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BLOOD DONOR DEFERRAL PATTERN AT TERTIARY CARE TEACHING INSTITUTE IN WESTERN UTTAR PRADESH, INDIA

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Abstract

Introduction: Blood donor deferral is the fundamental component of blood donation systems worldwide, ensuring the safety of the blood supply and the health of donors and recipients. This practice involves an individual's temporary and permanent deferral from donating blood based on specific criteria. Knowing these causes of temporary and permanent deferrals in our region helps guide these deferred blood donors to be recruited back in the future.

Material and Methods: A retrospective record-based study of deferral of blood donors who presented at the blood bank at Autonomous State Medical College over three years (July 2019–June 2022). Blood donors were screened per the Drugs and Cosmetics Act 1940 and Rules 1945 included in our institute's standard operating procedure of blood bank.

Results: There were 32381 donors registered, of which 2039 (6.3%) donors were deferred from donating blood. Donor deferrals were segregated into temporary and permanent. Most deferred donors were male (89.8%) compared to females(11.2%). The temporarily deferred (98.8%) was higher than permanently deferred (1.2%). Overall the three most common reasons for temporary pathological deferral in males were blood pressure(51.6%), followed by medication(14%), and infection-cough-cold (6.86%), and in females, anemia (82.18%), followed by low blood pressure(5.17%) and dengue(3.44%) respectively. The three most common causes for permanent deferral in males were heart disease (43.47%), followed by asthma 8 (34.78%), and unexplained weight loss (21.73%).

Conclusion: Blood donor deferral is a critical step in the donor selection process. Blood donors can be informed of various deferral causes and educated about their interval and treatment for safe blood.

Keywords: Donor Deferral, Temporary, Permanent, Underweight, Anemia, Blood Pressure.

INTRODUCTION:

Blood Transfusion Service is the backbone and integral part of health care practices as whole blood and its components are needed to manage severe haemorrhages due to trauma, obstetric complications, and surgeries.[1] To meet these blood demands, an uninterrupted pool of blood donors is necessary to achieve this aim successfully. Donor selection and deferral criteria are provided by the Drug and Cosmetic Act 1940, supplemented by the manual (Director-General of Health Services MOH and FW, Govt. of India).[2] These criteria are stringent so the patient gets the safest blood possible. These Stringent criteria are designed to protect both the donors and recipients of blood products, maintainng the integrity of the blood supply and upholding public standards, but this led to the deferral of blood donors, making their experience mournful, which causes them less likely to be future blood donors. These deferrals are of two types temporary and permanent. Most blood donors are deferred due to temporary causes, and some are deferred due to permanent causes. Temporary blood donor deferral is more common than permanent deferral.[3] Temporary blood donors can be recruited back after their deferral period and treatment. Permanent blood donors can be counseled for their disease condition and treatment plan to stop disease progression early. As blood Donor deferral pattern varies from region to region due to the endemicity of disease patterns and sociocultural norms, it is paramount to understand the pattern and reasons for donor deferral in our area to guide them in the treatment plan and deferral duration for their recruitment back in blood donor pool in the future.

MATERIAL AND METHODS:

This single-center retrospective record-based study was done to examine the various causes of blood donor deferral for 3 years from July 2019 to June 2022 in the blood bank of Autonomous State Medical College, Shahjahanpur, on both voluntary and replacement donors, whether in-house or in camp. The data of blood donor deferrals are collected by deferral register and monthly deferral report. The deferral causes are divided into permanent and temporary. The temporary deferral was further divided into physiological and pathological causes. Donors are evaluated physically for weight, age, and medical examination for blood pressure and hemoglobin. All donors were age group of 18 to 60 for first-time blood donors and 65yr for repeat blood donors. Standard pulse rate 60-100, blood pressure systolic 100 -140, diastolic 60-90, body temperature 37.2-37.7 degrees Celsius, and hemoglobin above 12.5 gm/dl were selected for donation. Informed consent of all donors was taken. Inclusion criteria: All the blood donors who were deferred during the medical examination and donor questionnaire as per National AIDS Control Organisation (NACO) guidelines as included in the Standard Operating Procedure (SOP) of the blood bank were included in the study.

Exclusion criteria: The donors who were fit as per NACO guidelines as included in the SOP of the blood bank were excluded from the study.

Statistical analysis was done using Microsoft Excel 2017, and data were expressed in numbers and percentages.

