Retrospective Analysis of Patterns of Donor Deferral among Blood Donors in a Tertiary Care Hospital

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ABSTRACT

Introduction: Blood transfusion saves millions of lives. Donors undergo certain stringent selection criteria to ensure safe and quality blood and blood products. During such process it is likely that donors may get deferred either temporarily or permanently. Deferral leads to precious loss of donors and blood units. Morever rates and reasons of deferral vary from region to region. The aim of the study was to analyse rates and reasons of donor deferral in our hospital.

Material and Methods: It is a retrospective study done over a period of 6 years from January 2012 to December 2017. Details of donors who were deferred either temporarily or permanently during the study period was collected from the donor registry.

Results: Out of the 15,807 donors who registered for blood donation during study period, 971 donors were deferred due to several reasons both temporarily and permanently. Total deferral rate of 6% as comparable to other studies in literature.

Conclusion: Knowledge about rates and reasons of donor deferral may guide medical personnel to focus on donor screening. Proper follow up measures can be carried out in case of temporarily deferred donors to bring them back to donor pool.

Keywords: Blood Donation, Donor Selection Criteria, Donor Deferral

INTRODUCTION

Safe and adequate supply of blood and blood products is a major public health problem. Proper donor selection for blood donation is an important step to ensure safety for both donor and recipient.[1] Due to such stringent donor criteria, a large number of donors are deferred from donating blood for several reasons either temporarily or permanently. Rate and reasons of donor deferral differs from region to region.[2]

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.[3] Donor deferrals can be due to temporary and permanent reasons.[4] All donors who are deferred must receive proper counselling and education regarding deferral reasons and adequate advice to rectify it.

The present study was conducted to analyse rate and reasons of donor deferral among blood donors in our hospital blood bank so that temporarily deferred donors are identified and counselled so that we can increase pool of voluntary donors without compromising on quality or safety of both donor and recipient. Study also aims to plan and implement strategy to reduce no of deferred donors

MATERIAL AND METHODS

A retrospective study of all blood donors who were deferred from blood donation in Tertiary care hospital blood bank south India for a period of 6 years from January 2012 to December 2017 were analysed. Every blood donor who attended blood bank was screened based on donor questionnaire prepared according to criteria laid down by Director General of Health Services and Drug Controller of India. Data of deferred donors were obtained from Donor Deferral register. Every blood donor was evaluated by medical examination, physical examination, haemoglobin estimation, weight, age, blood pressure, pulse rate, temperature. Deferred donor were analysed based on causes for deferral. Deferred donors included those who were deferred based on history and physical examination and also donors who turned to be seroreactive for any of transfusion transmitted infection (HIV, HBV, HCV, Syphilis, malaria) post donation tested by ELIZA (Enzyme linked immunosorbent assay)

RESULTS

During retrospective study for a period of 6 years from January 2012 to December 2017 a total of 15,807 blood donors were registered in our Blood Bank. Out of 15,807 registered donors 15,407 were males and 400 were females. Out of 15,407 registered males, only 14,498 donated blood and 909 were deferred due to several reasons. Out of 400 registered females, only 338 donated blood and 62 were deferred from blood donation.

Total no of donors deferred in our study was 971. Total deferral rate was 6%. Percentage of deferral among males was 6.3% and percentage of deferral among females was 18.3% (Table 1).

Deferred donors were further classified as deferral due to temporary and permanent reasons. There were about 638 (65.7%) deferred due to temporary reasons and 333 (34.3%) deferred due to permanent reasons (Table 2). Out of 638

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Donors	Male	Female	Total
Registered	15407	400	15807
Selected	14498(94.1%)	338 (84.5%)	14836 (93.8%)
Deferred	909 (6.3%)	62 (18.3%)	971 (6.5%)

Table-1: Demographic profile of donors

Si No	Types of deferral	No	Deferral rate
1	Temporary	638	65.7%
2	Permanent	333	34.3%

