DEMOGRAPHIC FEATURES OF DONORS AND CAUSES OF BLOOD DONOR DEFERRAL AT ARMED FORCES INSTITUTE OF TRANSFUSION, RAWALPINDI

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ABSTRACT

Objective: To determine the demographic features and causes of donor deferral in blood donors.
Study Design: Descriptive study.
Place and Duration of Study: Conducted at the Armed Forces Institute of Transfusion (AFIT) for a period of 1 year from Jun 2012 to May 2013.
Material and Methods: Donors with ages ranging from 18-60 years who reported to the blood bank were incorporated in this study. A comprehensive history was taken from all the potential donors through a structured proforma. A detailed general physical examination was done by the appointed doctor at the blood bank. Furthermore, laboratory testing of the blood samples of potential donors was done. On this basis, donors were accepted or deferred.
Results: The commonest cause of the donor deferral was hepatitis C (HCV) (28.6%), the second leading cause was anaemia (24%) and the third leading cause was hepatitis B (HBV) (16.8%). Syphilis was also a major cause of donor deferral causing the rejection of 10.4% donors.
Conclusion: The donor deferral rate is 7.3% and the leading course of donor deferral are chronic infections like hepatitis C and B and diseases like anaemia.

Keywords: Blood donors, Demography, Donor deferral.

INTRODUCTION

Blood donation is vital to the provision of transfusion services in a country. Throughout the world, the need of whole blood and blood products is increasing. An efficient blood donor programme is important for providing safe transfusion services. As the demand for blood units increases, there is a need to recruit more donors especially non-remunerated, voluntary repeat donors. They are the most desirable because they are already encouraged enough and have undergone all the screening procedure[1,2]. Unfortunately, this is not the case in most of the countries. In approximately 90% cases in various countries, paid or replacement donors are still employed[3].

Blood donor eligibility is determined by medical interviews, based on the guidelines set on a National level for donor selection. This is followed by a thorough general physical examination[4]. Donor screening criteria are established to protect both donors and recipients[5]. Screening, however, can lead to temporary or permanent deferral of the potential donors, thus reducing the size of the donor pool. Many of the donors are deferred because of history of jaundice due to Hepatitis B or C, HIV/AIDS, a positive test for syphilis, low haematocrit or haemoglobin leading to anaemia, being underweight, due to other medical diagnosis and high risk behaviour[6,7].

Every blood transfusion carries a possible danger for transfusion transmitted Infections (TTIs)[8,9]. Leading among these emerging pathogens are the Hepatitis B and C viruses, *Treoponema pallidum*, and Malarial parasite[10]. The international literature also reports hepatitis viruses E and G, human immunodeficiency virus, the West Nile virus and HHV8. Among

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protozoans *Babesia spp* and *Trypanosoma cruzi* are the emerging TTIs[11]. Dengue's transmission through asymptomatic donors has also been recorded.

Blood banking on one hand can provide a huge resource to fulfil the growing need of whole blood and blood products. But on the other hand it has a risk of transmitting infectious diseases and causing complications in the recipient as well as the donor if the criteria of safe blood donation and blood transfusion are not met. By analysing the causes of the deferral of blood donors being presented at a blood bank, we can reduce the risk factors for both the donors and recipients. No study so far has reported causes of donor deferral at Armed Forces Institute of Transfusion (AFIT) in literature so this study was planned and aims to look at the causes of blood donor deferral in this military setup in Rawalpindi, Pakistan. A detailed analysis of the deferred population including their demographic details is also done.

MATERIAL AND METHODS

This descriptive study was setup in the AFIT for a period of 1 year from Jun 2012 to Jun 2013. Donors with ages ranging from 18-60 years who reported during one year to the blood bank were incorporated in this study. The sampling technique was non-probability convenience sampling. Sample size was determined by including all the potential blood donors reporting to AFIT during the study duration. A comprehensive history was taken from all the potential donors through a pre-formed proforma. It was also translated into Urdu for the convenience of the people. Demographic features of all the participants were noted including age, gender, educational background, marital status and ethnic group. It was also noted whether donors reported voluntarily for blood donation or were military personnel directed by the unit to AFIT. The previous history of blood donation, if any was also noted with frequency. Included in

Table-I: Demographic features of donors.

S No.	Parameters:		
1	Gender	Males: 4634 (99.4%)	Females: 28 (0.6%)
2	Occupation	Military Services: 1031 (22.1%)	Civilian: 3631 (77.9%) Govt job: 2368 (65.21%) Private job: 1205 (33.1%) Un-employed: 58 (16%)
3	Educational background	Illiterate: 65 (1.5%)	Literate: 4597 (98.5%) Primary: 594 (12.7%) Secondary: 1750 (37.5%) Intermediate: 547 (11.7%) Graduate: 1477 (31.7%) Post-Graduate: 229 (4.9%)
4	Marital Status	Single / Unmarried: 2959 (63.5%)	Married: 1703 (36.5%)
5	Ethnic Groups	Punjabi: 3992 (85.6%)	Other than Punjabi: 670 (14.4%) Pathan: 406 (8.7%) Urdu Speaking: 37 (0.8%) Siraiki: 7 (0.2%) Others: 181 (3.9%) Balochi: 9 (0.2%) Sindhi: 30 (0.6%)
6	Type of Donor	Directed: 3997 (85.7%)	Undirected: 665 (14.3%) Voluntary: 10.7% Stock blood: 3.6%
7	Donor History	First Time: 2799 (60%)	Repeat: 1863 (40%)

the proforma were questions related to the potential donor's health status. The questions were targeted to ask the person about any history of blood donation and transfusion, jaundice due to hepatitis B, C or any other cause like HIV / AIDS, syphilis, malaria, tuberculosis or any other chronic illness, any recent episode of fever, drug usage, dental treatment, vaccination over the last 5 years and any tattoos or shaving cuts.

