

Evaluation of Pre-donation Deferral Causes in Whole Blood Donor Population at a Tertiary Rural Health Centre

Dr. Vamseedhar Annam¹, Dr. NaliniMohan.C², Dr. Lakshmi.R³, Dr. Mrinalini.V.R⁴, Dr. Sivachandran⁵

¹Associate Professor, Department of Pathology, Mamata Medical College, Khammam, Telangana, India.

²Assistant Professor, Department of Pathology, Mamata Medical College, Khammam, Telangana, India.

³Blood Bank Officer, MAPIMS, Melmaruvathur, TamilNadu, India.

⁴Professor & HOD, Department of Pathology, MAPIMS, Melmaruvathur, TamilNadu, India

⁵Junior Resident, MAPIMS, Melmaruvathur, TamilNadu, India.

Abstract: Blood safety and transfusion is one of the major issues in transfusion medicine. Whole blood donor deferrals lead to loss of precious blood donors and blood units available for transfusion purposes. The objective of this study is to evaluate the reasons for donor deferral, and also to guide the proposed donor education and recruitment programme. Of the pre-donation blood donors (n= 933), the total deferrals were 9.11% (n=85). Temporary deferrals (75.29%) were more common than permanent deferral (24.71%). The most common reason for temporary deferral was low hemoglobin (34.1%) followed by hypotension (14.1%) and in permanent deferral; the causes were hypertension (9.41%) and cardiac illness (7.06%). Thus, it is important to evaluate the spectrum of causes of whole blood donor deferral to guide the recruitment and retention efforts at rural level.

Keywords: Donor deferral, Blood, Rural centre, Hemoglobin, Hypertension.

1. Introduction and Literature review

Blood donation and transfusion saves life and improves health. The minimum needed 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 health-care 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 [2]. The paucity of healthy, safe blood donors has always been a serious problem for blood banks at rural health sectors in India.

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 [3]. These blood donors are less likely to return in future for any blood donation [4]. The criteria for these deferrals and their implementation depend on the quality of blood supply. Thus, every blood bank has to balance between the acceptable quality and desired quantity.

In most of the blood banks, focus is more at recruiting new blood donors while retention and re-entry of recruited but deferred due to various causes are ignored. 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 [5]. It is also very important to study and analyze various causes for donor deferral, in order to categorize them

under temporary and permanent deferrals. Hence, the present study was taken to analyze and evaluate the spectrum of causes for donor deferral at rural 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.

2. Methods

The present prospective study included all whole blood donors [voluntary/replacement] arrived for blood donation in the blood bank of MAPIMS, Melmaruvathur, TamilNadu (India) from 1st January to 31st December. The donors were evaluated on the basis of pre-screening tests like questionnaire followed by clinical details, physical examination, Haemoglobin [Hb] estimation, blood pressure and temperature. Haemoglobin estimation as measured by automated haematology analyzer [SYSMEX, KX-21]. Blood samples for these donors were screened for HBsAg, HCV, HIV 1 and 2 by ELISA method, Malaria by SD Malaria Ag Pf/Pan, syphilis by CARBOGEN, RPR card test and Treponema pallidum antigen by solid phase immunochromatographic assay. The TamilNadu State AIDS Control Society [TRANSACS] guidelines were used for deferral of blood donors. Deferred donors data was analysed with respect to age, sex, type of donor and causes for deferral were categorised into temporary and permanent based on the curability of the condition.

3. Results

Out of 933 whole blood donors who arrived for blood donation at rural blood bank, 848 (90.89%) were eligible for

donation and 85 (9.11%) blood donors were deferred. Male population were found to have higher deferral rate than the female population (95.29% vs 4.71%).

Table 1: Demographic profile of whole blood donors at Rural blood bank centre

	No. of Registrations	No. of Deferrals	% of deferrals of total registration
Male	915	81	8.68%
Female	18	04	0.43%
Total	933	85	9.11%

Among 85 deferred donors, the frequency of temporary deferral (75.29%) was increased compared to permanent deferral (24.71%) and the ratio was 3.05:1 [Table.2]. Deferred donor age group ranged from 18 to 60 years with a mean age of 39 years. The deferred donors were categorised according to the age as shown in Table.3. Deferral rate was highest among 18-30 years age group (72.95%) followed by 31-40 years (15.29%), 41-50 years (9.41%) and 51-60 years (2.35%).

