

Evaluation Of Pre-Donation Deferral Causes In Blood Donor Population At Tertiary Health Care Center of Rajasthan

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ABSTRACT

Background: Donors should be in good health at the time of donation and free of infections transmissible by blood. The blood transfusion service should provide clear and unambiguous guidance for staff involved in donor selection. **Objectives:** The present study was done to analyze and evaluate the spectrum of causes for donor deferral at the tertiary health sector, so that temporarily deferred donors with corrective reasons can be identified, properly informed and guided to improve their quality of blood for future donation. **Material & Methods:** This prospective record based study was carried out for blood donors at a Blood bank in the Department of Transfusion Medicine and Immunohaematology in Maharana Bhupal Government Hospital & R.N.T. Medical College, Udaipur (Rajasthan) over a period of one year from 1 October 2014 to 30 September 2015. Standard operating Procedures based on the Directorate General of Health Services guidelines, the Ministry of Health & Family Welfare (2003) and world health organization guideline 2012 used for donor selection and deferral. The donors were evaluated on the basis of pre-screening tests like a questionnaire followed by clinical details, physical examination and laboratory tests. **Results:** The present study observed that out of 16919 blood donors who came to donate blood, 15776 (93.24%) were eligible for donation and 1143 (6.75%) blood donors were deferred. The deferral rate among the male population (1000/16476 cases, 6.07%) and female population (143/443 cases, 32.28%) were observed. The deferral rate among female population was 5.30 times higher than the male population. The most common cause of deferral in our study was low body weight (399, 34.91%), followed by anaemia (239, 20.91%), medical treatment (133, 11.64%), medical disease (84, 7.35%), blood donation < 3 months (47, 4.11%), age < 18 years (40, 3.49%). Out of the total 1143 deferrals, 108 cases were due to permanent causes and 1035 cases were due to temporary causes. **Conclusion:** Among temporary causes of deferral low weight and low haemoglobin are the two most common causes in both males and females which can be easily alleviated by proper nutritious supplement. The older age group blood donors have a higher number of diabetes mellitus, so they must be screened stringently before blood donation.

Key-words: Blood Donors, Haemoglobin, Deferral Rate.

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INTRODUCTION

Blood donation and transfusion saves life and improves health. The minimum need to meet a nation's basic requirement for blood is approximately about 1% of the population (10 per 1000 population); these requirements are

directly proportional to the type of advanced healthcare systems in any country.¹ According to National AIDS control organization's statistics, the annual rate of blood donation is about 7.4 million units against the requirement of 10 million units in India. The paucity of healthy, safe

blood donors has always been a serious problem for blood banks at tertiary health sectors in India.¹

Blood donor deferral is an uncomfortable and sad experience for the blood donor as well as the blood bank where screening is done. Moreover, a deferred prospective donor often leaves them with negative feelings about themselves as well as the blood donation process. These blood donors are less likely to return in the future for any blood donation. The criteria for these deferrals and their implementation depend on the quality of the blood supply. Thus, every blood bank has to balance between the acceptable quality and desired quantity.² In most of the blood banks, the focus is more on recruiting new blood donors while retention and re-entry of recruited, but deferred due to various causes are ignored.² Pre donation donor selection is usually performed for the safety of not only the blood donor but also for the recipient. Monthly statistics sent to the drug controller exclusively includes transfusion transmitted diseases data and excludes other causes. It is also very important to study and analyze the various causes for donor deferral, in order to categorize them under temporary and permanent deferrals.³ Hence, the present study was done to analyze and evaluate the spectrum of causes for donor deferral at the tertiary health sector, so that temporarily deferred donors with corrective reasons can be identified, properly informed and guided to improve their quality of blood for future donation.

