

# Pre-Donation Deferral of Whole Blood Donors in District Transfusion Centre

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## ABSTRACT

**Background:** Blood transfusion saves lives and improves health, but millions of patients who need transfusion do not have timely access to safe blood. Pre-donation donor selection is done for the safety of the blood donor and recipient.

**Aims:** Primary objective of this study was to record and document the current rate and reasons for donor deferral in our District Transfusion Centre.

**Methods and Material:** Study was conducted on whole blood donors (voluntary/replacement), arrived for donating blood at our blood bank, during 1st January 2009 to 31st December 2010. The donor selection was done by pre-donation screening tests like questionnaire followed by physical examination and haemoglobin estimation. The deferred donor's data was

analysed.

**Results:** Out of 9113 blood donors who came to donate blood, 94.81% were eligible for donation and 5.19% blood donors were deferred. The deferral rate among male population (401/8870 cases, 4.52%) and female population (72/243 cases, 29.63%) were observed. Most common cause of deferral in our study was hypertension (189, 39.95%), followed by anaemia (92, 19.45%), low body weight (43, 9.09%).

**Conclusions:** Hence studying the profile of blood donors will help to identify sections of the population which could be targeted, to increase the pool of voluntary blood donors and also to guide and provide the necessary essential database for the policy design and programme implementation.

**Key Words:** Pre-donation deferral, Blood donors, Donation, Anaemia

## INTRODUCTION

Blood transfusion saves lives and improves health, but millions of patients who needs transfusion do not have timely access to safe blood. It is estimated that donation by 1% of the population (10 per 1000 population) is generally the minimum needed to meet a nation's most basic requirements for blood; the requirements are higher in countries with more advanced health-care systems [1]. National AIDS Control Organization's (NACO) statistics show that the annual rate of blood donation in India is about 7.4 million units, against the requirement of 10 million units [2]. The state of Karnataka contributes about 500,000 units, with 62% coming via voluntary blood donation [3]. Pre donation donor selection is done for the safety of the blood donor and recipient. Various causes of the pre-blood donation deferral need to be studied systematically to improve the donation rate. Monthly statistics sent to the drug controller exclusively includes transfusion transmitted diseases data and excludes other major causes of deferral. Deferral is a painful and sad experience for blood donor as well as the transfusion centre and it necessitates additional efforts towards new recruitments. Moreover, deferring prospective donors often leaves them with negative feelings about themselves as well as the blood donation process [4]. Most of the previous studies carried out concentrated mainly on blood groups and transfusion transmitted diseases, however very few studies are published regarding the pre-blood donation deferral. Primary objective of this study was to record and document the current rate and reasons for donor deferral in our District Transfusion Centre.

## MATERIALS AND METHODS

Study was conducted on whole blood donors (voluntary/replacement), arrived for donating blood at our blood bank, during 1st January 2009 to 31st December 2010. The donor selection was done by pre-donation screening tests like questionnaire followed by physical examination and haemoglobin estimation. The donors who were fit according to the Directorate General of Health Services guidelines, Ministry of Health and Family Welfare (2003) [5], were asked to donate blood. Deferred donors data was analysed with respect to age, sex, type of donor and causes for deferral which were also categorised into permanent and temporary causes based on the curability of the condition.

## RESULTS

Out of 9113 blood donors who came to donate blood, 8640 (94.81%) were eligible for donation and 473 (5.19%) blood donors were deferred. The deferral rate among male population (401/8870 cases, 4.52%) and female population (72/243 cases, 29.63%) were observed [Table/Fig-1]. Deferral rate among female population was 6.5 times higher than the male population.

Deferred donor age group ranged from 18 to 55 years with a mean age 30.09 years. Average age of the deferred female donors (23.68 years) was less than the male donors (31.24 years). The deferred donors were divided according to the age group as shown in the [Table/Fig-2]. Deferral rate was highest among 18-30years age group (270, 57.08%) followed by 31-40 years (132, 27.90%), 41-50 years (57, 12.05%) & 51-60 years (14, 2.95%). Highest deferral rate among male (270/401, 50.87%) and females (66/72, 91.66%) were seen

in 18-30 years age group. Most common cause of deferral in our study was hypertension (189, 39.95%), followed by anaemia (92, 19.45%), low body weight (43, 9.09%), DM (31, 6.55%), medication (28, 5.91%), hypotension (26, 5.49%) and other causes (64, 13.53%) including previous donation, chronic medical illness, previous surgery, menstruation, breast feeding, typhoid, allergy, immunisation, drug abuse, lymphadenopathy, alcoholism, tattooing.

