

Analysis of Blood Donor Deferral in a Tertiary Care Hospital

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Abstract

Introduction : Selection of proper donor according to stringent selection criteria is the prerequisite for safe blood transfusion practice. It is widely known that a large number of blood donors are deferred for different reasons.

Objective : The aim of present study is to evaluate the incidence and different reasons of blood donor deferral in a tertiary care hospital.

Methodology : This retrospective cross-sectional study was carried out in Transfusion Medicine and Clinical Haematology Department of BIRDEM General Hospital, Dhaka, during the period from July 2016 to June 2017. The blood donor of either sex attending the mentioned department were selected purposively and categorized into four groups according to their age for this study. Donors were selected and deferred by medical officer according to national guideline. Deferred blood donors were recorded in register book and were analyzed retrospectively.

Results : In current study, 1152 blood donor (8.8%) were deferred attending for allogeneic blood donation during the study period. Out of 13082 registered blood donor 11961 were male (91.43%) and 1121 were female (8.57%) and deferral rate was 2.37 times more in female. Majority of the deferred donors (55.38%) were under the age of 40 where 26.82% were in between 40-49 years and 17.8% were in the range of 50 years and above. Age range of highest deferred donors (32.20%) was between 30-39 years. The number of temporary and permanent deferral were 836 (72.57 %) and 316 (27.43%) respectively. Anaemia (33.01%), underweight (21.53%) and hypotension (17.34%) were the most common reason of temporary deferral. Chronic uncontrolled hypertension (42.4%), donors with medication (16.77%) and asthma (15.18%) was the most common cause of permanent deferral.

Conclusion : The deferral rate was low and most of the deferred donors were young adult. Temporary deferred donors were higher than permanent deferred donors. The most common reasons for temporary deferral were anemia, underweight and hypotension. Permanent deferral causes were chronic uncontrolled hypertension, donors on medication for various reason and asthma. Donors should be informed with a clear message on their deferral status. It is important to determine the rate and causes of donor deferral for the safety of blood transfusion and to guide the recruitment efforts for safe blood transfusion and to avoid the permanent loss of blood donors.

Key words : Blood donor, Anaemia, Temporary Deferral, Permanent Deferral.

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Introduction

Blood transfusion is one of the common medical practice and also a life saving procedure that requiring sufficient supply of safe blood. For safe blood transfusion, many safety measures are commenced by the blood transfusion community where the most necessary is proper donor selection.¹ Individual disqualified from donating blood are known as "deferred" donors.

The WHO Global Database indicated that >92 million blood donations are collected annually from 164 different countries around the world. Around 1.6 million units were discarded due to the presence of infections such as hepatitis B and C, HIV, herpes and syphilis. In addition, at least 13 million donors were deferred due to having the risk of infection that could be

transmitted through blood, a preexisting medical disease or anemia. Due to this, blood donor selection is a cornerstone for blood transfusion safety, designed to safeguard the health of both donors and recipients. Blood donor eligibility is determined by medical interview, based on national guidelines for donor selection.² A prospective donor may be deferred at any point during the collection and testing process either temporarily or permanently depending on the specific reason for disqualification. If a donor is to be deferred, his or her name is entered into a list of deferred donors maintained by the blood transfusion center, often known as the "deferral registry." If a deferred donor attempts to give blood before the end of the deferral period, the donor will not be accepted for donation. Once the reason for the deferral no longer exists and the temporary deferral period has lapsed, the donor may return to the blood transfusion center and be re-entered into the system,³ Deferred donor experience a troublesome feeling during donor selection and mostly leaves them with negative perception, about themselves as well as the blood donation process. Additionally these donors are less likely to come-back for future blood donation.⁴

Materials and Methods

The current retrospective record based study was carried out on 13082 blood donor attending to Transfusion Medicine and Clinical Haematology department, BIRDEM General Hospital, Dhaka from July 2016 to June 2017. The blood donor of either sex attending the mentioned department were selected purposively and categorized into four groups according to their age.

