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Original Research

Assessment of the prevalence of rate of rejection of blood donors in a specific area

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ABSTRACT

Background: Blood safety has received major attention from the point of view of transfusion-transmitted infections, but it has been argued that the most important advancement in this area of medicine has been the collection of blood from non remunerated repeat voluntary blood donors in the past 50 years instead of paid professional donors. **Aim of the study:** To assess the prevalence of blood donor rejection in a particular area. **Materials and methods:** The study was conducted in the Department of General Pathology of the medical institution. For the study, a blood donation camp was organized at the institute. A total of 200 volunteers were screened for the blood donation. The volunteers consisted of students, faculty members, members from staff and people from nearby local area. Initially, a registration form was filled by the patients and was submitted to the medical officer. The primary screening of the donors was done before the collection of the blood. Primary screening included body weight measurement, blood pressure, pulse rate, and hemoglobin screening. **Results:** A total of 200 registered for the blood donation camp and were screened for donation. Out of these 200 blood donors, 112 donors were rejected and 86 were accepted. The selected blood donors included 64 males and 24 females (Table 1 and Fig 1). Out of the rejected blood donors, 82 were females and 30 were males. **Conclusion:** From the results of the present study, this can be concluded that similar to other areas, the rate of deferral for blood donors is more for female candidates than male candidates.

Keywords: Anemia, blood donation, blood donor, blood transfusion.

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INTRODUCTION

Blood safety has received major attention from the point of view of transfusion-transmitted infections, but it has been argued that the most important advancement in this area of medicine has been the collection of blood from non remunerated repeat voluntary blood donors in the past 50 years instead of paid professional donors.^{1,2}This process of blood donation involves voluntary and non remunerated blood donors coming forward to donate blood willingly and the choice when and where to donate is dependent on blood donors' positive action.³ However, the transfusion services have a process of donor selection based on criteria of subjecting donors to a questionnaire, physical examination, and hemoglobin testing before blood donation, and only those who meet the requirements qualify as blood donors.⁴ In 2003, a study on availability, safety and quality of the blood used for transfusions in the Americas showed that Brazil had an annual transfusion rate of 16.1 per 1000 inhabitants. This figure is relatively low compared to the 53.8 donors in Cuba, 45.9 in the United States, 32.7 in Canada, and 35.0 in Uruguay.

Because of the increasing elderly population, better access of the general population to healthcare and the complexity of procedures, lack of blood becomes a clear concern.^{5, 6} Therefore, programs aiming to improve blood collection by selecting volunteer donors from low-risk populations on a fidelity basis are needed. Hence, the present study was conducted to assess the prevalence of blood donor rejection in a particular area.

MATERIALS AND METHODS

The study was conducted in the Department of General Pathology of the medical institution. The ethical clearance for study protocol was obtained from ethical committee of the institution. For the study, a blood donation camp was organized at the institute. A total of 200 volunteers were screened for the blood donation. The volunteers consisted of students, faculty members, members from staff and people from nearby local area. Initially, a registration form was filled by the patients and was submitted to the medical officer. The primary screening of the donors was done before the

collection of the blood. Primary screening included body weight measurement, blood pressure, pulse rate, and hemoglobin screening. The donors with weight more than 45 kg were accepted for the blood donation. And the cut off for hemoglobin was at 12.0 g/dL. Donors with diastolic blood pressure in the range of 60-90 mmHg and systolic blood pressure in the range of 100-160 mmHg were selected for blood donation. The donors were cleared for blood donation by the medical officer after thorough medical check up and their medical history.

The statistical analysis of the data was done using SPSS version 11.0 for windows. Chi-square and Student’s t-test were used for checking the significance of the data. A p-value of 0.05 and lesser was defined to be statistical significant.

RESULTS

A total of 200 registered for the blood donation camp and were screened for donation. Out of these 200 blood donors, 112 donors were rejected and 86 were accepted. The selected blood donors included 64 males and 24 females (Table 1 and Fig 1). Out of the rejected blood donors, 82 were females and 30 were males. The deferral of males was mainly due to hypertension, tattoos and consumption of alcohol on previous night. On the other hand, the deferral of female donors was due to body piercings, low body weight and low hemoglobin level (Table 2 and Fig 2).