Out of the total 473 deferrals, 237 cases were due to permanent causes and 236 were due to temporary causes. Highest Deferral rate in younger age group 18-30 years (189/237, 79.74%) included temporary causes, while permanent causes were seen in older age group 31-60 years (155/236, 65.67%) Refer [Table/Fig-3]. Common deferral causes in younger population 18-30 years age group were anaemia, low weight and hypotension. Common deferral causes in older population 31-60 years age group were hypertension and diabetes mellitus [Table/Fig-4].

## DISCUSSION

Safe donor selection is the first step towards safe transfusion services. National and international efforts are on to ensure safe blood supply through screening, education and strict criteria laid down by the Directorate General of Health Sciences, Ministry of Health and Family Welfare (2003) [5] and Eligibility criteria for blood donation American Red Cross [6].

Deferral rate ranged from 5.6-35.6% across the world in previous studies, however low incidence are reported from Manipal [7] (5.2%), Rabeya [8] (5.6%), Bangalore [9] (5.84%) in concordance with our study (5.19%). Higher deferral rate are seen in both national and international regions like Singapore [10] (14.4%), Lucknow [11] (16.4%), Maiduguri [12] (17.7%) and Trinidad and Tobago [13] (35.6%). Variation in deferral rate can be attributed to multiple factors such as: an higher incidence of first time donors

Donor category	Male	Female	Total
Total donors selected	8469 (95.48%)	171 (70.37%)	8640 (94.81%)
Total donors deferred	401 (04.52%)	72 (29.63%)	473 (05.19%)
Total	8870 (100.0%)	243 (100.0%)	9113 (100.0%)

[Table/Fig-1]: Distribution of male and female whole blood donors

Particulars		Male	Female	Total (%)
Age	18-30 yrs	204	66	270 (57.08%)
	31-40 yrs	126	6	132 (27.90%)
	41-50 yrs	57	0	57 (12.05%)
	51-60 yrs	14	0	14 (2.95%)
Age range		18-55 yrs	18-40 yrs	18-55 yrs
Average age		31.24 yrs	23.68 yrs	30.09 yrs
Type of donation	Voluntary	220	52	272 (57.5%)
	Replacement	181	20	201 (42.5%)
Type of deferral	Temporary	166	71	237 (50.1%)
	Permanent	235	1	236 (49.9%)

[Table/Fig-2]: Demographic profile of the deferred whole blood donors

		Temporary	Permanent	Total
Age group	18-30 yrs	189	81	270 (57.08%)
	31-40 yrs	35	97	132 (27.90%)
	41-50 yrs	8	49	57 (12.05%)
	51-60 yrs	5	9	14 (2.95%)
Total		237 (50.1%)	236 (49.9%)	473 (100%)

[Table/Fig-3]: Distribution of permanent and temporary deferral causes among different age groups

Deferral causes	Male	Female	18-30 yrs	31-40 yrs	41-50 yrs	51-60 yrs	Total (%)
Hypertension	188	1	70	84	30	5	189 (39.95%)
Anaemia	58	34	75	13	1	3	92 (19.45%)
Low weight	19	24	39	4	-	-	43 (9.09 %)
Diabetes	31	-	1	9	18	3	31 (6.55%)
Antibiotics	28	-	16	7	5	-	28 (5.91 %)
Hypotension	26	-	21	4	-	1	26 (5.49 %)
Past Blood donation	11	2	12	1	-	-	13 (2.74 %)
Fever	11	1	9	2	1	-	12 (2.53 %)
Menstruation	-	8	7	1	-	-	08 (1.69%)
Chronic medical illness	8	-	5	2	-	1	08 (1.69%)
Allergy/asthma	7	-	4	2	1	-	07 (1.47%)
Typhoid	5	-	5	-	-	-	05 (1.05%)
Surgery	3	1	-	2	1	1	04 (0.84 %)
Lymphadenopathy	2	-	2	-	-	-	02 (0.42 %)
Alcoholism	1	-	1	-	-	-	01 (0.21 %)
Breast feeding	-	1	1	-	-	-	01 (0.21 %)
Tattoo	1	-	-	1	-	-	01 (0.21 %)
Immunisation	1	-	1	-	-	-	01 (0.21 %)
Drug addict	1	-	1	-	-	-	01 (0.21 %)
Total	401	73	270	132	57	14	473 (100%)

