5 Miscellaneous causes of deferral

Causes	Number (Total: 401)
Blood donation within 3 months	93
Menstruating Female	29
Recent delivery/ Abortion/ Lactation	30
Chronic smoker	38
Fasting	29
High BP/ Pulse	30
Haemoglobin > 17.5 gm%	24
Recent vaccination	19
Recent Tattoo	17
Recent Surgery	16
Suspected Professional Donor	45
Others (Tremors, Poor veins, unwilling)	31

Almost 58 percent of such donors (1281 out of 2221) were young adults aged between 18 to 30 years. Sixty nine percent (1535/ 2221) of all anaemic deferred donors were females, of which 847 were less than 30 years, 524 between 31 and 45 years while 164 were more than 45 years old. Haemoglobin was marginally low (between 11.5 and 12.5 gm %) in a large percent (46.4%) of anaemic prospective donors (1031 out of 2221). (Table 2, Fig. 2)

Fig. 1: Causes of deferral

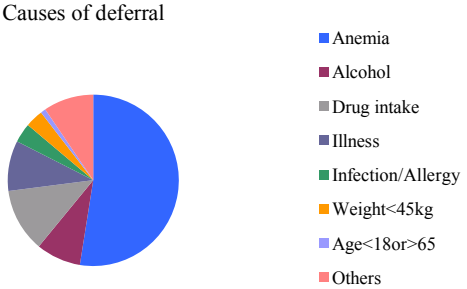
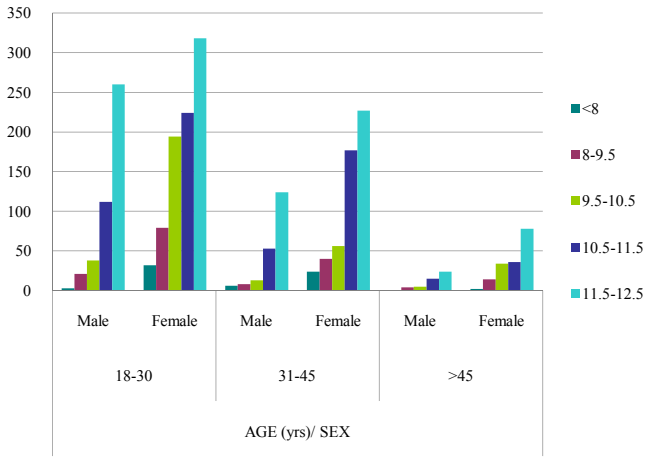


Fig. 2: Distribution of age and sex in Anemic



Another major cause of deferral was recent intake of alcohol (within last 24 hours) before donation. Three hundred fifty nine out of 2221 (16%) deferrals were ascribed to this cause. Drugs like Non Steroidal Anti Inflammatory Drugs (NSAIDS),

Antibiotics, Antitubercular constituted another 23% (509/ 2221) of deferred cases. (Table 1 and 3)

Whatever be the cause of deferral, it leads to loss of time and effort of both staff and the prospective donors.

Table 6 Comparison of present study with other Indian studies

	Anemia	Alcohol	Drug intake	Abnormal BP	Infection/Allergy	Weight<45 kgs	Age <18yrs or >65yrs	Previous donation
Present Study	52.5	9	12	1.2	4	3	1	9
Pune	55.8		6.9	11.1	1.7	2.9	2.7	2
Aligarh	11.4	5.7	5.8	2.1	21.5	6.8	7.1	2.6
Bangalore	23		0.8	11.5	18.7		11.6	
Gujurat	34.6	0.6	8.6	14.7	11.9	9.3	2	1
Kolkata	40.9	1.2	10	22.1	11.6	0.6		4.1

Table 7 Comparison with other studies done worldwide

	Anemia	Abnormal BP	High Risk Activity	Infections	Medication	Age Related	Weight <45Kgs	Positive Serology	Previous donation	Other Medical Illness
Present study (India)	52.5	1.2		4	12	1	3		9	5
Ivory Coast	29.4	2.5	29.6	6.7	2.4		1.9	3.3		4.1
Malaysia	40.7	32.9								15.6
Turkey	20.7	5.6	16.7	23.3						
Trinidad and Tobago	22	17	28				3.9			4
Brazil	18.7	10.6	16.5	10.1	5.7		1.7			17.2

Amongst chronic medical illnesses, jaundice was the commonest cause of deferral. Most of these prospective donors were unaware of the type of hepatitis they had suffered, either because they were never tested for it or could not recall. Hypertension, uncontrolled raised blood sugar level, epilepsy, endocrinological disorders, coronary artery disease were some of the other important causes of deferral. Past or present history of tuberculosis and typhoid, allergic manifestations (respiratory and dermatological) were also causes of deferral. Underweight and underage candidates and senior citizens were also declined for donation. (Table 1 and 4)

