

# Pre-Donation Deferral at a Regional Transfusion Centre in Northern India

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## Abstract

The aim of the study was to analyze the rate of Blood Donor deferral and its various causes and use this information as a guide for promoting Voluntary Blood donation. All the Blood donors reporting at our Blood Bank between for six months were analyzed retrospectively. Data of all the donors deferred due to various causes was analyzed at our Transfusion Medicine Centre, of Tertiary care teaching hospital. There were 7253 donors, of which 524 donors were deferred (7.22%) for various reasons. Of the 7253 donors registered for donation, females constituted only 8.6% and deferral rate was about six times more for female (29.05%) compared to male (5.18%). The three most common reasons for deferral low hemoglobin levels, chronic diseases and medication. More studies should be done at state and national level so that enough data can be collected and national policies formulated and western parameters for deferral should not be followed as regional differences cause unnecessary deferrals of already limited donors. Moreover, analysis of donor deferral pattern will help blood banks to formulate more focused donor screening approach

## Key Words

Voluntary Blood Donation, Deferral, Transfusion

## Introduction

The blood donor suitability is based on informed medical opinion and regulatory rules (1). Deferred donors are those donors who do not qualify the guidelines for allogenic blood donation. Deferral may be temporary or permanent depending on the reason. Selection of blood donors is a critical step in ensuring safety of both recipient and donor. Moreover, deferring prospective donors often leaves them with negative feelings about themselves as well as the blood donation process (2). The goal is to maintain a balance between acceptable quality of blood and desired quantity. To best of our knowledge no similar study exist from this region studying pre-donation deferral of blood transfusion. Thus, this study was done at Blood bank GMC Jammu one of the two Blood Banks under P.G Department of Immunohematology and Transfusion Medicine, GMC Jammu, which is a Regional Blood

Transfusion Centre (RBTC) and largest blood collection centre in the region. The annual blood collection at our Blood Bank is 16000- 18000 units The aim of the study was to analyze the Incidence of Blood Donor deferral and its various causes and use this information as a guide for promoting Voluntary Blood donation.

## Material and Methods

All the Blood donors reporting at our Blood Bank 6 month were analyzed retrospectively. Blood donors were screened by Medical officer on duty based on brief medical history which included filling up of preexisting donor questionnaire and brief examination with regard to blood pressure, temperature, pulse and weight of donor. Hemoglobin was estimated by Hemocue method. The blood donor deferral criteria were based upon guidelines issued by Director General Health Services, India, and

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Departmental S.O.P's. Donors deferred were categorized on basis sex, age groups and whether deferral was temporary or permanent and the reason for deferral was recorded. Different ratios were calculated and significance limit was set at .05 and chi square test was used to find statistical significance.

### Results

A total of 7253 donors were registered at P.G Department of Immunohematology and Transfusion medicine. Out of 7253 donors presenting to us 524 were deferred. The incidence of deferral at our centre was 7.22%. A total of 343 males were deferred out of 6630 who reported to us for blood donation (5.18%) and 181 females were deferred out of 623 reporting for donation (29.05%). 91.4% (6630) of the donors were males and females constituted only 8.6% (623) of the donors. The p value for difference between males and females was 0.000005 which is less than 0.05 hence the difference was highly significant. (Table-1)

Age and sex distribution of deferred donors is given in table 2. The difference between deferred donors in these age groups was statistically not significant.

Most of the of the donor deferral were due to temporary causes (n=343, 66.6%), permanent deferral of donors was done in 33.3% donors (n=175). Causes temporary deferral in males and females is shown in table 3. In our study the most common cause for temporary deferral was anemia in both in male and female donors. The next common causes of temporary deferral were medications for various reasons, H/O tattooing, ear piercing, dental extraction, Donation less than 3 months, low body weight, Surgical causes and Alcohol intoxication. A very few number of cases were also deferred because of failed phlebotomy.