MATERIAL & METHOD:

This prospective record based study was carried out for blood donors at Blood bank, Department of Transfusion Medicine and Immunohaematology in Maharana Bhupal Government Hospital & R.N.T. Medical College, Udaipur (Rajasthan) over a period of one year from 1 October 2014 to 30 September 2015. Donors who had donated blood at our outdoor voluntary blood donation camps as well as at our blood bank (indoor) were included in the study. Standard operating Procedures based on the Directorate General of Health Services guidelines, the Ministry of Health & Family Welfare (2003) and world health organization guideline 2012 used for donor selection and deferral. The donors were evaluated on the basis of pre-screening tests like questionnaire followed by clinical details, physical examination and laboratory tests. Clinical details included information about jaundice, malaria, ulcers, diabetes, syphilis, T.B, rheumatic fever, cardiac or renal disease, convulsion or fainting spells, loss of weight, previous blood donations, allergy, serious illness, surgery, blood transfusion, immunization and history of pregnancy in case of females. General examination included weight in kg, vital signs like pulse, temperature, respiratory rate and blood pressure, pallor, jaundice and any visible abnormality. Deferred donor data were analyzed with respect to age, sex, type of donor, demographic area and causes for deferral which were also categorized into permanent and temporary causes based on curability of the condition.

Basic Requirements for blood donation:

Donors will be in generally good health and feeling well.
Age: 18 to 60 years.
Weight: More than 45 kg.
Pulse: 80 to 100 beats/min and regular.
Temperature: Should not exceed 99.5F (37.5C).

Blood Pressure: Donors with systolic BP between 110 to 140 mm Hg and diastolic BP between 60 to 90 mm of Hg will be accepted for blood donation. In Laboratory test included Blood Groups ABO and Rh(D) group of donors by slide /tile or tube method. Haemoglobin estimation by CuSO₄ (finger prick) method or Haemoque method with cut off value of 12.5 gm/dl. First time and repeat donors were not segregated and for the sake of simplicity of analysis, all repeat presentations were considered as independent attempts for blood donation. Suitable statistical tests will be applied to find significant differences between different variables.

RESULTS:

The present study observed that out of 16919 blood donors who came to donate blood, 15776 (93.24%) were eligible for donation and 1143 (6.75%) blood donors were deferred. The deferral rate among the male population (1000/16476 cases, 6.07%) and female

population (143/443 cases, 32.28%) were observed. The deferral rate among female population was 5.30 times higher than the male population and it was highest among 18-30years age group (549, 48.03%) followed by 31-40 years (300, 26.25%), 41-50 years (166, 14.523%), 51-60 years (73, 6.39%), less than 18 years (40, 3.49%) and more than 60 years (15, 1.31%). The most common cause of deferral in our study was low body weight (399, 34.91%), followed by anaemia (239, 20.91%), medical treatment (133, 11.64%), medical disease (84, 7.35%), blood donation < 3 months (47, 4.11%), age < 18 years (40, 3.49%) and other causes including skin disease, abnormal blood pressure, menstruation, age > 60 years, diabetic mellitus, accident, injury, typhoid, tattooing, asthma, anxiety, tremor, high risk donor, operation, migraine, malaria, septic lesion, fracture, epilepsy, blood transfusion, pregnancy, dental procedure, breast feeding, immunization, alcoholism and other causes. Out of the total 1143 deferrals, 108 cases were due to permanent causes and 1035 cases were due to temporary causes.

TABLE 1: Distribution of male and female blood donors

Donor Category	Male	Female	Total
Total donors selected	15476 (93.930)	300 (67.720)	15776 (93.244)
Total donors deferred	1000 (6.069)	143 (32.279)	1143 (6.755)
Total	16476	443	16919

TABLE 2: Deferred blood donors

Donors	Blood bank	Camp	Total
Male	864	136	1000
Female	110	33	143

TABEL 3: Demographic profile of various age groups of deferred blood donors

Age (years)	Male		Female		Total	%
	Blood bank	Camp	Blood bank	Camp		
<18	25	14	1	-	40	3.499
18-30	406	71	53	19	544	48.031
31-40	233	21	38	8	300	26.246
41-50	129	16	16	5	166	14.523
51-60	59	12	1	1	73	6.386
>60	12	2	1	-	15	1.312