Donors presenting for repeat donation before prescribed time gap of three months was another important cause found in the deferred population. Menstruating females, females in post partum six months time, recent abortion and lactating mothers were also refused to donate blood. Donors giving history of chronic smoking, recent surgery, vaccination or tattoo were deferred until the specified time period. Donors observing restricted diet, fasting were temporarily deferred. On physical examination, persons having high or low pulse/ uncontrolled blood pressure, haemoglobin more than 17.5 gm%, and tremors were discouraged to donate blood. During screening some of the donors were suspected of being professional donors. They were interrogated thoroughly and physically examined for presence of prick marks at the venepuncture site. They were declared unfit if prick marks were identified or they could not prove their identity or relationship with the patient. (Table 5)

DISCUSSION AND CONCLUSION

There are numerous causes of blood donor deferrals either temporary or permanent. While some deferrals are for the benefit of the donor, others are to protect the recipient from any undesired health related hazard [1]. Majority of deferrals are temporary where the donor is advised to return after a defined time period of few days or months.

At the same time it passes on a negative message to the potential donor about their health and fitness status [2].

In the present study out of 57,278 prospective donors, 4,232 donors were deferred. The rejection rate is approximately 8 percent, which is similar to previous studies [3-5]. Of these deferred cases, more than half (52%) were anemic with hemoglobin less than 12.5 gm%. Further analysis of these deferred donors revealed that females predominated in this group constituting almost 70% of deferrals due to anaemia. Fifty eight percent of anaemic donors (1281 out of 2221) were young adults aged between 18 and 30 years. Forty six percent i.e. 1031 out of 2221 had borderline haemoglobin in the range of 11.5 to 12.5 gm%. The largest category comprising 632 rejections was of the females having haemoglobin between 11.5 and 12.5 gm%. Other causes of deferral in descending order of importance were intake of alcohol within last 24 hours, recent ingestion of medication, presenting for subsequent donation before three months, chronic illness like jaundice, tuberculosis, uncontrolled hypertension and uncontrolled diabetes, infection etc. There was a fair population of suspected professional donors which were turned down for fear of promoting unethical practices and having various blood borne diseases.

Comparing studies from across the country, anemia is the most common cause of deferral followed by infections. Abnormal blood pressures and weight related issues also play a significant role [1, 6-9] [Table 6]. Similar deferral pattern is found in deferred blood donors throughout the world [10-14] [Table 7]. Study by Rabeya *et al* suggested setting new haemoglobin criteria for donor deferral according to reference range obtained for a particular population [7]. Similar study by Lim *et al* recommended modification in physical criteria that can lower deferral rates without compromising the health status of the donor [4]. The study also suggested the advantage of increased public education on common causes of donor deferral. This can allow prospective donors to pre-screen themselves and lower

the deferral rates. The study still considered that one to one medical screening and appropriate counselling are the best means to approve or reject a blood donor.

In current study, the most common reason for pre-donation deferral was a low haemoglobin level. Most of the young female donors were deferred because of low haemoglobin levels correlating or consistent with anemia. These findings are no different from previous studies. It has been reported that ninety-five percent of the deferrals for low hemoglobin and hematocrit occur in women [15, 16]. It has also been suggested that the hemoglobin/ hematocrit acceptance standard be lowered to increase female eligibility and to offer iron treatment for premenopausal women who want to donate or who are frequent donors [16]. Persons coming for blood donation must be encouraged and motivated to become regular voluntary donors [2]. Studies have shown that even temporary deferral of prospective donors can have a psychological effect [3, 4, 17, 18]. Rejected donors have shown to have undergone stress and develop negative image about self. The anaemic female donors are more prone for this. Such temporarily deferred donors are likely to avoid blood donation in future [17, 19].

This study has highlighted certain aspects and lacunae in blood banking system operational in India. It is recommended that more and more donors should be motivated and recruited in order to meet the demand of blood/ blood components in India. Public awareness and education about safe blood transfusion practices should be strengthened. Temporarily deferred donors should be counseled appropriately to ensure that they return after taking appropriate treatment or correction of the cause of temporary deferral. Rather than making it a exclusive blood banking affair, more clinicians should be involved for making awareness a success. Reasons for non return of the deferred voluntary donors should be studied and solution to their genuine concerns like time constraints, and negative impact on their mind regarding their health status should be addressed effectively.

In Indian scenario, where there is a huge gap between availability of blood and demand for the same, there is requirement to revisit and revise the criteria for screening of a prospective blood donor. Apart from these, there is a need to redesign our existing system which is friendlier for our voluntary donors. If necessary actions are taken up, we may built up an efficient donor resource group which should be big enough to tackle any kind of challenge the Indian healthcare services are facing with regard to lack of supply of adequate blood for their patients.

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