

An Analysis Of Pre-Donation Deferral Of Blood Donors In A Tertiary Care Teaching Hospital Blood Bank Unit, Tumakur, Karnataka, India

¹Dr. Krishna M C, ²Dr.Sharada.M S, ³Dr.Harish S G., ⁴Dr.Raman M Hulinaykar

¹Asst. Professor, ²Professor & HOD, Dept. of Pathology, ³Professor, Dept. of Pathology, ⁴Asst. Professor, Shridevi Institute of Medical Sciences and Research Hospital, Tumakur, Karnataka, India

Abstract: Blood transfusion safety begins with healthy donors. Blood Donors are deferred for multiple reasons and are not able to donate blood successfully either permanently or temporarily.

Aim is to study the main causes of pre-donation deferral of potentially healthy prospective blood donors in a Tertiary care teaching hospital, Blood Bank unit.

A retrospective analysis of records of the donors from January 2014 to December 2014 was done, in order to find out the rate and causes of deferral in pre-donation period both in male and female donors, in Tertiary care teaching hospital, Blood Bank unit.

Results of the 1548 donors registered for donation, deferral donors constituted 114 for various reasons and deferral rate was 7.3%. The three most common reasons for deferral were low hemoglobin levels, low body weight, hypertension and alcohol consumption. The deferral rate was higher in the age group of 18-25 years and most common cause was under weight, low hemoglobin level. In 45-55 age group reasons for deferral were hypertension, alcohol consumption and low hemoglobin levels. The most common cause of deferral in our study and in several studies available in the literature are the same.

Out of 114 deferred donors males constituted 89.47% and females were 10.52%. The percentage of deferred donors was 7.3% with majority of them (92.98%) being deferred for temporary reasons. Anemia was the most frequent cause for donor rejection (32.8%). Permanent deferral accounted for 7.01% with hypertension being the most common cause (25%) in this category.

Keywords: Blood Donor, Deferral, Permanent, Temporary.

1. INTRODUCTION

Blood donors are deferred for various reasons. Individuals disqualified from donating blood are known as “deferred” donors. The rate and reasons of deferral differs from region to region and one center to the other. To protect blood donors and recipients, stringent donor screening criteria are necessary. Modifying physical criteria could lower deferral rates but must be preceded by studies to ensure that donors do not suffer ill-effects. Increased public education on common causes of donor deferral may also lower deferral rates by allowing prospective donors to "pre-screen" themselves [1].

Blood donor deferral is a painful and sad experience for the blood donor as well as the blood bank unit screening the donor. Moreover, deferring prospective donors often leaves them with negative feelings about themselves as well as the blood donation process [2].

Loss of units from both first-time and repeat donors due to temporary deferral and loss of units from miscollection are more common events than losses due to disease marker testing. Some of these losses may be avoidable and could increase the blood supply without having to recruit new donors Additionally these donors are less likely to return for blood donation in future [3].

The criteria for prospective blood donor selection and deferral in India are provided by the Drugs and Cosmetic Act 1940 (and rules thereunder) supplemented by the Technical Manual (Directorate General of Health Services, MOH and FW, Govt. of India).

Numerous prospective donors are currently being deferred based on empirically derived criteria. By developing strategies to identify and rationalize donor selection criteria, the blood transfusion services should be able to decrease unnecessary deferrals [4].

The few studies done in India in the past have provided different common reasons for deferral of blood donors, highlighting differing demographic profile in different parts of the country [5].

The present study was undertaken to analyze the Pre donation deferral incidence and pattern among blood donors.