Table 2: Frequency of temporary and permanent whole blood donors

	No. of deferrals	% of total deferrals	% deferrals of total registration
Temporary	64	75.29%	6.86%
Permanent	21	24.71%	2.25%
Total No.	85	100%	9.11%

Table 3: Distribution of permanent and temporary deferral among different age groups

Age groups	Temporary	Permanent	Total
18 – 30years	54	08	62 (72.95%)
31 – 40 years	08	05	13 (15.29%)
41 – 50 years	02	06	08 (9.41%)
51 -60 years	00	02	02 (2.35%)
Total	64	21	85 (100%)

The most common cause for temporary deferral [Table.4] as low haemoglobin (45.31%), followed by hypotension (18.75%), anxiety (7.81%) and alcohol intake (6.25%). Among permanent deferral, the commonest deferral cause [Table.5] was hypertension (38.10%) followed by cardiac illness (28.57%) and asthma (19.05%).

Table.4: Distribution of spectrum of temporal deferral with their proportions

Causes	Deferral	% Temporary Deferral	% Total deferral
Low Hemoglobin	29	45.31%	34.12%
Antibiotic intake	03	4.69%	3.53%
Hypotension	12	18.75%	14.11%
Typhoid	02	3.13%	2.35%
Anxiety	05	7.81%	5.88%
Alcohol intake	04	6.25%	4.71%
Upper Respiratory Infection	01	1.56%	1.18%
AntiRabies Vaccine	02	3.13%	2.35%
Fasting	01	1.56%	1.18%
Heavy work	01	1.56%	1.18%
Underwent surgery	01	1.56%	1.18%
Drug intake	01	1.56%	1.18%
Under Age	01	1.56%	1.18%
Tattoo	01	1.56%	1.18%
Total	64	100.00%	75.29%

Table.5: Distribution of spectrum of permanent deferral with their proportions

Causes	Permanent Deferral	% Temporary Deferral	% Total deferral
Hypertension	08	38.10%	9.41%
Cardiac illness	06	28.57%	7.06%
Asthma	04	19.05%	4.71%
Epilepsy	02	9.52%	2.35%
Malignancy	01	4.76%	1.18%
	21	100.00%	24.71%

4. Discussion

Safe blood donor selection is of vital importance towards safe blood transfusion services. The life force of any blood bank and hospital in blood donation programme is the donor. Hence, insight into the various causes of donor deferral is very important. Most of the donors in our study were males (95.29%), women accounted for only 4.79% of the donors. Among rural population, more males than females approach for blood donation due to socio-cultural factors, ignorance, lack of awareness, lack of motivation and lesser opportunities among women for blood donation.

The donor deferral rate ranged from 5.19% - 35.6% across the world in previous studies [5,6,7,8,9], however in present study the deferral rate was 9.11%. These varied differences in various countries in donor deferral rate could be due to different donor selection criteria like weight, age, haemoglobin levels, blood donation interval, endemicity of transmittable diseases, high risk sexual activities and religious restriction on blood donation.

The donor deferral population was categorized into temporary and permanent deferrals for optimizing donor recruitment and retention in the long run. Among the deferrals, temporary causes (75.29%) were more common as compared to permanent causes (24.71%). Most of the lower age group donors (18-30years) were deferred mainly because of temporary causes and higher age group were rejected because of permanent causes (9.41%). The temporary deferrals can be called back after correction of the cause in order to prevent recruitment of fresh donors for blood donation camp which requires manpower, motivation, money and overall precious time. In a previous study, 70% of the temporary deferrals came back after correction of cause and donated blood [8]. In rural sectors, the population is less as compared to urban areas. Hence, depending on temporary deferrals for blood donation could be optimum rather than approaching a fresh donor.

