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An Analysis of Blood Donor Rejection Profiles Retrospective Study from a Rural Hospital Blood Center

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ABSTRACT

Blood Donation Services (BDS) are critical to healthcare systems worldwide, aiming to ensure an adequate supply of blood and its products. The demand for blood often surpasses the supply, with significant shortages reported globally, including in countries like India where annual blood collections fall short of needs. Ensuring the safety of both donors and recipients during the blood donation process is paramount, necessitating strict donor selection protocols and safety measures. This study investigates the reasons for blood donor deferral, analyzing data from voluntary blood donation camps and a blood bank at Swami Ramanand Teerth Rural Government Medical College Blood Center over a one-year period. It aims to identify factors contributing to donor deferral to improve donation rates and overcome obstacles hindering blood donation efforts. The study retrospectively analyzed donor records from January to December 2023, excluding individuals under 18 or over 60 and pregnant women. Donor eligibility was determined based on physical examinations, hemoglobin levels and blood pressure, following guidelines from the Transfusion Medicine Technical Manual by the Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India (2023). Out of 6745 registrants, 425 were deferred (6.3% of males and 6.4% of females), with the majority in the 41-50 age group. Temporary deferrals were most common, primarily due to low hemoglobin levels and alcohol consumption history. The study highlights the demographic distribution of donors and deferred individuals, shedding light on the reasons behind deferral. Understanding and managing blood donor deferrals is crucial for expanding the donor pool and ensuring a steady blood supply. Encouraging regular health screening and addressing deferral reasons can significantly contribute to improving donation rates and supporting healthcare needs.

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Key Words
Blood donation services, donor deferral, blood supply, safety protocols, demographic analysis, voluntary blood donation

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INTRODUCTION

Blood Donation Services (BDS) play a role, in today's healthcare system as they are essential for providing medical treatment. The primary objective of blood donation services is to guarantee an sufficient supply of blood and its products. Typically 1% of the population (equivalent to 10 individuals per 1000) is required to donate blood to meet a nations needs for blood; this need increases in countries with advanced healthcare systems. Statistics from the National AIDS Control Organization (NACO) indicate that India receives 7.4 million units of blood annually falling short of the required 10 million units. Globally the World Health Organization (WHO) reports that than 81 million units of blood are collected each year with 39% coming from developing countries despite these nations accounting for 82% of the world's population[1].

The scarcity of safe blood donors remains a challenge for blood banks worldwide. While ensuring a supply of blood is crucial it is equally important that the process of collection and transfusion does not pose any risks, to either the donor or recipient[2]. Under the Drugs and Cosmetics Act, not every individual who visits a donation camp or blood bank is considered a donor. A donor is someone who after undergoing a assessment by a physician is deemed eligible to donate blood. To ensure the safety of blood donation and boost trust, in blood donation the blood transfusion community enforces multiple safety protocols. Among these donor selection stands out as the safety measure. Thorough and careful screening of donors is essential to safeguard both donors and recipients. People may be deferred from donating blood for reasons with deferment rates. Causes varying across different regions and centers. Those ineligible to donate are labeled as deferred donors[3].

It is important to investigate the reasons for blood donation deferral systematically in order to enhance donation rates. Deferral can be an experience for both the donor and the transfusion center often leading to efforts in recruiting new donors. Furthermore deferring donors can leave them with perceptions, about themselves and the blood donation process. Therefore conducting an analysis of the factors contributing to donor deferral could assist professionals in overcoming obstacles that hinder blood donation efforts[4].

MATERIALS AND METHODS

Place and Type of Study: This study was conducted at Swami Ramanand Teerth Rural Government Medical College Blood Center looking back on records. The research focused on analyzing data of blood donors from January 2023 to December 2023. The study included donors who participated in voluntary blood donation camps and those who donated voluntarily at the blood bank.

Exclusion Criteria:

- Voluntary donors <18years and >60years
- Pregnant women

The selection and deferral of donors were carried out following Standard Operating Procedures based on guidelines from Transfusion Medicine Technical Manual by Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India (2023). Prior to donation screening tests such as a donor questionnaire, physical examination and Hemoglobin estimation using the CuSO4 method with a cut-off value of 12.5 gm/dl were conducted. Donors with blood pressure between 110 and 140 mm Hg and diastolic blood pressure between 70 and 90 mm Hg were deemed eligible for blood donation. The data of donors was analyzed based on age, gender and reasons for deferral (temporary or permanent). Additionally an analysis was done to compare the causes of deferrals between female blood donors. Permission, from the Institutional Ethical Review Board was obtained to conduct the study ensuring confidentiality of donor information.

RESULTS AND DISCUSSIONS

The research involved gathering and analyzing data spanning one years from January 1 2023 to December 31 2023 at the blood center. A total of 6745 individuals signed up to donate blood during the study period with 6591 (97.7%) being male and 154 (2.3%) being female. Of these donors 425 were deemed ineligible by Blood Transfusion Officers after assessments of their hemoglobin levels, blood pressure, temperature and pulse regularity and rate. Among the deferred donors there were 415 males and 10 females. The percentage of deferrals, among all registered males was 6.2% while for females it was 6.4%. The demographic breakdown by gender, for blood donors, selected donors and deferred donors is presented in (Table 1). In our research we found that most of the donors who were deferred fell into the 41-50 age group with the next highest age group being 18-30. For donors the majority deferred were, in the 41-50 age range. Temporary reasons accounted for the deferral of a majority of donors 376 (88.5%) while a smaller group of 49 donors (11.5%) were permanently deferred. The reasons for deferrals in both permanent categories are detailed in (Tables 3 and 4). The primary reason, for donor rejection was anaemia (Hb<12.5gm) making up 22.82% of deferrals followed by alcohol history at 20.47%. In cases of deferrals hypertension was the leading cause

Table 1: Gender distribution of registered, selected and deferred donors

Donors	Male	Female	Total
Registered	6591	154	6745
Selected	6176	144	6320
Deferred	415	10	425

Table 2: Demographic profile of various age groups of deferred blood donors

Age in years	Number of male donors	Number of female donors	Total Percentage
18-30	121	5	29.6
31-40	108	2	25.8
41-50	126	2	30.2
51-60	60	1	14.4
Total	415	10	100

Table 3: Temporary causes for donor rejection.

