

## Profile of blood donor deferrals in a tertiary care centre- our institutional experience

### ABSTRACT

**BACKGROUND:** It is the prime duty of transfusion services to provide safe, adequate and timely need of blood and the blood products. Understanding the reasons for donor deferral can help in planning more efficient recruitment strategies and educate and motivate temporarily deferred donors in order to maintain a safe and adequate supply of blood products. **AIMS OF THE STUDY:** To evaluate and analyze the blood donor deferral pattern in a tertiary care hospital blood bank and to review its influence on blood safety. **METHODOLOGY:** This retrospective study was conducted in the blood bank, CHRI from the year January 2015 to December 2018. Data like demographic data, clinical history, physical examination, haematological examination, stored in the blood bank was retrieved. The donors will be deferred based on standard WHO guidelines. The collected deferral data was analyzed using SPSS software 2011. **RESULTS:** During the study period there were 7010 registered blood donors. The deferral rate was 5.19%. Among the donor deferrals, females were more commonly deferred i.e. 31.66%. The deferral rate among voluntary and replacement donors are 4.71% and 11.62% respectively. The rate of permanent deferral (17.86%) was less compared to temporary deferral (82.14%). Among temporary deferral anaemia is the most common cause (27.75%). Seropositive for Hepatitis B is the most common cause for permanent deferral (52.30%). **CONCLUSION:** In our study temporary deferral is higher and this necessitates the need of education, motivation of these donors for future donation to maintain a healthy and safe donor pool.

**KEYWORDS:** Blood donors, deferral, temporary, permanent

### INTRODUCTION

The National AIDS Control Organization's (NACO) figures reveal that in India approximately 7.4 million units are donated annually, but the requirement is more than 10 million units<sup>1</sup>. WHO Global Database reveals approximately 1.6 million units were redundant due to variable reasons. Not only this around 13 million blood donors were deferred due to high risk behavior, anaemia or a preexisting medical disease<sup>2</sup>. The deferral rates varied extensively among countries, ranging from less than 1% to 37% and the median rate of deferral was 12%<sup>3</sup>. Blood donor selection procedure is the cornerstone for safety transfusion practices it perceives to safeguard the health of not only the recipients but also the donors<sup>4</sup>. In our present study, the aim and objective was to evaluate and analyze the blood donor deferral pattern and its causes among blood donors in a tertiary care hospital blood bank and to review its influence on blood safety.

### MATERIALS AND METHODS

The present study was a retrospective study conducted in the blood bank of Chettinad Hospital & Research Institute. All the recorded data about the blood donors from January 2015- December 2018 for a period of 3 years were retrieved. Details about donors like demographic data, clinical history, physical examination,

haematological examination, vitals was retrieved from the data stored in the blood bank. Institutional ethical clearance was obtained before the commencement of the study (745/IHEC/12-19). In our institute we follow WHO guidelines for donor deferral. Blood donors were grouped as either fit or unfit donors. Predonation and postdonation deferral data was collected and analyzed. Predonation deferral was based on standard questionnaire and physical examination including weight, pulse rate, blood pressure, and measurement of hemoglobin concentration. In our blood bank hemoglobin estimation was by specific gravity method. In terms of blood pressure systolic pressure ranging from 100-140mm of Hg and diastolic pressure ranging from 60-90mm of Hg was considered fit for blood donation. Postdonation deferral was based on screening testing of blood for TTI. ELISA was done for HIV, HBV and HCV. VDRL was done for testing Syphilis. Card test was done for Malaria. The donors were explained the process of blood donation by our staff clearly and adequately before the donation process. The statistics was done using SPSS software 2011. The values were expressed as frequency and percentage

## RESULTS

During the 3 year study period there were 7010 registered blood donors. Among them 6701 (95.59%) donated blood. Predonation deferral was 309 (4.41%) and postdonation deferral was 55. Totally 364 were deferred (5.19%). Male donors were more common ie 99.13% were male donors. Voluntary donors were more common accounting for 89.59%. Among the donor deferrals, females were more commonly deferred in our study ie 31.66%. The deferral rate among voluntary and replacement donors are 4.71% and 11.62% respectively. The rate of permanent deferral (17.86%) was less compared to temporary deferral (82.14%). Among temporary deferral Anaemia is the most common cause (27.75%). Seropositive for Hepatitis B is the most common cause for permanent deferral (52.30%).

