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A Study on Blood Donor Rejection Rate and Analysis of the Causes

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ABSTRACT:

Blood Banks play a vital role in the management of certain patients. Many patients are transfused with blood or its components as part of their treatment. The quality of blood or blood components plays a significant role in the successful and better management of such patients. This, in turn, depends, beside other things, on proper selection of voluntary blood donors. Some donors need to be rejected, based on standard criteria, to achieve this objective. This study aims to find the rejection rate of blood donors over a six month period at Govt. Vellore Medical College Blood Bank and analyzing the causes of rejection in order to suggest steps to reduce the rejection rate.

KEY WORDS: Blood Bank, Donor registration, Temporary and permanent deferral , donor rejection rate.

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INTRODUCTION:

Many patients presenting to various departments of a hospital require blood or blood component transfusion as part of their treatment.Many major hospitals have a blood transfusion service in their premises. Some hospitals get blood from elsewhere to cater to the needs of their patients. In any case, it is important to provide a good quality blood product for transfusion. This depends on various factors including good infrastructure, proper selection of blood donors, sophisticated methods of testing for transfusion transmitted infections and well trained personnel,beside other things. Proper selection of the blood donors is of paramount importance. The prospective blood donors can be rejected at the level of registration itself in many instances for various reasons. This includes many criteria like age(lesser than 18 years or greater than 65 years), weight(lesser than 45kg), history of certain diseases (like systemic hypertension and Diabetes mellitus on treatment, recent history of jaundice, hemoglobin level (lesser than 12.5g/dl) etc. This study aims to find out the blood donor rejection rate (at pre-donation level) in a 6month period from January 2017 to June 2017 at Govt. Vellore Medical College and Hospital, Vellore. This study also analyses the various causes of rejection. Steps to reduce the rejection rate further are suggested.

AIMS and OBJECTIVES:

1. To find out the blood donor rejection rate at the Pre-donation level.

2. To analyze the causes of rejection.

3. To suggest methods to decrease the donor rejection rate.

MATERIALS AND METHODS:

This retrospective study was conducted at Govt. Vellore Medical College and Hospital, Vellore. The period of study was six months from January 2017 to June 2017. All those who came forward to donate blood during this 6 month period, either in the Blood Bank (located in the hospital premises) or at Blood donation camps conducted elsewhere by the Blood Bank during this period were listed.All details required for eligibility for blood donation were recorded in the standard format. This included relevant history, brief physical examination and hemoglobin estimation. Those who were considered unfit for blood donation for any reason were included in the study. Those who were found to be eligible for blood donation at registration level were excluded from the study. The rejection rate was calculated.

The reasons for donor deferral were listed and analysed.Suggestions to further reduce the rejection rate are given.

All those who presented themselves for blood donation, either in the Blood Bank at Govt. Vellore Medical College and Hospital or at the various blood donation camps conducted by the blood bank during the six month period from January 2017 to June2017 were requested to fill up a blood donor enrolment form. The information collected in the donor form included donor identification details, their age, gender, date of birth, blood group(if known) and date of previous blood donation(when applicable). Relevant history including history of Diabetes Mellitus, Systemic hypertension, Bronchial asthma, Ischemic heart disease, chronic kidney disease, chronic liver disease, epilepsy, past history of tuberculosis, recent history of typhoid, malaria, jaundice, medication intake, alcohol consumption in the previous 24 hours, any major surgery in the past, recent history of blood/blood component transfusion, pregnancy and menstruation in ladies were collected. Also history suggestive of any transfusion transmissible infections like HIV, Hepatitis B, HCV Infection, Malaria and Syphilis were recorded.

A general examination for pallor, icterus, clubbing, Lymphadenopathy and leg edema was done. Vital signs- pulse rate, blood pressure, temperature and respiratory rate were recorded.

A brief Systemic examination of cardiovascular system, respiratory system, abdomen and nervous system was performed.

Then, the hemoglobin level was assessed by Specific gravity method using Copper sulphate solution with Specific Gravity 1.053.The signature of donor was obtained as consent for blood donation and declaration of genuinity of details. Those who met all criteria for blood donation were allowed to donate. Those subjects who were rejected for blood donation for any reason were included in the study. The rejection rate was calculated the causes for deferral were tabulated and analyzed.

RESULTS

The total number of subjects who came forward to donate blood either at Govt. Vellore Medical College Hospital Blood Bank or at blood donation camps organized by the blood bank during the study period of six months between January and June 2017 were 2980. Of these, 64 were deferred for various reasons. This gives a deferral rate of 2.15%. The distribution of cases for various causes of deferral are shown in the Table 1.