Temporary causes for rejection	No. of cases
Low hemoglobin	97 (22.82%)
History of alcohol	87 (20.47%)
Previous blood donation	50 (11.76%)
History of medication	17 (4%)
Menstruation	20 (4.71%)
Under weight	16 (3.76%)
Low blood pressure	35 (8.24%)
Tattooing	33 (7.76%)
Previous hospitalization	12 (2.82%)
Vaccination history	9 (2.12%)

Table 4: Permanent causes for donor rejection

Permanent causes of deferral	No. of cases
Age	11 (2.6%)
High blood pressure	26(6.12%)
Epilepsy	5(1.18%)
High risk factors	7(1.65%)

accounting for 53% of all permanently rejected donors. Blood transfusion and the donation process are aspects of care especially during emergencies where transfusions can be lifesaving. While blood donation is essential it should prioritize donor safety and ensure the recipient's well-being. The initial step towards transfusion services is selecting donors carefully to guarantee the safety of both donors and recipients. Donor screening criteria play a role in identifying blood donors as many individuals may not be eligible to donate blood temporarily or permanently for various reasons[5]. National and international initiatives focus on maintaining a blood supply through screening processes educational campaigns and adherence to strict guidelines set by health authorities such as the Directorate General of Health Sciences under the Ministry of Health and Family Welfare (2023) and eligibility criteria outlined by organizations like the American Red Cross. This study explores factors contributing to deferrals, from blood donation processes[6]. In our research the majority of donors were male accounting for 97.7% while females made up 2.3% of the donors[7]. The findings are consistent with studies by Deepa Narayan *et al*[8]. who also found that 95.8% of donors were male and 4.2% were female[1], while Ishan and Shairoly *et al*. reported variations in the pattern and trend of female donors[2]. The lower representation of female donors could be linked to factors such as lack of knowledge, apprehension and limited motivation among women.

CONCLUSION

The rates at which donors are deferred and the reasons, behind it in blood donation are matters that need to be emphasized to blood donors, the public, as well as in blood banks and hospitals. By encouraging donors and re engaging deferred donors after addressing their reasons for deferral we can significantly increase the donor pool. It is important to understand and manage deferrals due to illness. Analyzing the demographics of blood donors can help identify groups within the population that could be targeted to boost blood donation rates. This data can also inform policy making and program implementation efforts. It's essential to encourage women to donate blood. Regular health check ups and screening, for illnesses and anemia should be recommended for the public to minimize rates during blood donation events.

REFERENCES

1. Kebalo, A.H., S.T. Gizaw, N. Gnanasekaran and B. Areda, 2022. Lipid and haematologic profiling of regular blood donors revealed health benefits. J. Blood Med., 13: 385-394.
2. Zhang, L., H. Li, S. Su, E.M. Wood and T. Ma *et al*. 2022. Cohort profile: The shaanxi blood donor cohor t in China. Front. Cardiovasc. Med., Vol. 9 .10.3389/fcvm.2022.841253.
3. Drews, S.J., Q. Hu, R. Samson, K.T . Abe and B. Rathod *et al*. 2022. Sars-CoV-2 virus-like particle neutralizing capacity in blood donors depends on serological profile and donor-declared SARS-CoV-2 vaccination history. Microbiol. Spectrum, Vol. 10 .10.1128/spectrum.02262-21.
4. Sheykhsoltan, M., W. Wu, Z. Mei, D.C. Ward and A. Ziman, 2021. Who donates? patterns of blood donation and donor characteristics at a University-affiliated hospital-based donor center. Transfusion, 62: 346-354.

5. Alsughayyir, J., Y. Almalki, I. Alburayk, M. Alalshaik and I. Aljoni *et al.* 2022. Prevalence of transfusion-transmitted infections in Saudi Arabia blood donors: A nationwide, cross-sectional study. Saudi Med. J., 43: 1363-1372.
6. WHO., 2019. WHO technical consultation: Nutrition-related health products and the World Health Organization model list of essential medicines-practical considerations and feasibility. World Health Organization, Geneva, Switzerland,, https://www.who.int/publications/i/item/WHO-NMH-NHD-19.1.
7. Tuite, A.R., D. Fisman, K.T. Abe, B. Rathod and A. Pasculescu *et al*. 2022. Estimating SARS-CoV-2 seroprevalence in Canadian blood donors, April 2020 to March 2021: Improving accuracy with multiple assays. Microbiol. Spect., Vol. 10.
8. Narayanan, D., A. Rajan and V. Bindu, 2023. Gender distribution and reasons for donor deferral in blood donors at a tertiary healthcare center, kerala, India: A cross-sectional study. National J. Lab. Med., 12: 58-61.