

EVALUATION OF REASONS OF PRE-DONATION BLOOD DONOR DEFERRAL IN A TERTIARY CARE HOSPITAL AT DHAKA



Medicine

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ABSTRACT

Background: Our aim is to evaluate reasons of donor deferral in tertiary care hospital to find new disease distribution, any areas of negligence in part of donor or history taking physicians and human errors which could be easily correctable and beneficial for donors to remain healthy and provide safe blood.

Methodology: This is a retrospective analytic study carried out during the period of January to December 2015 at Department of Transfusion Medicine, Sir Salimullah Medical College and Mitford Hospital. After preliminary registration, each donor was either selected or deferred by medical officers. The donor selection and deferral criteria were according to the standard operating procedure. Detailed information of reason of deferral was recorded.

Results: Among 10056 registered donors, 9453 (94.004%) were eligible for donation and 603 (5.996%) blood donors were deferred due to various reasons. Male donors were 7526 (74.84%) more than female 2530 (25.16%). Females (60.03%) were found to have higher deferral rate than male population (39.97%). Low hemoglobin was found to be leading cause constituting 17.58% followed by hypertension 15.26%, medications 12.11% and underweight 11.28%.

Conclusion: Deferral may discourage the donor for subsequent donations, especially young first time donors. Deferred donors should be properly counseled and educated for probable future donations. By knowing the causes of deferral we can take further steps to prevent those causes and can preserve precious blood and blood components.

KEYWORDS

Blood donation, Donor Deferral, Donor education, Donation criteria

INTRODUCTION:

Blood is a living tissue that is transfused into another human body. Human blood has no substitute. Safe and adequate supply of blood and blood component is a major public health issue faced globally. Adequate blood supplies are the major contributory factor in preventing deaths especially among women and children. Ever changing socio-economic environment and human factors has made healthy donor recruitment a challenge for health industry now a days.(1)

About 112.5 million blood donations are collected worldwide.(2) Bangladesh is a densely populated country of population 170 million.(3) Blood transfusion Service in the country started in 1950 in few centers which confined to only basic serology. Compiled reports from blood transfusion centers under public and private sectors revealed that over 600,000 units of blood were collected in 2016 against an estimated demand of 800,000.(4) There are mainly two types of donor relative/replacement and voluntary. Voluntary blood donation is the donation of whole blood or plasma voluntarily without inducement or reward.(5) A replacement donor is a person who donates blood upon the request of a specific person or patient's family or acquaintance which, in principle, is intended to be used specifically for treatment of the patient.(6) Relative/replacement in some instances is the predominant types, while voluntary donors constitute the minority.

The donor selection criteria are made up of a set of questions and screening tests which are administered to every potential donor. The national program for donor selection and deferral is based on World Health Organization recommendations and complies with American Association of Blood Bank. At first usually interested donors are registered with the blood bank for further procedure. A detailed medical history is taken via a Donor History Questionnaire, and a physical examination is performed; during which weight, pulse, blood pressure, and temperature measurements are taken and hemoglobin levels are determined. Prospective donors who do not meet the criteria

for donation are designated as deferred donor. (7) Deferrals lead to loss of precious whole blood donors. Knowledge of causes and rate of deferrals can guide the recruitment strategy for blood donors.(8) Our aim is to evaluate reasons of donor deferral in tertiary care hospital to find new disease distribution, any areas of negligence in part of donor or history taking physicians and human errors which could be easily correctable and beneficial for donors to remain healthy and provide safe blood.

MATERIALS AND METHODS:

This is a retrospective analytic study of donor carried out from the donor records during the period of January to December 2015 at Department of Transfusion Medicine, Sir Salimullah Medical College and Mitford Hospital, Dhaka. The study involved both voluntary and replacement donors attending the Department of Transfusion Medicine. The blood bank is situated in a tertiary care teaching based postgraduate hospital. Each donor was selected by a medical officer based on detailed medical history and a short physical examination. The donor selection criteria were according to the standard operating procedure. Age between 18 to 65, weight not less than 45 kg for 350ml and 50 kg for 450ml, Hemoglobin level of 12 gm/dl, systolic BP 100-180, diastolic BP 60-90 were present standard. Detailed information of reason of deferral was recorded. The detailed information of donor deferral was recorded in deferral register.

RESULTS:

Total 10056 donors were registered during the study period, 9453 (94.004%) were eligible for donation and 603 (5.996%) blood donors were deferred due to various reasons. Of all the donors male were 7526 (74.84%) and female were 2530 (25.16%) and female population were found to have higher deferral rate than male population (60.03% vs 39.97%)

Among the deferral cases low hemoglobin was the number one cause of deferral constituting 17.58% followed by hypertension 15.26%, on different medications 12.11%, underweight 11.28%, hypotension

8.46%, menstruating 7.79%, vaccination 6.14%, dental procedures 5.14%, recent enteric fever 4.48%, lactation 3.65%, recent dengue fever 2.49%, pregnancy 1.99%, drug abuse 1.82%, unsafe sexual history 1.33% and other miscellaneous causes were 0.50%.