RESULTS:

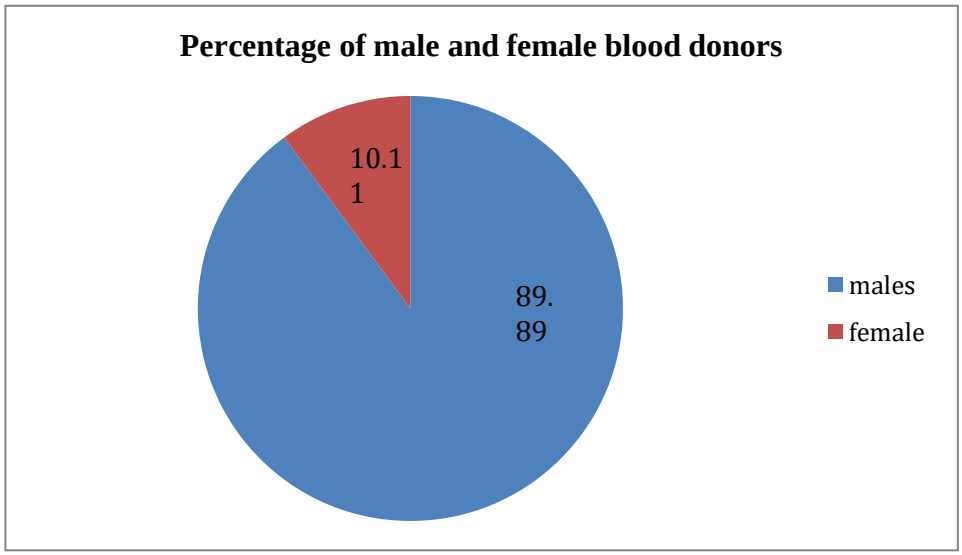
During the study period, the total number of registered donors accepted was 32381, of which 31452 (97.1%) were males and 929 (2.9%) were females. The total numbers of males who donated blood were 29619, and the number of females was 723. So the number of males who deferred was 1833 and females who deferred was 206 making 6.3% of total deferred registered donors (Table 1).

Table 1

Characteristics	Total registration (n)	Percentage (%)	Total blood donor bleed	Total Deferred blood donors
Male	31452	97%	29619	1833
Female	929	2.9%	723	206
Total	32381	100%	30342 (93.7%)	2039 (6.3%)

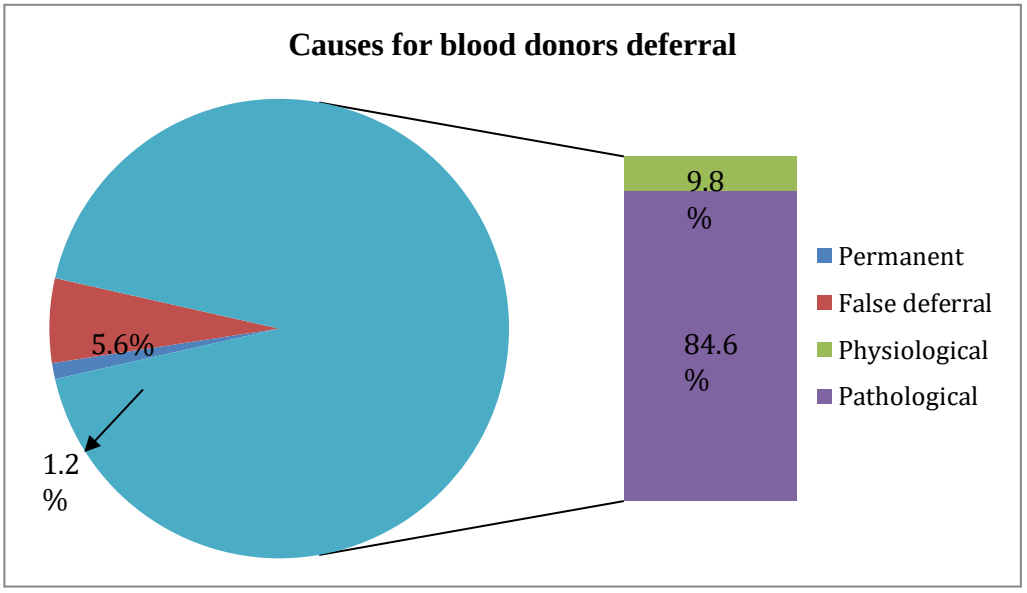
n= number; %= percentage

The deferral among males was 1833 (89.89%) donors and among females 206 (10.11%) donors, as shown (Pie chart 1).