TABLE 1- Etiological distribution of deferrals

Reason for deferral	Number of rejects	No. of rejects(as % of Total deferred)
Low Hemoglobin	23	35.94
Underaged	17	26.57
Recent alcohol intake	5	7.82
Menstruating	5	7.82
Under weight	4	6.25
Thyroid disorders	2	3.12
Recent history of Jaundice	2	3.12
History of major surgery	2	3.12
Asthmatics	2	3.12
Epileptics	1	1.56
Dermatological disease	1	1.56
TOTAL	64	100.00

Of the 64 deferrals, 34 were males (53%) and 30 were females (47%). The number of permanent deferrals was only 10(15.62%) and a good majority(54) were temporary deferrals(84.38%).Among the 23 cases rejected for hemoglobin level being lesser than 12.5g/dL,19 were females(82.6%) and only 4 were males(17.4%).In addition 5 females(7.82%) were menstruating and hence deferred. 17 subjects(26.57%) were deferred for being under 18 years of age. Of these,13 were males(76.5%) and 4 were females(23.5%).All the 5 subjects who were rejected for recent alcohol intake were males(100%).Both subjects with Thyroid disease were males(100%).All the 4 deferred for weighing lesser than 45kg were males(100%).Both rejects with recent jaundice and both asthmatic rejects were all males(both 100%). Of those rejected for having undergone major surgery,1 each were male and female. The single epileptic and the lone deferral having dermatological disease were both males.