Maximum donors were service holder (27.60%), followed by students (24.81%), businessman (19.24%) and housewife (14.45%). Majority of donors were young in 26-35 age groups (40.80%). The rate of deferral was the highest in the age group of 36-45 (32.67%) followed by 46-55 (30.35%), 56-65 (17.25%), 26-35 (15.26%) and 18-25 (4.48%).

A major portion of donors were new donors (57.21%) and remaining were repeated donors (42.79%) and the deferral rate between these two groups were 69.32% and 30.68% respectively. Among the donations relative donors were much high (92.23%) than the voluntary donors (7.77%).

Table Ia Percentage of accepted and deferred donors

Donor type	Registered	Percentage (%)
Registered	10056	100
Accepted	9453	94.01
Deferred	603	5.99

Table Ib Distribution of Sex of study subjects (n=10056)

Sex	Number of subjects	Percentage
Male	7526	74.84
Female	2530	25.16

Table Ic Distribution of deferred donor according to sex of donors

Sex of donors	Number of subjects	Number of deferred donor in group	Percentage of total deferred donor (n=603)
Male	7526	241	39.97
Female	2530	362	60.03

Distribution of Age of study subjects

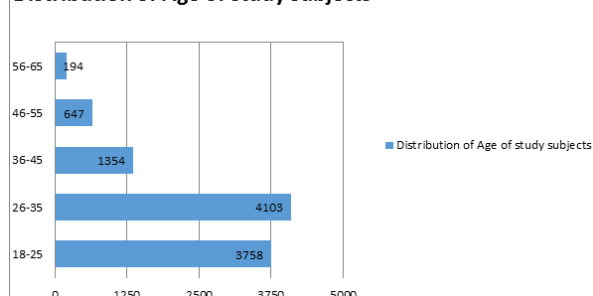


Fig 1: Distribution of Donors according to age

Table II Distribution of deferrals according to age groups

Age in Years	Number of subjects registered (a)	Number of deferrals in each group (b)	Percentage of deferred in accordance to total registered in group (b/a*100)	Percentage of group deferrals among total deferrals (n=603)
18-25	3758	27	0.72	4.48
26-35	4103	92	2.24	15.26
36-45	1354	197	14.55	32.67
46-55	647	183	28.28	30.35
56-65	194	104	53.61	17.25

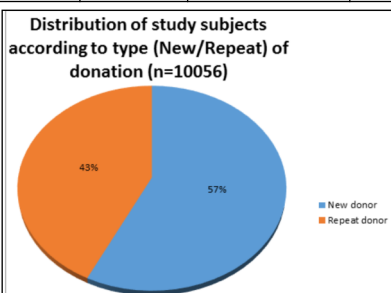


Fig 2: Distribution of study subjects according to type (New/Repeat) of donation (n=10056)

Table III Distribution of deferred donor according to nature of appearance for donation

Donor type	Number of registered donors	Number of deferred donor in group (n=603)	Percentage of deferred according to occurrence
New donor	5753	418	69.32
Repeat donor	4303	185	30.68

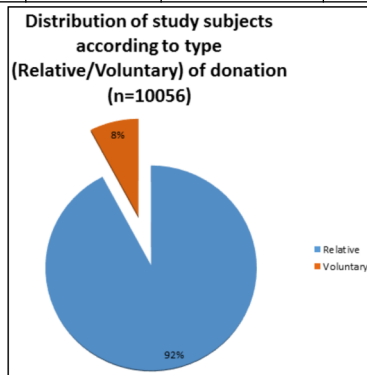


Fig 3: Distribution of study subjects according to type (Relative/Voluntary) of donation (n=10056)

Table IV Distribution of deferred individuals according to donor type

Donation type	Number of subjects	Number of deferrals	Percentage of deferred according to donor type
Relative	9275	502	83.25
Voluntary	781	101	16.75

Table V Distribution of study subjects on cause of deferral (n=603)

Cause of deferral	Number of subjects	Percentage of deferred donors
Low hemoglobin	106	17.58
Hypertension	92	15.26
On Medication	73	12.11
Underweight	68	11.28
Hypotension	51	8.46
Menstruating	47	7.79
Vaccination	37	6.14
Dental procedures	31	5.14
Recent Enteric fever	27	4.48
Lactation	22	3.65
Recent dengue fever	15	2.49
Pregnancy	12	1.99
Drug abuse	11	1.82
Unsafe sexual history	8	1.33
Other misc.	3	0.50

