

Original Research Article

Analysis of donor deferrals causes in blood donation center-tertiary care hospital study

P. Sindhur Rani Duvvuri, Bharath Teendra, Neelima Pola, Guvera Vasireddy*,
C. Aparna, Shusmitha Mayilanandan, Yaddanapudi Sruthi

Guntur Medical College, Guntur, Andra Pradesh, India

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*Correspondence:

Dr. Guvera Vasireddy,

E-mail: guvera@gmail.com

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ABSTRACT

Background: Blood donor selection is important in providing safety to the recipients and also preventing transfusion related complications. Temporary causes for deferral should be counseled while permanent causes deferred for a life time. In this study, analysis was done to know the causes donor deferrals.

Methods: A one year cross- sectional study was conducted in our hospital from the period March 2022 to March 2023. All the donors who were unfit for blood donation were included in the study. All the reasons for the deferrals are listed and analyzed the data.

Results: Among 7147 total donations, voluntary are 3775, replacement are 3372. Out of which 150 donors are deferred, most were males 129 (86%) and the rest were females 21 (14%). The rejection rate in our study was 2.09%. The most common reason for the permanent rejection is Hepatitis-B and low hemoglobin level for temporary rejection.

Conclusions: A vast majority of donors were rejected permanently 103 (68.6%), while the rest of them were rejected temporarily 47 (31.4%).

Keywords: Blood donor, Blood transfusion, Deferrals

INTRODUCTION

Blood donation plays an important role as a lifesaving tool in medical emergency. There is an increased demand for blood now a days, and many patients face difficulty in accessing safe blood. Proper donor selection and unnecessary deferrals can play an important role in meeting demand for blood and also safeguarding the health of recipients of transfusion. The World Health Organization (WHO) certain guidelines to assess donor suitability for blood donation and to assist blood transfusion services in countries that are strengthening national systems. For the selection of blood donors WHO recommends coordinating all the activities related to collecting, testing, processing, storage, and distribution at the national level through an effective organization.¹ In

present study analysis of donor deferral causes were listed and calculated the rate of rejection.

Minimization of temporary causes of rejections by counseling these patients well for donation after temporary cause is treated, while permanent causes are deferred for a life time so this will be cost effective tool for consumables and manpower.

METHODS

Study type

A hospital-based Cross- Sectional study conducted in a tertiary care hospital of Guntur Medical college involving both the voluntary and replacement donors.

Study duration

The study period for one year from March 2022 to March 2023.

Sampling technique

Convenience sampling technique was used for data collection during the study period which was taken from the hospital record donation list. "Donor questionnaire" becomes a key tool for donor selection, assesses the health and wellbeing of the donor, and helps to identify at-risk donors. The Questionnaire was first converted from English to local Telugu language and was validated by pool of faculty to English.²

Inclusion criteria

The form included all the required details such as identification details, age, sex, weight, height, blood group (if known), history of previous blood donation.

Exclusion criteria

Relevant history, physical examination, hemoglobin estimation are all recorded in a standard format using a manual from (drug controller of India guidelines). All those donors who were considered unfit for blood donation are listed. Eligible donors were excluded from present study.

Relevant medical history such as diabetes mellitus, hypertension, allergy, asthma, epilepsy, ischemic heart disease, past history of TB, chronic kidney disease, chronic liver disease.

Recent history of any infections, jaundice, drug/medicine intake, history of blood transfusion, alcohol consumption in the past 24 hours, major surgeries in the past.

Transfusion transmissible infections, e.g., HIV, Hepatitis B and C, Malaria, and Syphilis. Vital signs like, temperature, pulse, respiratory rate, and blood pressure were examined. Pallor, icterus, clubbing, pedal edema, and lymphadenopathy were also examined.

A systemic examination of cardiovascular system, respiratory system, nervous system, and abdomen was done. Hemoglobin was done by a specific gravity method using the CuSO₄ solution. Transfusion transmissible infections, e.g., HIV, Hepatitis B and C, Malaria, and Syphilis, were more emphasized in history taking.

Statistical analysis

Data will be entered into Microsoft excel data sheet and will be analysed using SPSS 25.0 version software. Categorical data will be represented in the form of Frequencies and proportions. Chi-square will be the test of significance. Continuous data will be represented as mean

and standard deviation. Independent t test will be the test of significance to identify the mean difference between two groups. The p value<0.05 was considered as statistically significant. The study was approved by Institutional Ethics Committee (IEC) of the Medical College.

RESULTS

As per Table 1 Out of 7,147 total donations, 52.8% (3,775) were voluntary donations, and 47.1% (3,372) were replacement donations. A significant majority of the donors were male, accounting for 96.9% (6,932) of total donations, while only 3% (215) of the donors were female.

Table 1: Demographic details and distribution based on donations (n=7147).

Total donations	N	%
Total voluntary donations	3775	52.8
Total replacement donations	3372	47.1
Total male donors	6932	96.9
Total female donors	215	3
Total deferral's	150	2.09
Total permanent deferral's	103	68.6
Total temporary deferral's	47	31.3
Total males deferred	129	86
Total females deferred	21	14

The overall deferral rate is 2.09%, with a total of 150 deferrals out of 7,147 donations. Among these deferrals, 68.6% (103) were permanent, and 31.3% (47) were temporary.

