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Analysis of Blood donor deferrals in the south west region of Maharashtra: A retrospective study

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Abstract

Background: Blood donation is a noble act that saves millions of lives every day. Blood donor selection is the most crucial step, not only for the safety of the donor himself but for the recipient and health care workers involved in the process of blood transfusion. During the process of donor selection, the donor can be rejected based on the temporary or permanent deferral causes, this leads to precise loss of donors and blood units. The aim of this study is to analyze the different causes for donor deferrals and deferral rates in our blood bank.

Materials and Methods: A retrospective study was done from, January 2018 to December 2019, in our blood bank at Kolhapur District, Maharashtra. The data and information of deferred donors were retrieved from deferral donor register maintained by the blood bank and then analyzed further by using MS excel software.

Results: A total of 13981 blood donors were registered in our Blood Bank out of which 13676 (97.81%) were males and 305 (2.18%) were females. Among 13981 blood donors, 13621 (97.42%) were accepted for blood donation and 360 (2.57%) were rejected due to various reasons. A total of 340 (94.44%) donors were deferred for temporary causes and 20 (5.55%) were deferred for permanent causes.

Conclusion: Increased awareness among the voluntary donors regarding deferral criteria is necessary to decrease the deferral rate in the donor population in this particular region would help greatly in blood donor recruitment efforts, especially, temporarily deferral donors who can return back to donor pool. Though there are many studies conducted to analyze patterns of donor deferral it is necessary that every blood bank should analyze rates and patterns of donor deferral especially due to temporary reasons can be avoided by conducting awareness programs.

Keywords: Blood bank, Donor, Temporary Deferrals, Permanent Deferrals

Introduction

Blood is a vital lifesaving fluid that can save millions of lives on day-to-day bases, that why there is a constant demand, so it is crucial to maintain the constant demand to supply ratio in both developed and developing nations. Person who is willing to donate either whole blood or blood products for the purpose of transfusion is termed as "Blood donor".^[1] Safe blood transfusion is a major concern that needs the application of science and technology to blood processing and testing, as well as requires social efforts to encourage healthy donors who are at low risk of transmitting infectious diseases to the recipients.^[2]

Deferrals are donors who do not meet the selection criteria should be deferred on a temporary or permanent basis according to WHO.^[3] Donor deferral leads to precious loss of whole blood donors and blood units. Deferred donors are also less likely to return for blood donation in future.^[4] There are many studies confirm that Blood donor deferral is a major issue in many countries in the world; it affects both low income and high-income countries. Amount of blood units wasted due to blood donor deferral is disappointing not only to the donor but also to the blood bank as whole.^[1] Deferrals rejected on the bases of permanent deferral criteria should be given proper guidance and counselling to treat the underline cause and those who are rejected based on temporary deferral criteria should be educated on what was the cause for rejection and how to overcome the underlying cause. Temporarily deferred donors should be advised on when they could donate and encouraged to return.^[3] Deferral rates and permanent or temporary reasons for deferral vary from one center to another. There is a need to find out exact reasons and rates of donor deferral so that we can implement more

efficient recruitment strategies. [5] This study will help to analyze the different causes of donor deferrals and how to tackle them to maintain a low rejection rates and to develop better strategies to minimize the loss due to deferrals.

Materials and Methods

A retrospective study was conducted from, January 2018 to December 2019, in our blood bank at Kolhapur District, Maharashtra. Every blood donor who was willing to donate blood at the blood bank was screened based on donor questionnaires prepared according to criteria laid down by Director General of Health Services and Drug controller of India, after which a detailed medical history was taken. All potential and existing donors were requested to provide accurate information and answers to all questions asked, for the protection of their own wellbeing and the recipient. Physical examination was performed which included of the weight, height, pulse, blood pressure and body temperature. Hemoglobin was checked using a portable hemoglobinometer (HemoCue Hb 301 Analyzer). Then donors were classified based on permanent and temporary causes for deferral. The data and information of deferred donor were retrieved retrospectively from deferred donor register maintained by the blood bank and then analyzed further by using MS-Excel software.

Results

During retrospective study for a period of 2 years from January 2018 to December 2019 a total of 13981 blood donors were registered in our Blood Bank out of which 13676 (97.81%) were males and 305 (2.18%) were females (Table 1). Among 13981 Blood donors, 13621 (97.42%) were accepted for blood donation and 360 (2.57%) were rejected due to various reasons. A total number of 340 (94.44%) donors were deferred for temporary causes and 20 (5.55%) were deferred for permanent causes (Table 2). Causes of temporary deferral in rank order were recent medication 49 (14.41%), low hemoglobin levels 48 (14.11%), recent viral fever or infection 32 (9.41%), tattoo 29 (8.23%), underweight 28 (8.23%), surgery 27 (7.94%), skin lesions 26 (7.64%), vaccination 20 (5.88%), jaundice 13 (3.82%) and alcohol 11 (3.23%). Other less common causes of temporary deferral included malaria, typhoid, menstruation, lack of sleep, low BP, asthma, underage, pregnancy, dog bite etc. (Table 3).

The main causes of permanent deferral of the donor in decreasing order were hypertension 10(50%), hepatitis B 5 (25%), diabetes 4 (20%) and cardiac disorders 1 (5%) (Table 4).