Pie chart 1

The causes for deferral were divided into temporary causes 2016 (98.8%), permanent causes 23 (1.2%), and false deferral causes (absconding) 121 (5.6%). The temporary causes were further divided into physiological causes 191 (9.8%) and pathological causes 1704 (84.6%), as shown in pie chart 2.



Pie chart 2

In physiological temporary, males deferred 165 (86.3%), and females were 26 (13.7%). Among males, temporary physiological most common causes were underweight 54 (32.7%), recent donation

33 (20.1%), and under age 32 (19.4%). Among females, the most common temporary physiological causes were menstruation 16(61.5%), underweight 5 (19.2%), and poor vein 3 (11.5%), as shown in Table-2.

Table -2

Temporary causes of deferral (Physiological)	No. of male (n)	Percentage (%)	No. of female (n)	Percentage (%)
Poor vein	36	21.8%	3	11.5%%
Over age	4	2.4%	0	0%
Under age	32	19.4%	2	7.7%
Lack of sleep	6	3.6%	0	0%
Underweight	54	32.7%	5	19.2%
Recent donation	33	20.1%	0	0%
Menstruation	0	0%	16	61.5%
Total	165	100%	26	100%

n= number; %= percentage

Temporary pathological deferral causes were 1704 (84.6%). Among temporary pathological deferrals, males were 89.78%, and females were 10.21%. Among males, the most common cause was high blood pressure (51.63%), medication (14%), and low blood pressure (3.85%), including epilepsy, tuberculosis, allergic disease, and previous history of transfusion. In females, anemia (82.18%), low blood pressure (5.17%), and dengue (3.44%) were the most common cause of temporary deferral, as shown in table-3.

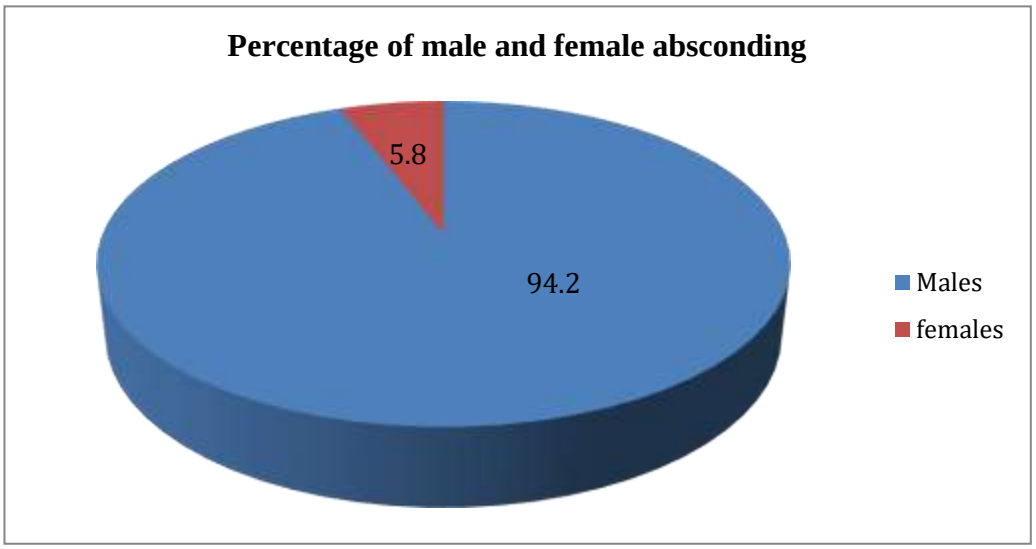
Table-3

Temporary causes of deferral(Pathological)	No. of male (n)	Percentage (%)	No. of female (n)	Percentage (%)
Infection, cough, and cold	105	6.86%	5	2.87%
Hemoglobin >12.5gm/dl	58	3.79%	143	82.18%
On antibiotics and aspirin	216	14%	4	2.29%
Typhoid	52	3.39%	0	0
Jaundice in the past year	22	1.43%	0	0
Malaria	8	0.52%	1	0.57%
Dengue	35	2.28%	6	3.44%
Piercing	6	0.39%	1	0.57%
Tattoo	19	1.24%	0	0
Vaccination for rabies	18	1.17%	0	0
High blood pressure	790	51.63%	0	0
Alcohol intake last 24hrs	50	3.26%	0	0
Chikungunya	2	0.13%	0	0
Low blood pressure	59	3.85%	9	5.17%
Major and minor surgery	28	1.83%	0	0
Dental extraction	18	1.17%	0	0
Diabetic on insulin	15	0.98%	0	0
Thyroid	0	0	3	1.72%
Tuberculosis	4	0.26%	0	0
Miscellaneous	25	1.63%	2	1.14%
Total	1530	100%	174	100%