Permanent deferral of donors was done in 33.3% donors (n=175). Causes permanent deferral in males and females is shown in table 4. History of chronic diseases like hypertension with heart disease, diabetes mellitus on Insulin, epilepsy, thyroid and renal diseases were most common cause of permanent deferral. Other causes were Jaundice with suspected hepatitis B and C infection, High risk sexual behavior. Six professional donors who had come to blood bank after receiving money from

attendants of patients were also permanently deferred. Percentage wise distribution of reason for deferral in both males and females is shown in table 5 and Fig 1.

**Table 1. Showing Deferral of Male and Female Donors**

	Males	Females	Total
Number of donors	6630	623	7253
Number of donors deferred	343	181	524

**Table 2. Age and Sex Distribution of Deferred Donors**

Age	Male	Female	Total
18-24	95	43	138
25-39	142	82	224
40-54	64	33	97
>55	42	23	65
<b>Total</b>	<b>343</b>	<b>181</b>	<b>524</b>

**Table 3. Showing Causes of Temporary Deferral**

Reason for deferral	Males	Females	Total
Anemia	76	110	186
Medication	37	6	43
H/O tattooing, ear piercing, dental extraction	32	2	34
Donation less than 3 months	31	2	33
Under weight	13	10	23
Surgical causes	8	3	11
Alcohol intoxication	10	0	10
Pregnancy / lactation	0	2	2
Failed phlebotomy	2	5	7
<b>Total</b>	<b>209</b>	<b>140</b>	<b>349</b>

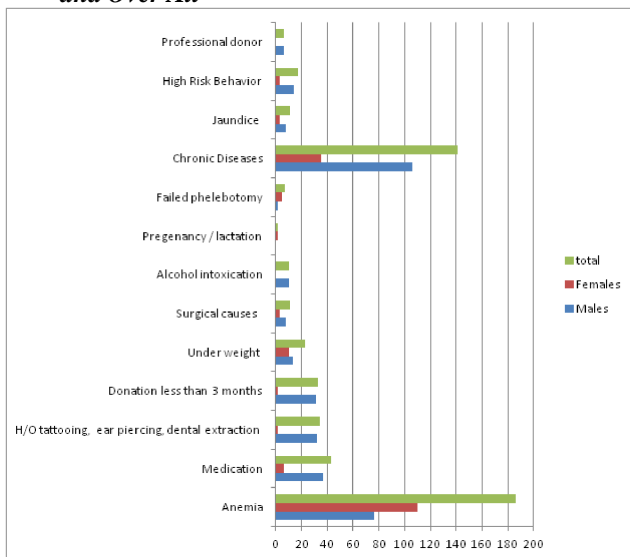
**Table 4. Showing Causes of Permanent Deferral**

Reason for deferral	Males	Females	Total
Chronic Diseases	106	35	141
Jaundice	8	3	11
High Risk Behavior	14	3	17
Professional donor	6	0	6
<b>Total</b>	<b>134</b>	<b>41</b>	<b>175</b>

### Discussion

The deferral rate in our study was 7.22% which is lower than most of the studies (8-15%) as reported by Chaudhry, (3) Agnihotri, (4) Ranveet (5) and higher than found by Sundar *et al.* (5.84%) (6). This may be due to the huge demand and supply gap that we face and pressurizes us to lax our donor deferral criteria so as adequate supply can be maintained. Deferral of donor

**Fig 1. Showing Reason For Deferral In Males, Females and Over All**



has a negative feeling about self and adverse effect on limited donor pool available. A balance must be maintained between available safe blood and adequate quantity.

Majority of the donors i.e 91.6% in our study were males and female donors were only 8.4%, Chaudary *et al* (3) and Arslan O (7) found similar differences in male and female donation trends which may be due to hesitation in society towards female donation. Education and motivation of female donor pool may help to decrease this disparity and improve our donor pool.

Most of the deferrals (66.6%) were due to temporary causes such as anemia ,medication ,tattooing, previous donation less than three months ago as compared to permanent deferral causing 33.3% Custer *et al*, reported 68.5% temporary and 31.5% permanent deferral. (8) Such temporarily deferred donors can be motivated to return back after proper education about deferral criteria. Providing literature in donor counseling regarding various deferral causes may help donors to self defer themselves and come for donation when they are ready .