Table 1: Number of accepted and rejected blood donors on the basis of sex

Parameters	Number of subjects
Total number of registered donors	200
Number of donors accepted	86
Number of donors rejected	112
Number of male donors accepted	64
Number of female donors accepted	24
Number of male donors rejected	30
Number of female donors rejected	82

Fig 1: Data of the accepted and rejected blood donors

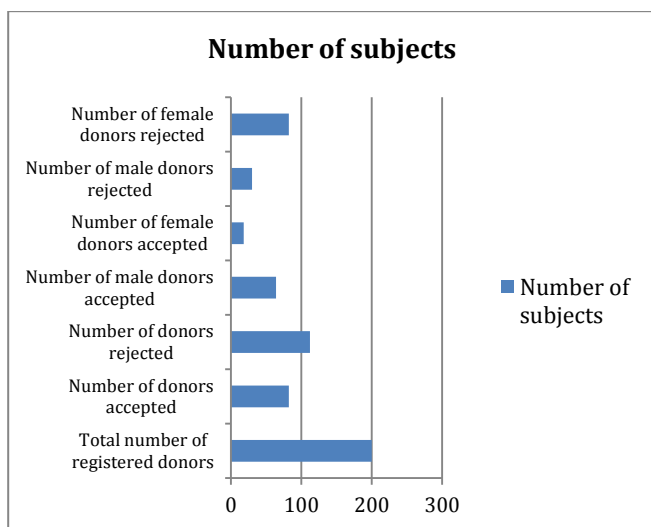
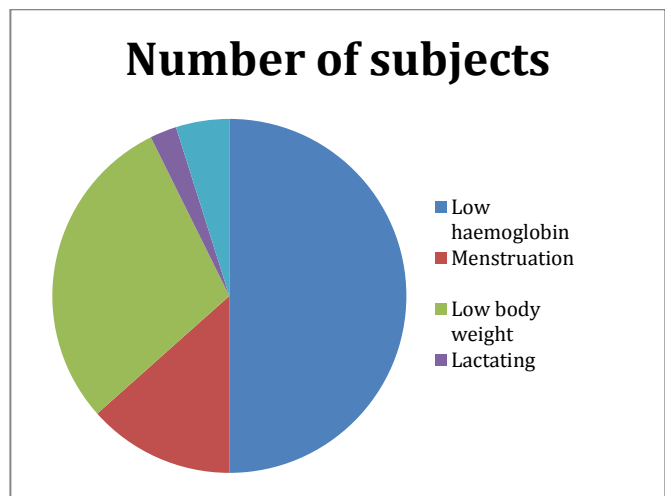


Table 2: Deferral of female volunteers for blood donation

Various parameters for deferral	Number of subjects
Low haemoglobin	41
Menstruation	11
Low body weight	24
Lactating	2
Body piercings	4
Total	82

Fig 2: Depicting deferral rate in females



DISCUSSION

In the present study, we observed out of 200 registered candidates for blood donation, 112 were rejected because of different parameters. Majority of deferred candidates were females. The results were statistically non-significant. The results were compared with previous similar studies in the literature. Shrivastava M evaluated and analyzed the blood donor deferral pattern and its causes among blood donors in a tertiary care hospital blood bank and to review its influence on blood safety. The data available as donor deferral record over a period of 13 years from 2001 to 2013 was analyzed. The blood donor deferral rate was 11.5%, the deferral rate in various categories was 4.8%, 4.7%, 1.6%, and 0.3% in Category 1, Category 2, Category 3, and Category 4, respectively. The majority of deferrals were temporary deferrals (62.8%) of young donors. The maximum number of donors deferred (28.2%) due to a history of jaundice (permanent) followed by 19.4% due to low hemoglobin (temporary). History of malaria, intake of medicines, infections, underweight, last blood donation within 3 months (temporary deferral), and history of heart and lung diseases, diabetes, and with suspicious identity (permanent deferral) were other major causes identified. They concluded that the pattern of donor deferral identified is an important tool for blood safety and also provides key areas to focus on a region or policy formulation nationally for donor selection as well ensure donor safety. The value of determining donor deferral pattern by the categories described is in calling back donors deferred due to temporary reasons and can help retain pool of motivated blood donors. Zou S et al analyzed actual deferral and return donation data from the American Red Cross to further assess the impact of donor deferral on donor availability. Voluntary blood