Table VI Comparison of reasons of deferral between voluntary and relative

Cause of deferral	Total number of deferred donors (n=603)	Number of deferred relative donor according to cause (n=528)	Percentage of deferred relative donors according to cause (n=528)	Number of deferred voluntary donors according to cause (n=75)	Percentage of deferred voluntary donors according to cause (n=75)
Low hemoglobin	106	91	17.23	15	20.00
Hypertension	92	85	16.10	7	9.33
On Medication	73	70	13.26	3	4.00
Underweight	68	62	11.74	6	8.00
Hypotension	51	47	8.90	4	5.33
Menstruating	47	41	7.77	6	8.00
Vaccination	37	29	5.49	8	10.67
Dental procedures	31	26	4.92	5	6.67
Recent Enteric fever	27	22	4.17	5	6.67

Lactation	22	17	3.22	5	6.67
Recent dengue fever	15	12	2.27	3	4.00
Pregnancy	12	10	1.89	2	2.67
Drug abuse	11	7	1.33	4	5.33
Unsafe sexual history	8	6	1.14	2	2.67
Other misc.	3	3	0.57	0	0.00

Table VII Distribution of donor according to occupation (n=10056)

Occupation of donor	Number of subjects	Percentage
Service	2775	27.60
Student	2495	24.81
Business	1935	19.24
Housewife	1453	14.45
Physician	1036	10.30
Farmer	113	1.12
Journalist	38	0.38
Other professions/Unemployed	211	2.10

Table VIII Percentage of deferred donor according to occupation in comparison to total deferrals

Occupation of donor	Number of registered donor	Number of deferred donor	Percentage of deferred donor according to occupation in comparison to total deferrals (n=603)
Service	2775	273	45.27
Student	2495	154	25.54
Business	1935	75	12.44
Housewife	1453	62	10.28
Physician	1036	26	4.31
Farmer	113	8	1.33
Journalist	38	3	0.50
Other professions/Unemployed	211	2	0.33

DISCUSSION:

The theme of World Blood donor Day 2018 was 'Be there for someone else. Give blood. Share life'. (9) The life force of any blood bank is the donor. Donor deferral is the form of rejection and loss of time for both donors and blood banks. (10) For this reason there should be a rational donor selection strategy to minimize the loss. Many national and international measures are taken to ensure safe blood supply.

The deferral rate differs from region to region and center to center. These varied differences in the rate could be due to different donor selection criteria. (11) The proportion of deferred donors in our study is relatively low than neighboring countries. Shalini et al (2009) found donor deferral rate 9% among 16,694 donors in Delhi, India. (12) Arslan found 14.6% deferral rate in Turkish donors. (13) Waheed et al reported 10.4% deferral rate in Pakistan. (14) However the international comparison shows that the deferral rate is also low than rates reported in Dubai (19.4%), USA (12.8-15.6%), Japan (14%), Singapore (14.4%). (10,15) Majority of the donors in our study were male, first time, relative donors. The deferral pattern tends to be higher in females and first time donors, which is similar to deferred cases around the world including those in USA, India and Saudi Arabia. (10) Our study found that the repeat donors had significantly low deferral rate as compared to new donors. This findings matched with that of study of Naveen et al but differs with rate of voluntary donor deferrals. In our study related donors were deferred most which was opposite to findings from their study. (8) Knowledge about possibility of deferral and awareness of deferral criteria may be responsible for low rate of deferral in related donors. Similar observations were made by Zou et al. (15) But study done by Charles et al there were no significant difference between voluntary and relative donors. (16)

Most common cause of deferral was low hemoglobin in our study which is consistent with other studies. (12,15,17-19) Khurram et al reported that nutritional deficiencies, particularly iron deficiency (anemia), account for 6% of public health burden in subcontinent. (20) Low hemoglobin has been reported as major cause of deferral in many countries. Most deferred donors were middle aged which reflects malnourishment in this population. A study reported that only 21% first time donors having anemia came back to donate within 3 years while

70% of those not deferred returned. Similarly only 64% of repeat donors returned within 3 years after low hemoglobin deferral while 91% of those not deferred returned. (21) The second most common leading cause of deferral was hypertension. Hypertension often goes undiagnosed and is usually an incidental finding. The probable reason for hypertension may be sight of blood, fear of phlebotomy, stress and white coat hypertension. However any blood donor suffering from a marked degree of hypertension has to deal with care as sudden removal of 350-450 ml of blood may precipitate a cerebral catastrophe. (22).

CONCLUSION:

Deferral may discourage the donor for subsequent donations. Deferred donors should be properly counseled, educated and encouraged for developing a healthy donor pool. Young first time donors can play a vital role to increase the donor pool by future repeat donations. They should provide clear explanation about reasons of their deferral. Understanding the reasons for donor deferral can help in planning more efficient recruitment strategies and evaluating donor selection criteria. We need to consider that selection process might have negative impacts on the blood supply, as many deferred donors might not return to donate again due to negative feeling resulting from their deferral. So it is crucial to define a rational, evidence based donor selection process and eliminate practices that lead to the unnecessary deferral. Deferred donors should be properly counseled, educated and encouraged for developing a healthy donor pool.

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