2. MATERIALS AND METHODS

The study involved donors both voluntary and replacement who have donated blood to our center during the period January 2014 to December 2014. During which period, there were 1548 donors who came to donate whole blood and blood components. Of 1548 there were 1524 males and 24 (1.44%) female donors. We collected blood from donors both at the Blood Bank unit involving both voluntary and replacement donors; and out door camps involving only voluntary donors and arranged by various agencies. Approximately 80% were voluntary and 20% replacement. The majority of donors were people in and around Tumakur within a radius of 40 km. Each donor was selected by a medical officer based on detailed medical history and brief physical examination of donors with regard to hemoglobin, blood pressure, temperature, and pulse regularity and rate. Detailed information on the donor deferral including the cause of deferral was recorded in deferral register. Donors deferred were differentiated according to sex, age group, and whether deferral was temporary or permanent basis. Criteria laid down by director general Health Services and Drug's Controller of India were strictly followed. We used statistical method to detect the rate and reason for donor deferral. The quantity of blood collected was 350 ml or 450 ml depending on the weight of the donor: 350 ml was collected from donors who weighed 45-60 kg and 450 ml from donors who weighed above 60 kg.

3. RESULTS

Of the 1548 donors registered at our blood bank unit and at various blood donation camps, were 1524 males and 24 females. As the figures reveal, female constituted only 1.44% of donors. The deferral rate among males was 6.69% and among females 50%. Table 1 shows the total number of donors, number deferred, and percentage deferred both in male and female.

Table: 1 Distribution of blood donation and deferral in by sex

	Males	Females	Total
No of Donors	1524	24	1548
No Deferred	102	12	114
% deferred	6.69%	50%	7.36%

Table: 2 Distribution of blood donation deferral by causes

	Total	Percentage
Temporary	106	93%
Permanent	08	07%
Total	114	100%

We have also subdivided the age group into four categories, for both male and female, to find out which category of age donated blood more and in which age group the deferral rate is high.

As per the records the reasons for deferral are many as listed below. They are broadly differentiated into permanent and temporary. There were 106 (93%) temporary and 08(7%) permanent deferrals out of 1548 donors.

Causes of Temporary deferral

	Causes	
1	Under Age	09
2	Under Weight	13
3	Anaemia	32
4	Fever	8
5	Tattooing	8
6	On Medication in the past 72 hours	11
7	Alcohol intake in the past 72 hours	14
8	Donated Blood in the last 3 months	6
9	Menstruation	1
10	URI	3
11	Bronchitis	1
		106

Causes of Permanent deferral

	Causes	
1	Hypertension	3
2	Asthama	1
3	Cardiovascular disturbances	1
4	Diabetics	1
5	Cancer	1
6	Major surgery	1
		8

The most common cause for deferral was anemia both in male and female donors, in our study. The next common causes were low body weight, hypertension, It is observed that the leading reason for rejecting the donors is low Hb levels.

4. DISCUSSION

Blood Transfusion Services (BTS) is a vital part of the health care services. Advancement in the field of transfusion medicine and technology have made it necessary to enforce measures to ensure the quality of blood and blood products Blood donor deferral is a painful and sad experience for the blood donors as well as for the blood donation centres which screen the donors. Moreover, deferring prospective donors often leaves them with negative feelings about themselves and about the blood donation process [6].

Additionally, these donors are less likely to return for blood donation in future. Nonetheless, the criteria for these deferrals and their implementation strongly influence the quality of blood supply in a population. Thus, every blood centre has to balance the fulcrum between the acceptable quality and the desired quantity of blood [7].

The blood donor suitability criteria which are based on science, the informed medical opinion, and the regulatory rules influence the donor demographics and this can lead to specific deferral patterns. These criteria are designed to protect both the blood donors and the recipients from harm [8].

The donor selection process results in the deferral or the rejection of the potential blood donors who may not particularly like this feeling of being rejected and they may thus refrain from returning for future donations. Nodal agencies like the National AIDS Control Organization (NACO) and the State Blood Transfusion Councils (SBTCs) do not actively collect data on the donor deferrals. Their formats for the data collection are more inclined towards the quantity of the supply and towards the deferrals, solely due to infectious diseases in the donated units[5]. As a result, most of the efforts at the

government, community and the individual levels are focused at recruiting more and more new donors while ignoring the retention and the re-entry of those who have been recruited but have been deferred due to various causes. This can be achieved by analyzing the reasons for these deferrals amongst the blood donors by addressing the issue and by ameliorating the causes if possible [4].