Table 1: Demographic Profile of Donors and deferrals (N=13981).

Donor	Male number (%)	Female number (%)	Total number (%)
Registered	13676 (97.81)	305 (2.18)	13981 (100)
Donated	13421 (98.13)	200 (65.57)	13621 (97.42)
Deferred	255(1.86)	105 (34.42)	360 (2.57)

Table 2: Deferral Profile of donors

Deferral type	Total Number	Deferral Percentage (%)	Deferral rate on total registration (%)
Temporary	340	94.44	2.43
Permanent	20	5.55	0.14
Total	360	100	2.57

Table 3: Causes of temporary deferrals

Sr No	Causes	Male	Female	Total	Percentage from Temporary deferral (%)	Percentage from Total deferral (%)
1	Recent Medication	39	10	49	14.41	0.350
2	Low Hemoglobin	9	39	48	14.11	0.343
3	Fever/ Viral Infs.	29	3	32	9.41	0.228
4	Tattoo	29	-	29	8.52	0.207
5	Under weight	17	11	28	8.23	0.200
6	Surgery	12	15	27	7.94	0.193
7	Skin lesions	21	5	26	7.64	0.185
8	Vaccination	18	2	20	5.88	0.143
9	Jaundice	11	2	13	3.82	0.092
10	Alcohol	11	-	11	3.23	0.078
11	Malaria	6	3	9	2.64	0.064
12	Typhoid	7	1	8	2.35	0.057
13	Menstruation	-	8	8	2.35	0.057
14	Lack of sleep	7	0	7	2.05	0.050

Table 4: Causes of Permanent deferrals

Sr No	Cause	Male	Female	Total	Percentage from Permanent deferral (%)	Percentage from total deferral (%)
1	Hepatitis B	5	-	5	25	0.035
2	Hypertension	10	-	10	50	0.071
3	Diabetes	4	-	4	20	0.028
4	Cardiac Disease	1	-	1	5	0.007
	Total	20	-	20	100	0.14

Discussion

The blood donor selection is very important step for safe and healthy blood transfusion. Blood donors are the backbone of safe blood transfusion practice. Strict criteria for blood donation are not only necessary to safeguard the health of donors but also extremely important so as to prevent transfusion transmittable infections spreading to the recipients. During the proper donor selection process, some donors get deferred because of various permanent and temporary causes. It is essential to understand various reasons of donor deferral for both temporary and permanently deferred donors, so that in case of temporarily deferred donors proper follow up can be conducted to bring back donors for blood donation. In case of permanently deferred donor's proper notification and counselling can be given. Donor deferral rates in blood centers vary from 5 to 24%^[6] leading to huge losses in terms of available blood units for transfusion. We undertook this retrospective study to obtain the incidence of deferral in our whole blood donors and also to analyze the deferral pattern with an aim to review our recruitment and retention strategy.

A total of 13981 donors came for donating blood in our blood bank and blood donation camps organized during this period of our study. Out of which, 360 (2.57%) cases were deferred due to various reasons. In the study conducted by Jethani *et al.*, showed deferral rate of 2.6% which was comparable with our study.^[7] Study done by Patil SB *et al* reported 7.2% deferral rate which is higher as compare to our study.^[8] Studies in literature showed varied rates of blood donor deferral ranging from 5.19% to 35.6% across the world.^[9] These variations of donor referral rates may be because of different donor selection criteria, variations in prevalence of anemia and due to different geographical locations. In our study male blood donors was more in number as compare to female donor's male (97.81%) and female (2.18%) constitutes total registered donor population, similar to other studies in literature,^[9-10] The deferral rate among females was more as compared to males in present study which was similar to other studies.^[11-12]

It was observed that temporary cause of deferral (97.81%) are more common as compared with the permanent cause (2.18%) and found to be highly significant in present study, in concordance with other studies by Kumar S.H. *et al.*,^[13] where temporary deferrals rate was 90.3% and permanent deferral rate was 9.7% of total deferrals. The overall most common causes of temporary deferrals amongst the blood donors in present study were recent medication (14.41%), low hemoglobin (14.11%) and viral fever or infection (9.41%). In contrast, alcohol was the second most common cause of rejection in the study conducted by Bhosale *et al.*,^[14] but it was the tenth most common cause of rejection in our study. All the temporary deferral individuals must be educated for cause and period of deferral and proper counseling should be given to them so that they can donate blood in future. The most common causes of permanent deferral in present study were hypertension (50%) followed by hepatitis B (25%), diabetes (20%) and cardiac diseases (5%). This supports the studies done by Bahadur *et al.*,^[15] and Sayed MA *et al.*,^[16] who stated that hypertension was the most common cause of permanent deferral in their studies. It is stated that a regular assessment of deferral in different blood bank centers will help in planning strategies to minimize donor rejection.

Conclusion

Increased awareness among the voluntary donors regarding deferral criteria is necessary to decrease the deferral rate in the donor population in particular region would help greatly in blood donor recruitment efforts especially temporarily deferral donors who can returned back to the donor pool. Though there are many studies conducted to analyze patterns of donor deferral it is necessary that every blood bank should analyze rates and patterns of donor deferral due to temporary reasons can be avoided by conducting awareness programs. All this step will ensure safe and quality blood products quality for the recipients.

Conflict of interest: None

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