Preliminary donor selection was done by using donor questionnaire prepared following national guide line, brief physical examination of donors with regard to pulse, blood pressure and temperature and post donation screening along with hemoglobin estimation by hemoglobin meter were done. After completion of blood collection donor samples were tested for Hepatitis B (HBsAg), Hepatitis C virus (Anti HCV), Human Immunodeficiency Virus (HIV 1 & 2), Syphilis and Malaria. If any of the tests were positive then the blood was discarded and the donor was referred to respective department for further management.

Donors were selected and/or deferred by Medical officer according to national guideline. Deferred blood donors were recorded in Register book. All data from records were then analyzed as percentage and proportion. Data analysis was performed on SPSS for Windows Version 18. (IBM Corp, New York, USA).

Results

The result showed that out of 13082 registered blood donors attending for allogeneic blood donation during the study period, 1152 (8.8%) were deferred donor and among total number of donor 11961 were male (91.43%) and 1121 were female (8.57%). Deferral rate among male 7.87 % and among female 18.73 % which was 2.37times more in female. Majority of the donors were under the age of 40(55.38%), 26.82% were in between 40-49 years and 17.8% were in the range of 50 years and above where most of the deferred donors were between 30-39 years. Deferred blood donor were classified into temporary and permanent .The number of temporary and permanent deferral were 836 (72.57 %) and 316 (27.43%) respectively. (Table 1)

Table I : Total donor, deferred donor by sex and type of donor

Donor	Male	Female	Total
Number of donor	11961	1121	13082
Number of deferred donor	942	210	1152
Percentage deferred	7.87%	18.73%	8.8%
Deferred donors by age and sex (n=1152)			
Age (years)	Male	Female	Total
18-29	124	143	267(23.18%)
30-39	322	49	371(32.20%)
40-49	293	16	309(26.82%)
50 years and above	203	2	205(17.8%)
Total	942(81.77%)	210(18.23%)	1152(100%)
Classification of Deferred donors			
Deferred donors type	Number	Percentage	
Temporary deferral	836	72.57%	
Permanent deferral	316	27.43%	
Total	1152	100%	

The main causes of temporary deferral were Anaemia 276(33.01%), underweight180 (21.53%) and hypotension145 (17.34%) (Table II)

Table II : Distribution of temporary deferral by age and sex (n =836)

Causes	18-29 yrs		30-39 yrs		40-49 yrs		50-60 yrs		Total		Grand Total	Percentage (%)
	M	F	M	F	M	F	M	F	M	F		
Anaemia	21	69	68	19	53	7	38	1	180 (28.16%)	96 (48.73%)	276	33.01%
Underweight	15	35	57	13	25	3	32	-	129 (20.18%)	51 (25.88%)	180	21.53%
Hypotension	9	14	54	8	23	2	35	-	121 (18.93%)	24 (12.18%)	145	17.34%
Fever due to bacterial, viral, fungal infections	7	3	23	1	28	-	17	-	75 (11.73%)	4 (2.03%)	79	9.45%
Typhoid fever	3	2	13	-	7	1	9	-	32(5.05%)	3 (1.52%)	35	4.18%
H/O icterus	2	3	19	-	18	-	2	-	41(6.41%)	3 (1.52%)	44	5.26%
Tatto	3	-	6	-	3	-	-	-	12(1.87%)	-	12	1.43%
H/O previous blood donation <3months	5	2	8	-	9	-	-	-	22(3.45%)	2 (1.01%)	24	2.87%
Menstruations	-	9	-	4	-	-	-	-	-	13 (6.59%)	13	1.57%
History of blood transfusion	2	1	7	-	4	-	1	-	14(2.19%)	1 (0.5%)	15	1.79%
Alcohol intake	2	-	5	-	6	-	-	-	13(2.03%)	-	13	1.57%
Total	69	138	260	45	176	13	134	1	639 (100%)	197 (100%)	836	100%

Most common cause of permanent deferral chronic uncontrolled hypertension 134 (42.4%), on medication for various reason 50(16.67%) and Asthma40 (13.20%). Other causes of permanent deferral were chronic allergic disease, thyroid disease, skin problem like psoriasis, haemoglobinopathy such as thalassaemia minor and diabetes mellitus on insulin. In male and female distribution male deferral was found higher.