The major temporary deferral cause was anemia (45.31%) in our study which was similar with other previous studies [5,10,11]. In rural population, high prevalence of anemia could be due to poor nutritional status and ill health. The effect of differences in donor characteristics on low haemoglobin levels should be taken into consideration for donor counselling, recruitment and retention efforts. Information about how to increase the haemoglobin levels should be provided to the donors. For example, food intake with high iron or taking multivitamin containing iron should be encouraged and educate to donate blood at a later date after the cause is rectified. Thus evaluation and management

of anemia plays a pivotal role in rural population. Hypotension (18.75%) was the second commonest temporary deferral cause observed in our study similar to Khan S study [12]. Among rural sector, hypotension could be due to increased starvation, excessive fluid loss from sweating or heat stroke during agriculture work in fields. All the other listed temporary causes in the present study can be treated with appropriate education, counselling and related medications for the cause.

The most common cause for permanent deferral in our study was hypertension (38.10%) in contrast to other studies [5,9,13]. The probable reason could be sight of blood, first time blood donation, fear of phlebotomy and white coat hypertension. Due to ignorance among people in rural area, hypertension often goes undiagnosed and is usually an incidental finding. This signifies hypertension as the common undiagnosed epidemic in rural health sectors. The other frequent permanent deferral causes were cardiac illness (28.57%) and asthma (19.05%). Most of the persons in rural area are exposed to heavy physical work of long duration and also are directly in contact with pollens and animal dander and other environmental factors, hence they are prone for cardiac illness and asthma.

Donor education about selection criteria needs to be addressed as an objective policy. Monitoring and evaluation of deferral rates and causes could be used as a helpful indicator of the effectiveness of the policy.

The most common cause for temporary deferral [Table.4] as low haemoglobin (45.31%), followed by bradycardia (14.06%), anxiety (7.81%) and alcohol intake (6.25%). Among permanent deferral, the commonest deferral cause [Table.5] was hypertension (38.10%) followed by cardiac illness (28.57%) and asthma (19.05%). Public awareness programmes related to donor deferral causes needs to be encouraged.

5. Conclusion

The present study evaluates the donor deferral rate and emphasizes the spectrum of donor deferral patterns among rural population. Awareness about categorization of donor deferral causes into temporary and permanent deferrals is required for all the blood banks and transfusion services. All the potential donors deferred for temporary causes should be informed at the time of deferral about the cause and time duration of the deferral. These donors should be counselled, educated and encouraged to improve the efficiency of donor programme. Also, temporary deferred donors require appropriate follow up and management so as not to lead to a diminished supply of future donors. Thus, evaluating the profile of blood donors will help to identify target population to increase the pool of voluntary donors. However, health authorities should provide necessary essential database for policy design and programme implementation to decrease the incidences of common deferral causes as they reflect the health status of the society.

6. Future Scope

There is scarcity of literature regarding donor deferral causes among rural population. Furthermore studies involving larger population, screening methodologies involving more parameters are required to improve the quality of blood donation.

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Author Profile

Dr. Vamseedhar Annam [M.D. (Pathology), D.C.P]– Presently working Associate Professor in Mamata Medical College. Previously working as Incharge and Head of Blood Bank Unit, MAPIMS, Melmaruvathur. Has more than 35 publications in various indexed international and national journals. Scopus h index = 5.

Dr. NaliniMohan. C. [M.D. (Pathology)]– Presently working as Assistant Professor, Mamta Medical College. Previously working at Department of Pathology, MAPIMS, Melmaruvathur. Has more than 5 publications in international and national journals.

Dr. Lakshmi. R. [M.B.B.S]– working as Blood Bank Officer, MAPIMS, Melmaruvathur.

Dr. Mrinalini. V. R. [M.D. (Pathology)]– worked as Professor & HOD, Department of Pathology, MAPIMS, Melmaruvathur.

Dr. Sivachandran. [M.B.B.S]– worked as Junior resident, Blood Bank Officer, MAPIMS, Melmaruvathur.