Most common cause of deferral overall was anemia (35.4%) which was also the most common cause of deferral in males (22.1%) and females (60.7%). In a study by Halperin *et al*, the three most common short term deferral were low hemoglobin level, colds and/or sore throats, and elevated temperature, (9) whereas that by Ranveet *et al*, under-weight, under-age, and low

**Table 5. Distribution In Percentage of Reason For Deferral of Donors By Sex**

Reason for deferral	Males	Females	Overall
Anemia	22.1%	60.7%	35.4%
Medication	10.7%	3.3%	8.2%
H/O tattooing, ear piercing, dental extraction	9.3%	1.1%	6.2%
Donation less than 3 months	9%	1.1%	6.2%
Under weight	3.7%	5.5%	4.3%
Surgical causes	2.3%	1.6%	2.1%
Alcohol intoxication	2.9%	0	1.9%
Pregenancy / lactation	0	1.1%	0.3%
Failed phlebotomy	0.5%	2.7%	1.3%
Chronic Diseases	30.9%	20.4%	26.9%
Jaundice	2.3%	1.6%	2.1%
High Risk Behavior	4%	1.6%	3.2%
Professional donor	1.7%	0	1.1%

hemoglobin levels (5). This is due to high prevalence of anemia in our community especially in females some of the unpublished studies done in this region of country showing prevalence of anemia as high as 80% in rural female population. Donors deferred due to anemia should be educated and treated for anemia making this group of deferred donor fit will have huge impact on deferral rates and decrease them. Chronic diseases like severe uncontrolled diabetes, hypertension, cardiac disease, asthma, epilepsy, autoimmune disease etc caused 26.9% deferral this is due to high incidence on diabetes and hypertension in our country .Hypertension can lead to deferral of a significant percentage of prospective blood donors as evident in our study and another by Bahadur *et al*.(10) However, any blood donor suffering from a marked degree of hypertension has to be bled with care as in such cases the sudden removal of 350 or 450 ml of blood may precipitate a cerebral catastrophe (11) This could be tragic for the donor as well as blood center bleeding such donor. Patients with hypertension and diabetes should not be outrightly rejected but assessed carefully as reduction of deferral in this group can cause large decrease in deferral rates.

Medication like antibiotics, vaccination, alcohol intake, tattooing ear piercing, donation less than 3 months etc also cause significant number of deferrals, education of donors about these can help donors to self defer themselves. Donors deferred due to these can also be decreased by educating the donors about these deferral criteria's and providing IEC material. Failed phlebotomy caused only 1.3% of the deferrals. Deferred relatives

could feel need to hire professional donor further endangering the safety of blood number of professional donors presenting to us were 6 who were permanently deferred, these professional donors are at high risk of HIV, Hepatitis and other diseases. In USA blood center approximately 83% of blood donors successfully donate, but 13% are rejected because of donor suitability issue. One percent is rejected for the positive test, which is often nonspecific or false positive and 2% to 4% of the phlebotomies are not successful (11)

### Conclusion

Rate of donor deferral in our study was 7.22%. Most common cause of deferral in females is anemia; contrary to the belief that only females are anemic second most common cause of deferral in males also is anemia. The hemoglobin criteria should be according to the reference range obtained from population of the region, western reference ranges should not applied to local population. There is still huge difference between number of males and females turning up for donation. Number of males turning up for donation is nine times more. The chances of female getting deferred are six times more as compared to males. Regions like ours are accident prone and terrorist related casualties are a regular feature, in such time of need we do not have a stable voluntary donor pool to fall back upon. In our scenario where we have a limited donor pool, loss of donor after deferral has adverse effect on limited donor availability and there is need to monitor and assess the necessity and effectiveness of such deferrals. Temporary deferral should be actively and aggressively managed so that this donor pool is not lost permanently and after treatment, education and motivation they return back to the donor pool. More studies should be done at state and national level so that enough data can be collected and national policies formulated and western parameters for deferral should not be followed as regional differences cause unnecessary deferrals of already limited donors. Moreover analysis of donor deferral pattern will help blood banks to formulate more focused donor screening approach.

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