[Table/Fig-4]: Distribution of various deferral causes with respect to sex and age groups

in Singapore [10], in turn resulting in detection of relatively higher permanent (neurological diseases & chronic hypertension) and temporary (sexually transmitted diseases) deferral causes; During the study period at Lucknow [11] compulsory blood screening for transmittable viral disease like hepatitis was not universally followed but past history of jaundice was included as an exclusion criteria; Cut-off point of haemoglobin was not operational, inviting more number of anaemic donors resulting in higher deferral rate in Maiduguri [12]. Higher prevalence of high risk sexual activity in Trinidad & Tobago [13] was a major cause for deferral. Apart from this, variation in donor selection criteria like weight, age, haemoglobin percentage, donation interval, high risk sexual activities, endemicity of transmittable diseases and imposition of religious restriction on donation of human parts including blood could have summated to the deferral.

Delhi [14], Bangalore [9] & Manipal [7] studies showed that female donor population was very low which was similar to our study and can be attributed to ignorance, fear, lack of awareness and motivation among females. Most common cause of deferral was anaemia among females [9,13,15] reflecting ill health, poor nutritional status and higher prevalence of anaemia which is also observed in our study. Categorization of deferred donor population into temporary and permanent groups is essential for optimising donor re-recruitment and retention in the long run. The major temporary deferral causes were anaemia and low weight [8,9,14] including in our study. Evaluation and management of anaemia and recruitment to donate at a later date is pivotal in ensuring donor retention. [7]

Lower age group donors were rejected mainly because of temporary causes (18-30years, 189/270, 70%) and higher age group donors were rejected mainly because of permanent causes (40-60 years, 58/71, 81%).

Most common cause of deferral was hypertension accounting for 39.95% in contrast with other studies. [2, 11, 13] Probable reasons for this could be fear of phlebotomy, sight of blood, first-time donation and white coat hypertension. Moreover, hypertension being a modern epidemic which often goes undiagnosed and is an incidental finding in most cases. [16] Hypertension was the most common cause of deferral among permanent causes in our study and also in other studies [9,14] conducted in India. This signifies hypertension as the major under diagnosed epidemic in Indian population.

Recruitment of fresh donors by organising voluntary donation camp requires manpower, money, motivation of donors and precious time. All these can be curtailed by calling back the temporarily deferred donors after correction of their cause as done in the previous study in maiduguri [12] where nearly 70% came back and donated blood.

In Shaz [17] study, donors aged more than 60 years were allowed to donate, but our guidelines restrict donating blood beyond age group. There is a need to study the incidence of permanent deferral causes in this age group verses screening cost verses benefits of procuring blood.

## CONCLUSION

Differing deferral causes in different locality, socio-economic status, age group and sex are of vital significance in formulating and

modulating policies towards modern blood transfusion services. Hence studying the profile of blood donors will help to identify sections of the population which could be targeted to increase the pool of voluntary blood donors and also to guide and provide the necessary essential database for the policy design and programme implementation.

Among temporary causes for deferral, anaemia and low weight are the two most common causes in both males and females which can be easily alleviated by proper nutritious supplement. So we have suggested to state blood council to properly maintain the records of all the deferred donors with their causes, and ask them to return for blood donation after correcting their illness. The deferral data is not widely recorded and reported to policy makers for transfusion services. If collected and studied in a systematic way it will definitely improve the collection of blood from prospective blood donors. The older age group blood donors have higher number of diabetes mellitus, so they must be screened stringently before blood donation.

Similar studies involving larger population, stringent screening methodologies involving more parameters are needed for the upliftment of the blood donation rate and quality.

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