A detailed general physical examination was done by the appointed doctor at the blood bank. Through general physical examination, the vital signs; pulse rate, temperature, blood pressure, respiratory rate, weight (in kilograms), height (in meters,) and body mass index (BMI) were recorded. Jaundice, pallor (if present) or any other visible physical deformity or anomaly of the potential donors were also noted. ABO and Rh blood typing was done. Blood samples were taken for the initial screening process. Blood complete picture (CP) was performed by sysmex automated analyzer to find out serum haemoglobin levels and sign of any kind of inflammation whether acute or chronic. Erythrocyte sedimentation rate (ESR) was determined by Westergren's method. The labelled samples were sent to the labs for testing of hepatitis B and hepatitis C. Hepatitis B surface antigen (HBsAg) and hepatitis C virus (HCV) were determined by anti HBV and HCV antibodies by enzyme linked immunosorbent assay (ELISA). Human immunodeficiency virus (HIV) to detect acquired immune deficiency syndrome (AIDS) was tested by determining anti HIV antibodies by ELISA. Syphilis by rapid plasma reagin (RPR) and malaria by Biotech ICT method were also detected in all potential donors. All tests were performed according to manufacturers' instructions. The data of the donor was entered and analysed on SPSS-22. Mean age along with standard deviation was determined. Frequencies were calculated for all the categorical variables.

RESULTS

Amongst the total of potential 4662 blood donors appearing to AFIT for blood donation, 346 were deferred (7.4%) and 4316 donated blood (92.6%) (table-I). The mean age of potential blood donors was 33 ± 8.5 years. Analysis of various age groups was also carried out with maximum donors belonging to ages between 21 to 30 years making 63% of the total donors and 53.8% of the deferred donors. A total of 0.7% of the total donors and 1.8% of the deferred donors belonged to the age group ranging from 51-60 years. Out of total 4662 potential donors, 99.4% of the donors were males and 0.6% was females and majority were civilians (78%) as compared army personnel (22%). About 50% of the potential donors were literate up to the level of secondary and

Table-II: Common causes of donor deferral at AFIT.

Causes	Frequency	Percentage (%)
Anaemia	83	1.8
Leukocytosis	9	0.2
Polycythemia	1	0
Thrombocytopenia	5	0.1
HBsAg	58	1.2
HCV	99	2.1
Syphilis	36	0.8
Blood pressure	6	0.1
Fainting	2	0
Left without donation	27	0.6
Deferred	346	7.3
Donors	4316	92.7
Total	4662	100

intermediate education. Most of the donors were directed by the authorities to report for blood donation and only 15% reported voluntarily indicating poor awareness regarding blood donation. About 60% of potential donors reported for the 1st time. Detailed analysis of the potential donors reporting to AFIT for blood donation including their demographical analysis is given in table-I.

The commonest cause of the donor deferral was hepatitis C, the second leading cause was anaemia and the third leading cause was hepatitis B. The rest of the causes are listed in table-II. About 7.8% of the donors left without donation.

DISCUSSION

In our study the deferral rate was 7.3%. The deferral rates were 9% and 11.6%[12,13] in different studies in India, 14.6% in a study in Turkey[14], 30.9% in a study conducted in Iran[15], 12.8%[16] in a study by the American Red Cross that was carried out over a span of 6 years and 10.8%[17] in a study carried out in France. Most of the compared deferrals approximate. Geographical regions do not seem to have a significant role in differences. Differences however may be due to the selection criteria and the type of donors. For example in our study the volunteer donors were only 10.7% (directed 85.7% and stock 3.6%) whereas the study conducted in Iran[15] included only volunteer donors and a study in India[13] included 0.6% volunteer donors and 99.4% replacement donors.

The most common cause of deferral was HCV 28.6% followed by anaemia 24% in our study. These causes were similar to another study carried out in Pakistan[1] in which anaemia and HCV were the two leading causes of deferral. In Iran[15], the leading cause was HIV and hepatitis infections (43.6%). However most of the other studies had anaemia as their leading cause with significantly lower ratio of HCV being a cause[13,14]. This signifies the poor control of transmission of HCV in our set up. The lack of preventive measures, poor education about the disease and insufficient screening methods are all major contributing factors of the high incidence of HCV. Hence health education amongst the population about anaemia and the prevention of HCV is necessary not only to reduce the number of donor deferrals but also to improve the general health of the population.

The greatest number of donors was from the age group 21-30 years accounting for 63% of all the donors, which is approximate to the other studies. In the study carried out in India[13] the majority of the donors were from the age group 18-40 years, whereas study carried out in Iran[15] had maximum donors between the ages of 17-30 years. This signifies the low health status amongst the young people of Pakistan with a prevalence of HCV.

The limitations of the study are its highly predominant male population which affects the parameters analyzed and the results. Moreover, the study is based on a single centre data and therefore results cannot be taken as broadly representative of the general population.

There is need to remove myths and improve awareness regarding blood donation by advocacy of campaigns highlighting benefits of blood donation.

CONCLUSION

The donor deferral rate is 7.3% and the leading causes of donor deferral are chronic hepatitis C, B and anaemia.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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