donors who presented between 2001 and 2006 were included in this study. Deferred donors were classified into three groups according to their history of presentation during the prior 2 years: Group 1 with no prior donation or deferral, Group 2 with prior donation but no deferral, and Group 3 with prior deferral. Temporarily deferred donors in Groups 1 and 2 who did not return during the next 3 years were considered lost donors. All indefinitely deferred donors were lost donors. A mean of 12.8 percent of a total of 47,814,370 donor presentations between 2001 and 2006 resulted in a deferral. While majority of the deferrals were related to donor safety reasons, deferrals for recipient safety reasons accounted for 22.6 percent of deferrals or 2.9 percent of total presentations. Temporary and indefinite deferrals for recipient safety-related reasons collectively caused an estimated loss of 647,828 donors during the 6 years. An additional 1,042,743 donors were lost due to deferrals for donor safety-related reasons during the same period. It was concluded that the results on donor loss after deferral call attention to the impact of donor deferrals on donor availability and the need to monitor and assess the necessity and effectiveness of such deferrals.^{7,8}

Al Shaer L et al defined donor pre-donation deferral rates, causes of deferral, and characteristics of deferred donors in Dubai. This retrospective study was conducted on all donors who presented for allogeneic blood donation between January 1, 2010, until June 30, 2013, in Dubai Blood Donation Centre, accredited by the American Association of Blood Banks. The donation and deferral data were analyzed to determine the demographic characteristics of accepted and deferred donors, and frequency analyses were also conducted. Among 142,431 individuals presenting during the study period, 114,827 (80.6%) were accepted for donation, and 27,604 (19.4%) were deferred. The overall proportion of deferrals was higher among individuals less than 21 years old, females (44% were deferred compared to 15% of males), and first-time donors (22% were deferred vs 14% of repeat donors). The main causes for a temporary deferral were low hemoglobin and high blood pressure. The deferral rate among blood donors in Dubai is relatively high compared to the internationally reported rates. This rate was higher among first-time donors and females, with low hemoglobin as the major factor leading to a temporary deferral of donors. Strategies to mitigate deferral and improve blood donor retention are urged in Dubai to avoid additional stress on the blood supply. Khurram S et al determined the frequency and reasons for donor deferral prior to the blood donation process in our population. A cross-sectional study was carried out at the blood bank department in our hospital from January 2012 to December 2014. All the blood donors who visited our department in the study period were included in this study. A total of 25 901 potential donations were recorded during the study period, comprising 24 309 (93.8%) replacement and 1592 (6.2%) voluntary donations. Females accounted for only 222 (0.9%) of potential donations. Deferral occurred in 3156 (12.2%) of attempts; 280 (1.1%) were permanently deferred, while 2876 (11.1%) were temporarily deferred. The most common reason for permanent deferral was a history of hepatitis B infection (n=147, 4.7% of all deferrals). Major reasons for temporary donor deferral were low levels of haemoglobin (n=971, 30.76%), low levels of platelets (n=611, 19.35%) and previous history of jaundice (n=192, 6.1%). They concluded that a fairly similar pattern of donor deferrals as in other regional studies. Low haemoglobin levels and a history of hepatitis B infection were the most common factors for temporary and permanent donor deferrals, respectively.^{9,10}

CONCLUSION

From the results of the present study, this can be concluded that similar to other areas, the rate of deferral for blood donors is more for female candidates than male candidates.

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