TABLE 4: Causes of temporary deferral with their relative proportions

Causes	Blood bank	Camp	Total	%
Low weight	393	6	399	34.91
Haemoglobin	218	21	239	20.91
Medication	94	39	133	11.64
Medical disease	52	32	84	7.35
Blood donation <3 months	36	11	47	4.11
Age<18 years	26	14	40	3.49
Skin disease	23	4	27	2.36
Menstrual cycle	6	9	15	1.31
Accident & injury	11	1	12	1.05
Venipuncture not possible	5	1	6	0.524
Tattooing	4	2	6	0.524
Anxiety & tremor	3	3	6	0.524
Malaria	3	1	4	0.349
Septic lesion	3	1	4	0.349
Fracture	-	3	3	0.262
Minor operation	1	2	3	0.262
Alcohol intake	1	1	2	0.174
Vaccination	-	1	1	0.087
H/o blood transfusion	1	-	1	0.087
Lactation	1	-	1	0.087
Pregnancy	1	-	1	0.087
Dental procedure	1	-	1	0.087

TABLE 5 Types of deferral

Types	Blood Bank	Camp	Total	%
Temporary	887	148	1035	90.55
Permanent	87	21	108	9.45

DISCUSSION:

Adequate supply of blood is the most important and it is also essential that the blood collection process doesn't harm either the donor or the recipient. Safe donor is the first step towards Safe Transfusion Services. This is achieved by donor selection criteria. While losses resulting from the consequences of rigorous screening for transfusion transmitted infections have been the focus of our attention for more than a decade, reasons for donor deferrals has not received much attention. In order to quantify the losses due to deferred donors and to understand the health problems of the donor population, A prospective study was conducted. The rate and reasons of deferral differ from region to region and

from one Center to another. Donor deferral rates in blood Centers vary from 5%- 24%, leading to huge losses in terms of available units for transfusion in the nation every year.

In our study, we segregated donor deferrals on the basis of medical history and physical examination. Our objective was to formulate a definite strategy based on the point of exit of prospective blood donors in order to increase the efficiency of the donor screening process. This highlights the fact that a sizable proportion of youth in our population is malnourished which markedly reduces blood availability. Interventions like nutritional advice, iron supplementation, education and motivation of donors to seek medical attention for anaemia, will improve the eligibility of prospective donors in the long run. The most common

reason for permanent deferral found in our study was high blood pressure, which was also the most common cause of male similar to Bahadur S et al (2009)⁴ and Sunder P et al (2010)⁵. This signifies hypertension as the major under diagnosed epidemic in Indian population. In our study, 90.55% of donors were deferred for temporary reasons and 9.45% were deferred for permanent reasons. All these can be actively and aggressively managed by calling them back after correction of their cause which can help to retain future donor pool.

DIFFERENT STUDIES:

Most common pre donation deferral reasons among various studies	Common deferral reasons
Agnihotri (2010) ⁷	Low Hb and hypertension
Charles et al. (2010) ¹⁰	Low Hb and hypertension
Bahadur et al. (2009) ³	Low Hb and low weight
Zou et al. (2008) ⁸	Travel to malaria area and miscellaneous blood exposure
Chaudhary et al. (1995) ¹¹	Low weight and low Hb
Present study	Low body weight and low haemoglobin

DIFFERENT STUDIES:

Rabeya et al. (2008) ⁶	5.6%
Sunder et al. (2010) ⁴	6.0%
Bahadur et al. (2009) ⁵	9.0%
Agnihotri (2010) ⁷	11.6%
Zou et al. (2008) ⁸	12.8%
Custer B et al. (2004) ⁹	13.6%
Lim et al. (1993) ³	14.4%
Present study	6.75%

CONCLUSION:

Differing deferral causes in different locality, socioeconomic status, age group and sex are of vital significance in formulating and modulating policies towards modern blood transfusion services. Among temporary causes of deferral low weight and low haemoglobin are the two most common causes in both males and females which can be easily alleviated by proper nutritious supplement. The older age group blood donors have a higher number of diabetes mellitus, so they must be screened stringently before blood donation.

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