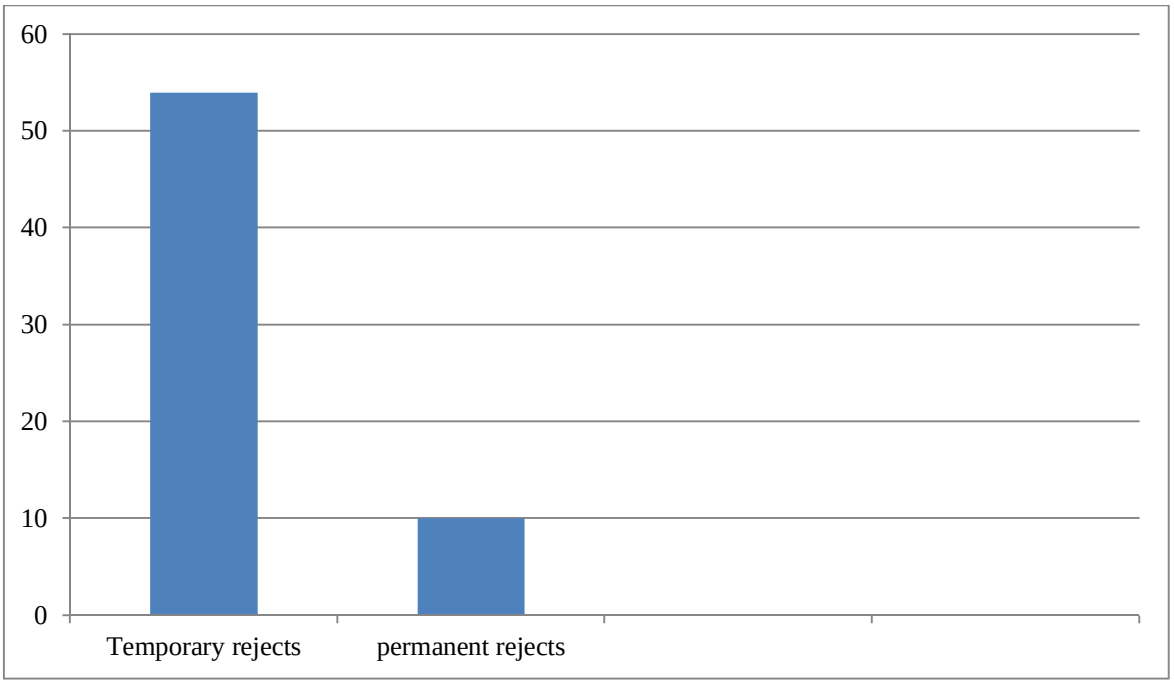

Fig: 1 Distribution of Rejects

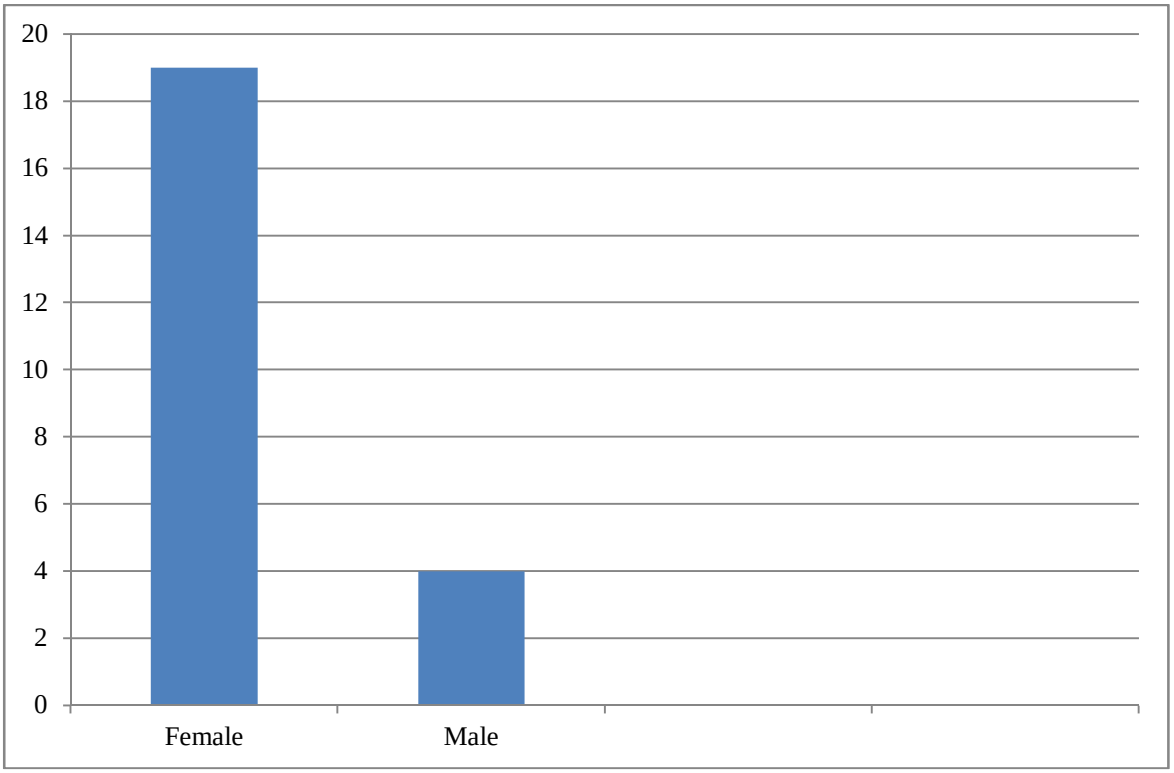

Fig: 2 Low Hemoglobin Rejects-Sex Distribution

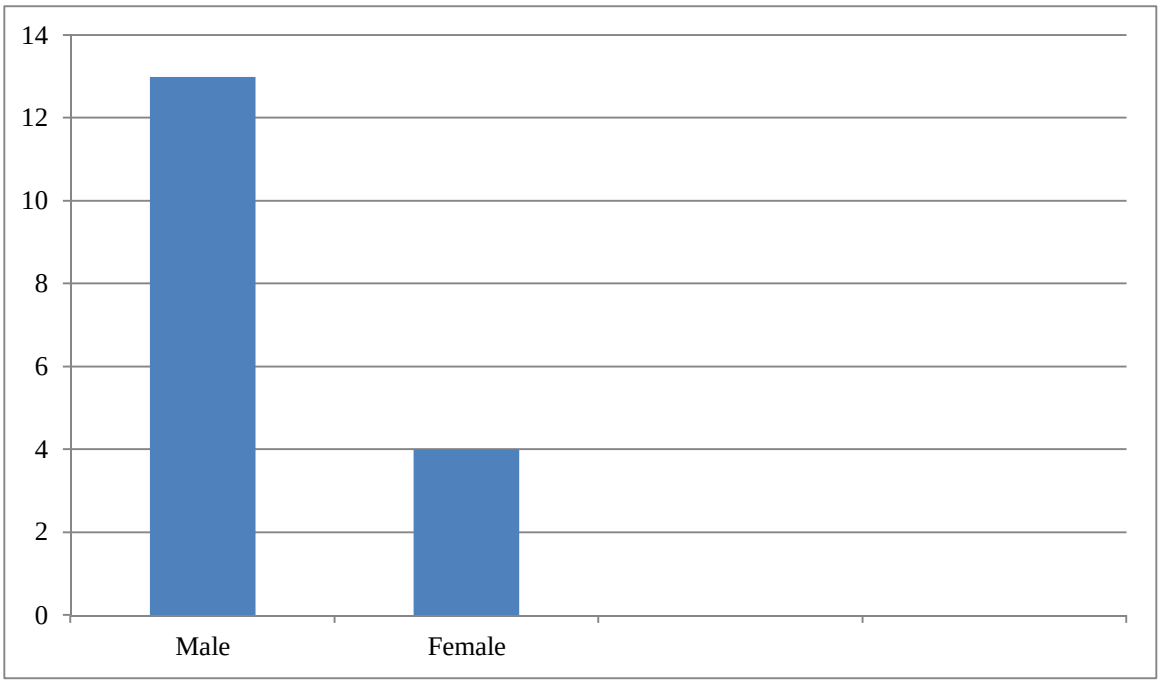

Fig: 3 Under Aged Rejects - Sex distribution

DISCUSSION:

The purpose of setting criteria for eligibility to donate blood is to ensure donor as well as patient safety.However, rejection of blood donors for failure to meet the required criteria could make them less motivated to return to donate blood at a later date. Therefore, it is important to decrease the donor deferral rate as much as possible.For this, the reasons for deferral have to be studied and analyzed carefully so that appropriate steps can be taken to ensure the same.In most cases, the deferred donors need to be "educated" about the reason for deferral and suitable remedies,if any.

Our study gave an overall pre-donation deferral rate of 2.15% over a period of six months from January to June 2017. This is much lower than that reported by other studies. HakonReikvam[1] et al reported a deferral rate of 3.9% in a study in Norway over a period of eighteen months from June 2008 to December 2009. In India, Agnihotri. N[2]. Reported a 11.6% whole blood donor deferral rate at a center in western India over a period of eighteen months from January 2008 to June 2009.

In our study, an overwhelming majority of the deferrals were temporary which gives us scope to educate them about the reason for deferral and the remedial measures to be taken by them to be able to donate

blood at a later date on fulfilling the necessary criteria.Further,it is important to reassure and motivate them to return to donate blood at a later date. The merits of blood donation needs to be re-emphasised and their fears, if any, allayed.This could decrease the rejection rate in the future.

Though our study gives similar deferral rates in both sexes, it is clear that the predominant cause in each is different. While underage was the most common cause for deferral in males, inadequate hemoglobin levels was the major cause in females.

Our study found that 82.6% of the deferrals due to low Hb level were females. This is probably because these women were in their reproductive age and therefore having menstrual blood loss, contributing to the low Hb.

Most of those deferred for being underaged were boys.This is probably because the boys under the age of eighteen were more willing to come forward for blood donation compared to their female counterparts who might have been more hesitant to consider donating blood.

All rejects due to “recent alcohol intake” were males. This could possibly due to higher prevalence of alcohol intake in males when compared with females.

It is important to spend extra time on deferred donors and explain to them in detail about why they were rejected and what they could do so that they could donate later after fulfilling the required criteria. Those who were permanently deferred should be appreciated for their gesture of having considered donation of blood despite their ill health, if any. Explaining in detail helps them understand and overcome their disappointment of not being allowed to donate blood. However, educating the donor need not translate into better donor [3].

Most of those rejected for low Hb are amenable to treatment after finding the cause. Appropriate measures to be taken by them could be explained. Those who were under aged should be appreciated for having come forward to donate blood and that they could do so as soon as they attain eighteen years of age.

Those rejected on groups of “periods” could be advised to come back after a week or so later to donate blood. So also, those who were under weight could be suggested steps to increase their weight to more than 45kg so that they will be eligible for blood donation.

Thus, sparing extra time to attend to permanent rejects could comfort them while chances of temporary rejects returning at a later date for blood donation(after remedial steps have been taken) can be improved. Proper donor education on risk factors is important for safe transfusion practice [4, 5]. This also improves donor motivation [6]. Also similar further analysis of donors after a period of 1 year can help us know whether there is an actual decrease in donor deferral rate [7].

CONCLUSION: Careful selection of blood donors is an important aspect of any blood transfusion service. This is the first step of filtration of prospective donors to ensure safe blood transfusion. Our study over a 6 month period at Govt. Vellore Medical College and Hospital gave a rejection rate of 2.15%,which is very much lesser than those found in other studies. A vast majority of the rejects were temporary deferrals and are therefore potential future blood donors after rectification of the cause. Low Hb(<12.5g/dL) and underage(<18yrs) were the two most common causes for temporary deferral most of whom can be treated to meet the required criteria for blood donation. Addressing the temporary deferrals suitably can ensure further decrease in rejection rate.It is very important to spend adequate time to ”educate” the rejected donors ,be it temporary or permanent deferrals. This study however cannot be extrapolated to generalize for entire population in view of the short study period. Studies over a much longer period are required to assess the rejection rate accurately.

We declare that they have no potential conflicts of interest.

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