Deferring or rejecting potential blood donors often leaves the person with negative feeling about themselves as well as the blood banking system. But there are definite advantages of eliminating donors with possible risk of disease because despite the availability of sensitive screening tests to detect HIV infection, blood donors can be infected but test negative if they have been infected for a period of 6 weeks or less [9].

The rate of deferral differs from region to region and sometimes in the same region and one center to another [10]. In this study the overall deferral rate was about 7.3% and the deferral rate was about seven times higher in females compared with males i.e. one seventh of female donors were deferred. The lowest reported rate of rejection was by Talonu T (4%) in Papua New Guinea [11] and higher rate (8-15%) was reported by Chaudhry, [4] Lim,[1] Blumberg, [14] Ranveet.[8].

Age group deferral under age is commonest. Very few donors above 50 years constituting less than 1% in our study. Garry *et al*, advice elderly healthy individual to donate but to limit donations to less than five per year or donors are advised to take iron supplement regularly to preserve reasonable amount of iron reserve [13].

The causes of deferral were many and were broadly classified into temporary causes and permanent causes. More number of deferral was in temporary constituting about 93% and permanent about 7%. Custer *et al*, report 68.5% temporary and 31.5% permanent deferral.[14]. In our study permanent deferral constituted only 7.3%; this may be due to more number of younger donors. Most blood donor deferrals are temporary and short-term. The most common causes for temporary and short-term deferral (STTD) in female were low hemoglobin level, low body weight, and hypotension and in males low hemoglobin level and hypotension. In a study by Halperin *et al*, the three most common STTD are low hemoglobin level, colds and/or sore throats, and elevated temperature, [15] whereas that by Ranveet *et al*, under-weight, under-age, and low hemoglobin levels.[15]. Hence, studies on donor deferral indicate that in each regions there would be unique sets of reasons. The effect of short-term, temporary deferral STTD on blood donor returns and subsequent blood donation is an important issue. STTD have a very negative impact on blood donor return rates and subsequent donations [15].

In many studies it is observed that the most common cause for deferral is anemia, even in western studies. In India required hemoglobin is 12.5 gm/dl both for male and female, for blood donation. In Canada, 2% of all blood donors do not meet minimum hemoglobin standard,[16] whereas in developing countries the number is more as pointed by this study (more than 21%).

Under permanent deferral, hypertension was the most common cause of deferral. Two Indian studies report that history of jaundice was the most common cause of deferral in Chandigarh [17] and Lucknow. [4] A large number of deferrals due to pulse irregularities or histories suggestive of potential cardiovascular problems were reported by Blumberg *et al*,[12] whereas in our study less than 1% of donors had these type of medical problems.

Having a tattoo has been associated with serological evidence of hepatitis B and C viruses, as well as HIV infection and syphilis, all these are known to be transmissible by blood transfusion. These associations are of higher magnitude for individuals having two or more tattoos unprofessionally applied and are common among drug addicts and prisoners.[17]. In our region tattooing is common and constituted 8% of deferral.

Domen *et al*, indicate that shared donor deferral registries may be valuable at the local or regional level to prevent deferred blood donors from donating at other blood collection facilities.[18]. In USA blood center approximately 83% of blood donors successfully donate, but 13% are rejected because of donor suitability issue. One percent is rejected for the positive test, which is often nonspecific or false positive and 2% to 4% of the phlebotomies are not successful.[19]

Analysis of donor deferral pattern indicates the impact of knowledge of deferral criteria in blood donors. The deferral rate can be reduced by providing information and education of selection criteria.

5. CONCLUSION

This study showed that the deferral rate was 7.33%. Donors are deferred for multiple reasons. The temporary causes of deferral were more as compared to the permanent causes. The most common causes of temporary deferral in both male and female donors are anemia, low birth weight and under age. Hypertension is the commonest for permanent deferral.

The blood transfusion services should develop strategies to identify and rationalize the donor selection criteria and be able to decrease unnecessary deferrals. The deferred donors should be helped to overcome their problems by providing information and education such that they move out from the category of deferral state to permanent donors.

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