Table-2: Deferral profile of donors

Si No	Causes	Total	Permanent deferral %	Total deferral %
1	Low haemoglobin	360	56.43%	37.08%
2	Alcohol	78	12.23%	8.03%
3	Tattoo	32	5.02%	3.29%
4	Underweight	29	4.55%	2.99%
5	Vaccination	22	3.45%	2.27%
6	Medications	21	3.29%	2.16%
7	Typhoid	20	3.13%	2.06%
8	Surgery	18	2.82%	1.85%
9	Low BP	18	2.82%	1.85%
10	Frequent donations	8	1.25%	0.82%
11	Underage	6	0.94%	0.62%
12	Smoking	5	0.78%	0.51%
13	Diarrhoea	5	0.78%	0.51%
14	Chicken pox	3	0.47%	0.31%
15	Blood transfusion	3	0.47%	0.31%
16	Cold	2	0.31%	0.21%
17	Failed phlebotomy	2	0.31%	0.21%
18	Tuberculosis	2	0.31%	0.21%
19	Skin lesions	2	0.31%	0.21%
19	Jaundice	1	0.16%	0.10%
20	Human bite	1	0.16%	0.10%
	Total	638	100	65.7%

Table-3: Causes of temporary deferral

Si No	Causes	No	Permanent deferral %	Total deferral %
1	Hepatitis B	184	55.26	18.95
2	Hypertension	92	27.63	9.47
3	Diabetes	24	7.21	2.47
4	Syphilis	16	4.80	1.65
5	HIV 1,2	9	2.70	0.93
6	HCV	3	0.90	0.31
7	Seizures	3	0.90	0.31
8	Fear of seeing blood	2	0.60	0.21
	Total	333	100	34.3%

Table-4: Causes of permanent deferral

Si No	TTI Seropositivity	No	Percentage	Prevalence
1	Hepatitis B	184	86.7%	1.2%
2	Hepatitis C	3	1.4%	0.02%
3	HIV	9	4.3%	0.06%
4	Syphilis	16	7.6%	0.1%
5	Malaria	0	0	0
	Total	212	100	

Table-5: TTI status among blood donors

temporarily deferred donors, 360 (56.43%) were deferred due to low haemoglobin,78 (12.23%) were deferred due to alcohol intake in the last 24 hours prior to blood donation. 32(5.02%) were deferred due to tattoo in less than 6 months prior to donation. 29(4.55%) were deferred due to underweight (Table 3)

Out of 333 permanently deferred donors, 92 (27.63%) donors were deferred due to hypertension before donation. 184 (55.26%) were deferred post donation due to hepatitis B positivity. There were 24 (7.21%) deferred due to diabetes. They were (0.60%) deferred due to history of fear of seeing blood (Table 4).

Among the 212 donors who were seropositive for various transfusion transmitted infections, postdonation 184 (86.79%) donors were seropositive for Hepatitis B, 16 (7.55%) donors were seropositive for syphilis, 9 (4.25%) were seropositive for HIV. There were 3 (1.42%) who were seropositive for HCV. The seroprevalence of TTI among blood donors n=14836 were hepatitis B (1.2%), syphilis (0.1%), HIV (0.06%), HCV (0.02%). (TABLE 5)

DISCUSSION

Blood donors are the backbone of safe transfusion practice. Before blood donation every blood donor must undergo certain stringent selection criteria to ensure safety and quality of blood and components. During such process it is likely that donors may get deferred due to temporary or permanent reasons.

Donor deferral is a form of rejection and also plays an increasing role of blood shortage in blood bank. It is a mere loss of time and manpower to a large extent.[5] The rates and reasons of donor deferral varies from region to region.[2] 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 to donor pool. In case of permanently deferred donors proper notification and counselling can be given.