## DISCUSSION

Blood transfusion service is an essential part of health care system. As per WHO, the minimum requirement to meet a nation's essential blood requirements is taken generally as donation of blood by 1% of its population. But usually the requirements are much higher in countries which have advanced health care systems<sup>5</sup>. According to Siromani et al our nation's blood requirement is calculated as 8.5 to 10 million units/year, but the supply is only 7.4 million units/year<sup>6</sup>.

Individuals who approach blood bank with an intention of donating blood believe them as fit and healthy donors but it is the sole duty of blood bank to screen them completely and if needed to defer them either temporarily or permanently. This not only aids us to maintain a healthy and safe donor pool but also to safeguard the health of both donors and recipients. In order to sustain a safe, adequate blood at a reasonable cost we have to educate and motivate temporarily deferred donors for future blood donation. This study is aimed to study the deferral causes and pattern in a tertiary teaching hospital. The present study is a retrospective study conducted in the blood bank of Chettinad hospital & research institute. All the recorded data about the blood donation from January 2015- December 2018 for a period of 3 years were retrieved. During the 3 year study period there were 7010 registered blood donors. Among them 6701 (95.59%) donated blood. The rate of deferral in our study is 5.19% and it is lower than most other studies. Most of the Indian and international studies have reported deferral rate ranging from 5% to 24%<sup>7</sup>. In Tufail et al (Pakistan) study the rate is much higher 13.58%<sup>8</sup>. In Henshaw et al (Nigeria) study the deferral rate is 8.69%<sup>9</sup>. Laila et al in their study (Dubai) had a higher deferral rate ie 19.4%<sup>10</sup>. In Singh P et al study (Uttar Pradesh) the deferral rate is 16.4%<sup>11</sup>. The deferral rate in Chauhan et al study (Uttar Pradesh) is comparable to our study which is 5.56%<sup>12</sup>. In Harjot Kaur et al study (Punjab) the deferral rate is 6.99%<sup>13</sup>. A similar deferral rate is seen in Chenna et al study (Karnataka) 5.6%<sup>14</sup>. Vimal et al study (South India) shows the deferral rate as 14.87% which is very much higher than our study<sup>15</sup>. In Nagarekha study (Karnataka) the deferral rate is only 4.27%<sup>16</sup>. In Unnikrishnan et al (Mangalore) the deferral rate is 5.2%<sup>17</sup>. The difference in deferral could be attributed due to difference in socioeconomic status, culture and the deferral criteria prevailing in various areas. In our study males were more common registered donors but the deferral rate is much higher in females. This is similar to most other studies<sup>10,12,15</sup>. In contrast to our study Nagarekha in her study showed males were more commonly deferred than females<sup>16</sup>. Anaemia is more prevalent in females and this could be the cause. Females are needed to be

more educated and motivated for blood donation. Permanent deferral (17.86%) is less common than temporary deferral (82.14%) in our study. This is comparable with many other studies<sup>8,12</sup>. Some studies show a low rate of temporary deferral<sup>13</sup>. Henshaw et al in their study revealed permanent deferral is more common<sup>9</sup>.

Among permanent deferral high risk behavior particularly seropositive for hepatitis B is the most common cause (52.30%). The seropositive rate in our study is 0.82%. Out of 6701 cases only 55 were serology positive. All the serology positive cases were males and all were replacement donors in our study. This emphasizes the need of recruitment of voluntary donors. It is comparable to Unnikrishnan et al study (1.58%) This is followed by HCV and medications. This is in line with other studies<sup>9, 10, 13, 15</sup>. But in Nagarekha and Chauhan et al study accounted hypertension as the most common cause of permanent deferral<sup>16</sup>. In Tufail et al study Hepatitis C positivity is the most common cause for permanent deferral<sup>8</sup>.