Table 2: List of permanent causes.

List of permanent causes	N	%
HBV	54	52.4
Syphilis	29	28.1
HIV	16	15.5
HCV	4	3.8

As per Table 2, HBV is the most common infection detected, accounting for more than half of all the infections (52.4%). This suggests that HBV may be a significant concern in the donor population and might require targeted interventions or more rigorous screening procedures.

While Syphilis (28.1%) and HIV (15.5%) are less common than HBV, their presence still represents a notable proportion of the total infections. The relatively high rate of Syphilis compared to HIV might reflect differences in transmission routes or effectiveness of prevention strategies in the community.

HCV is the least prevalent among the identified infections, with only 3.8% of cases. This could indicate that HCV is either less common in the donor population or that it is

being effectively screened and managed in the general population.

Table 3: List of temporary causes.

List of temporary causes	N	%
Low haemoglobin	20	42.5
Abnormal blood pressure	6	12.7
Under age	5	10.6
Under weight	5	10.6
Recent alcohol intake	4	8.5
Menstruation	4	8.5
Asthma	2	4.2
Known allergies	1	2.1

As per table 3 The most common reason for deferral among donors is low hemoglobin, accounting for 42.5% (20 cases) of all deferrals. This indicates that a significant proportion of potential donors may have underlying anemia or other conditions affecting hemoglobin levels, making it a critical factor in donor eligibility. Abnormal blood pressure is the second most frequent cause of deferral, with 12.7% (6 cases) of donors being deferred for this reason. This suggests that blood pressure management is an important consideration in donor screening, as both high and low blood pressure can impact donor safety.

DISCUSSION

Data on deferral from blood donation were provided by 128 countries, only 80 countries provided number of deferrals by reason.³ The total deferral rates varied widely among countries, from less than 1% to over 37%. The median rate of total deferral was 12%.

In the present study it showed that the most common reason for the permanent rejection is Hepatitis-B infection while temporary rejection of blood donation was low hemoglobin level. Out of 20 donors who had low hemoglobin, 5 were males and 15 were females. The proportion of females were higher in the underweight group than in males. Recent alcohol intake was seen only in male donors.

Variations in deferral rates could be due to absence of donor selection criteria or appropriate donor selection procedures, or different donor registration practices.⁴ Underreporting total deferrals or deferral due to specific reasons, in developing countries may be the reasons for these variations.

In the present study we demonstrated an overall rejection rate of 2.09% for 12 months. This is similar to be reported by other studies like Vijayvargiya G, et al. demonstrated an overall rejection rate of 3.29% for 16 months.⁵ Reikvam, et al reported rejection rate of 3.9% for 18 months.⁶ Agnihotri et al study over 18 months, showing the rejection rate of 11.6%.⁷

In present study, the most common reason for rejection of blood donation is Hepatitis-B positive a permanent cause, while low hemoglobin levels in temporary cause. Permanent causes can be deferred for life time.⁸ While temporary causes can be counseled about the cause and after treatment, allow them to donate blood in the future. Moreover, reassurance and motivation of rejected donors are of utmost importance, helping to donate blood later. In temporary causes rejection rates in both the sexes and the predominant cause in both the sexes was different. Low hemoglobin level was the most common cause of rejection in females, abnormal blood pressure was the primary cause in males. This was probably because these females were in their reproductive age groups and had menstrual blood loss that contributed to low Hb, while in males, because most of the males were in the age group 31-40 years and were hypertensive. Recent alcohol intake was only seen in males.⁹

A low Hb is amenable to treatment after finding the cause, and those who were under-aged should be advised to come after the attainment of 18 years of age. Females who were rejected because of active menstrual bleeding could be advised to come after a week for blood donation. It is advised to explain them in detail and counsel the deferrals as it could allow them to donate later after fulfilling the eligibility criteria.¹⁰ Thus, proper donor education on the risk factors is necessary for the safe transfusion practice and the motivation of the donors that could improve the return rates for blood donation.¹¹

Our study has few limitations. The study was limited by a small sample size, which can reduce the statistical power and generalizability of the findings. Conducting the study at a single blood donation center limits the ability to generalize findings to other hospitals or regions, where different donor populations or practices might be in place. Some causes for deferral, such as recent alcohol intake or menstruation, may rely on self-reported information from donors. This can introduce bias if donors are not truthful or forget certain details. The study may focus only on the immediate reasons for deferral without exploring underlying factors, such as chronic health conditions or lifestyle factors, that contribute to deferral. This limits the depth of the analysis.

If the donor population at the tertiary care hospital is not representative of the general population (e.g., due to regional, socioeconomic, or demographic factors), the results may not be applicable to other settings.

CONCLUSION

Blood donation play an important role as a lifesaving tool during medical emergencies. Appropriate selection of donor plays an important role in avoiding risk of transmission of infections. Temporary deferral causes should be counseled and should ensure that these donors come back after temporary cause is treated. So that this will bring awareness among donors and improve blood

donations. While permanent causes for deferral should be deferred for a lifetime, this will decrease wastage of consumables and manpower. Documentation of these Donors through online mapping in future may be useful, so there will be more effective tracing of permanent deferrals.

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