Discussion

In our study the overall donor deferral rate was about 8.8% and deferral rate was 2.37 times higher in female compared with male which was similar to that observed by Bahaduret al.⁵ The lowest reported donor deferral was by Talonu⁶ (4%), Sundar⁷ (5.84%) and high rate was reported by Zou et al⁸ (12.8%) and Choudhary et al⁹ (16.4%). However the highest incidence of donor deferral was observed by some studies was between 20-35.6%.^{10,11}

Table III : Distribution of permanent deferral by age and sex (n=316)

Causes	18-29 yrs		30-39 yrs		40-49 yrs		50-60 yrs		Total		Grand Total	%
	M	F	M	F	M	F	M	F	M	F		
Chronic Hypertension	12	-	27	-	57	-	38	1	134(44.22)	-	134	42.4 %
Asthma	11	3	9	2	13	2	7	-	40(13.20%)	8(6.153%)	48	15.18 %
Chronic allergic disease	8	1	7	1	9	-	2	-	26(8.58%)	2(15.4%)	28	8.86 %
Thyroid disease	2	-	1	-	-	-	-	-	3(0.99%)	-	3	0.98 %
Skin disorder	9	-	5	-	7	-	3	-	24(7.92 %)	-	24	7.59 %
Use of medication due to various reason	12	1	11	1	13	1	14	-	50(16.67%)	3(23.07%)	53	16.77 %
Thalassaemia minor	1	-	-	-	-	-	-	-	-	-	1	0.31 %
Diabetes Mellitus on insulin	-	-	2	-	18	-	5	-	25 (8.42%)	-	25	7.91 %
Total	55	5	62	4	117	3	69	1	303 (100%)	13(100%)	316	100%

In present study most of the deferred donors (55.38%) were under the age of 40 years which was less similar to Di Lorenzo et al¹¹ study. Donor deferral was classified into temporary and permanent. Custer et al¹² observed 68.5% temporary and 31.5% permanent deferral which was similar to the present study. The temporary deferrals were more than permanent deferrals. The most common cause of temporary donor deferral was anaemia in many studies done by Naveen Agnihotri¹³ (56%) and Halperin et al¹⁴ (46%) which was comparable with ours. Anaemia was more common in female (48.73%) than male donor (28.16%) which highlight the prevalence of anaemia in general population among females in a developing country like Bangladesh. Chaudhary⁹ observed the two most common cause of temporary donor deferral were low weight (32.3%) and anaemia (18.6%) which is also comparable with present study. In current study the most common cause of permanent deferral in male was chronic hypertension (42.4%) which was similar to Sundar P⁷ and Kulkarni N¹⁵ study. Chaudhary⁹ and Ranveet¹⁶ reported that the most common cause of permanent deferral was history of jaundice which was not similar with our study.

Study limitations

The present study was conducted in a selected transfusion center of Bangladesh. Generalization from this study, therefore, cannot be made for the whole country. Duration of this study was only 1 (one) year with relatively small sample size. More extensive study will give better insight.

Conclusion

In this study, reasons for deferral of volunteer blood donors were studied and found the deferral rate was low and most of the deferred donors were young adult. Temporary deferred were higher than permanent deferred donor. The most common reasons for temporary deferral were anemia, underweight and hypotension. Permanent deferral causes were chronic uncontrolled hypertension, donors on medication for various reason and asthma. Since most of the deferrals were temporary deferrals, we should give a clear message for the reason for deferral and duration of deferral so that they return for donation in the future on correction of the cause of deferral at appropriate duration.

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