Among temporary deferral Anaemia is the most common cause (27.75%) followed by hypertension. This is in par with other studies<sup>8, 9, 10, 12, 13, 15</sup>. This reflects the socioeconomic status of this region and people's ignorance about their health. In our country prevalence of both clinical and subclinical anaemia is high. This indicates the importance of implementation of awareness and screening programs of anaemia so that the health the donor is guarded and we can maintain a healthy and safe donor pool. Most of the donors who were deferred due to anaemia had Hemoglobin concentration around 11 to 12 gm. By reducing the Hemoglobin cut off value by 1gm we can pave a way to get some more donors and this will enable us to meet our country's rising demand for blood<sup>18</sup>. Repeated donors are at risk of iron depletion hence it is essential to supplement them with iron to maintain their iron reserve<sup>19</sup>. Hypertension could be due to anxiety, fear of phlebotomy and white coat hypertension. These individuals should be handled with care and helped to become more comfortable and relaxed by describing the donation in a detail and simpler manner. Hypotension was the third most common cause of temporary deferral in our study since syncope are more commonly anticipated in them due to vasovagal attacks<sup>20</sup>.

The other major causes of temporary deferral in decreasing order of frequency include vaccination, medication, intake of alcohol, tooth extraction and tattooing. These temporarily deferred individuals should be educated and motivated so that they return for donation after the period of deferral.

The deferral rate among voluntary and replacement donors are 4.71% and 11.62% respectively. In accordance with NACO we don't entertain professional donors in our institute and recruit more voluntary donors by organizing camps<sup>21</sup>. Rehman and Jawaaid from their study revealed voluntary blood donors are safer than replacement donors<sup>22</sup>. Unnikrishnan et al also showed similar pattern<sup>17</sup> but Nagarekha in her study revealed voluntary donor deferral was more common than replacement donor deferral<sup>16</sup>. Henshaw et al study showed a higher rate of deferral for commercial and replacement donors<sup>9</sup>.

By analysing the donor deferral pattern we can understand that the knowledge about donor selection criteria is inadequate in common people. By educating them we can get a better acceptable rate and individuals with more tendencies to return for future donation and less bitter feeling towards rejection.

## **CONCLUSION**

The deferral rate in our study was 5.19%. Females should be educated and motivated for blood donation. As anaemia is more common in them there should be more national programs to manage it more effectively. As temporary deferral was more common this necessitates the education, motivation and follow up of temporary deferred donors so they could return for future donation

## **ETHICAL CLEARANCE:**

Ethical Clearance for this study was got approved from the Institutional Human Ethical Committee.

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## **TABLES**

Table1: Audit of blood donors for 3 years

Year	Number of registered donors	Number donated	Number of predonation deferral	Number of post donation deferral
2017	2294	2181	113	14
2018	2346	2246	100	24
2019	2370	2274	96	17
Total	7010	6701	309	55

Table2: Frequency Of Registered Donors

Year	Male	Female	Voluntary	Replacement
2017	2167	14	1939	242
2018	2227	19	2034	212
2019	2247	27	2031	243
Total	6641	60	6004	697

Table3: Frequency of Deferral Donors

Year	Frequency of donor deferral	Male	Female	Voluntary	Replacement
2017	127	116	11	98	29
2018	124	121	3	95	29
2019	113	108	5	90	23
Total	364	345	19	283	81

Table4: Causes for Permanent deferral

Causes for permanent deferral	2017	2018	2019	Total
Hbs ag	8	15	11	34
HCV	4	8	5	17
HIV	2	1	0	3
VDRL	0	0	1	1
Medications	1	6	2	9
Hemo dialysis	0	0	1	1
	15	30	20	65

Table5: Causes for Temporary deferral

Causes for temporary deferral	2017	2018	2019	Total
Hypotension	15	14	16	45
Hypertension	20	18	13	51
Low Hb	31	25	27	83
High Hb	2	4	5	11
Vaccination	15	11	9	35
Taken antibiotics	7	4	6	17
Dental extraction	4	2	3	9

Intake of alcohol	4	3	3	10
Major and minor surgery	2	2	2	6
Typhoid fever	1	1	1	3
Chicken pox	1	2	0	3
Tattooing	2	3	3	8
Asthma	1	0	1	2
Skin allergy	1	3	1	5
Previous donation not complete 3 months	1	1	1	3
Under weight below 45	1	1	0	2
Thin vein	1	0	1	2
Menstruation	1	0	0	1
Dengue	1	0	0	1
Ear piercing	1	0	0	1
Jaundice	0	0	1	1
	112	94	93	299

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