n= number; %= percentage

Among 23 (1.11%) permanent deferrals, males were 23(100%) and females were nil. The most common reason among males was heart disease 10(43.47%), followed by asthma 8 (34.78%), and unexplained weight loss 5 (21.73%).

Among false deferral (absconding) total number of males who absconded was 114 (94.2), and the females who absconded were 7 (5.8%), as shown in Pie Chart 3.



Pie chart 3

DISCUSSION:

The seamless blood supply flow is paramount as temporary and permanent donor deferral results in the elution of motivated, non-remunerative, and potential blood donors, affecting the patient's blood availability. Knowing the cause of temporary and permanent deferral will give insight into the disease burden of our society, which will help formulate regional health policy and reduce the financial health burden.[5] Educating donors about blood deferral criteria will make donors "prescreen" themselves and make them permanent blood donors.[6] In case of permanent deferral, proper notification, counseling, and treatment can be given to halt disease progression to the chronic phase .[7]

Our three-year study found a deferral rate of 6.3%, similar to other medical literature.[8-9] Different studies quoted different deferral rates, the lowest by Talonu T (4%) and the highest by Blumberg, Lim, and Chaudhary.[10-13] The variation in deferral rates may be associated with disease endemicity, sociocultural norms, and myths about blood donation. In our present study, the deferral rate was higher in female blood donors than in males, similar to other studies findings.[14-15] Higher deferral in females may be attributed to the prevalence of anemia, societal proscription, and fear of blood donation.[16] Local education about blood donation is necessary at the panchayat, schools, and colleges level to make the public aware of eliminating these taboos.

Our study found temporary causes of deferral weighted permanent causes as seen in different medical literature.[17] In our research, temporary deferral causes were again divided into physiological and pathological.

Among temporary physiological causes, underweight (32.7%) was the primary cause of male deferral, followed by poor veins (21.8%) and recent donation (20.1%). Being underweight can be attributed to inadequate intake of nutrients. Optimizing protein in school diets under mid-day meal programs can be beneficial. Poor veins can be associated with a thin body build. Recent donations can be associated with unawareness of blood donation intervals among the general population. In females' ongoing menstruation (61.5%)was the most common cause of deferral, followed by underweight(19.2%) and poor vein(11.5%). Menstruation deferral cause may be due to females' unaware that blood donation is not recommended during the period.

Among temporary pathological causes, high blood pressure (51.6%) was the male's most common deferral cause, similar to other studies, followed by medication (14%) and infection-cough-cold (6.86%).[18] High blood pressure prevalence in this area can be associated with unhealthy lifestyle choices, stress, and alcohol intake. Medication is related to taking medicines without a doctor's prescription. In females, anemia (82.18%) was the most common cause, followed by low blood pressure (5.17%) and dengue (3.44%).[20] Anemia prevalence may be due to poor nutrition, hookworm,

and parasite infestation. Prescreening of female serum ferritin and hemoglobin can be done to detect iron deficiency in the early stage, and timely treatment with ferrous sulfate supplement can be given.[20] This will ensure adequate iron levels for the donor's well-being and blood quality.

The permanent most common cause of deferral is heart disease in male donors, which may be associated with hypertension prevalence in our region.[19] Absconding was the leading cause of false deferral may be related to the pressure on donors by their relatives to donate blood. While these deferrals may be frustrating for potential donors, they are necessary to protect their health and recipients.

LIMITATION:

The study does not segregate blood donors' deferral into voluntary and replacement categories.

CONCLUSION:

As voluntary non-remunerative blood donors form the backbone of a safe supply of blood in transfusion services. This database will help properly counsel temporarily deferred donors about their deferral cause, duration, and treatment so they can be motivated to recruit again in the donor pool. Efforts to educate the public on these causes and encourage regular health check-ups can be pivotal in minimizing these deferrals and strengthening our collective commitment to saving lives through blood donation.

CONFLICT OF INTEREST: None

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