In the present study for 6 years, we found a deferral rate of 6%. Studies in literature showed varied rates of donor deferral ranging from 5.19% to 35.6% across the world both in studies conducted in India as well internationally.[6] The varied differences in deferral rate may be due to different donor selection criteria, endemicity of transmitted diseases, high sexual activities and religious and superstitious beliefs in blood donation.[6]

In our study males have outnumbered females in total blood donor population. Males (97.5%) and females (2.5%) constitutes total registered donor population, similar to other studies in literature.[6,7] The deferral rate among females was much higher when compared to males in current study similar to other studies in literarture.[8,9] Higher female deferral rate, low participation could be due to higher frequency of anemia, health problems, social taboos, cultural habits, lack of motivation, misbeliefs, reluctancy and fear to donate blood.[10] Education and programmes can be conducted targeting young population. Future studies can be carried out

to assess knowledge, practices, beliefs about blood donation among female population.

Further reasons of deferral in our study were further categorized into temporary and permanent reasons. Out of the total 971 donors deferred, 638 (65.7%) were deferred due to temporary reasons and 333 (34.3%) were deferred due to permanent reasons. Donor deferral due to temporary reasons was much higher than permanent reasons similar to studies reported in literature.[9, 11, 12, 13]

Among temporary reasons for deferral, most common cause was low hemoglobin 360(37.08%), followed by alcohol intake 78 (8.03%), tattoo 32 (3.29%). Anemia was the most common temporary cause of deferral similar to other studies in literature.[9, 14,15,16,17] Frequent blood donations, parasite infestations, poor nutrition can be the major causes of anemia. As majority of donors were deferred due to anemia, proper implementation of screening programmes can be conducted at the community level, follow up with iron supplementation, deworming drugs can be provided, screening of prospective donor for serum ferritin levels before blood donation, increasing frequency of blood donation can be implemented.

The second most common reason of temporary deferral in the current study was alcohol intake in the last 24 hours before blood donation similar to study reported.[11, 18, 19] Incidence of alcohol consumption has increased to 11% among Indian population due to binge drinking.[14,18] Adequate information, awareness programmes, speech, kits, pamphlets regarding eligibility criteria, significance of blood donation, ill effects of alcohol consumption, notice with all relevant information can be displayed in local languages around hospital and blood bank premises can be carried out to reduce unnecessary donor deferrals due to alcohol consumption.

In our current study tattoo constitutes mainly 32 (3.29%) of deferral. Tattoo carries high risk of spread of TTIs which is threat to blood donation, mainly due to unsterile needle used.[14] Other less common causes of deferral in our current study was underweight 29 (2.98%), vaccinations 22 (2.26% live, killed, dog bite vaccinations), 21 (2.16%) due to medications. There were 8 donors (0.82%) who were deferred due to frequent donations. Proper education and follow up measures can be taken to target such temporarily deferred donors, so that once deferral period is over they can be encouraged for a blood donation which will greatly add to the donor pool. Medical officer, blood bank counsellor, staff nurses can be adequately trained for the same.

Permanently deferred donors constitute nearly 333 (34.3%). The higher rate was due to inclusion of TTI seropositivity post donation similar to other studies in literature.[2, 7,8,14] in contrast to lower rate reported by other studies.[11,13] Most common predonation cause of permanent deferral was hypertension 92 (76%) of donors. This is similar to studies in literature.[6, 12, 13,14,19,20] The cause of hypertension may be due to fear of first time donation, white coat hypertension, anxiety, exertion before blood donation.[9] Most of donors are noticed with hypertension for the first time, hypertension usually goes unnoticed and it is a incidental finding. Such donors can be advised for lifestyle changes like salt restriction, Yoga and can be referred to physicians for further management and follow up.

Most common post donation cause of permanent deferral was TTI positivity constituting about 212 donors (21.83%). Among TTI seorpositivity most common was Hepatitis B 184(86.79%), 16 (7.55%) were positive for syphilis, 9(4.25%) were positive for HIV, 3 (1.42%) for HCV, there were none who was positive for malaria. The seroprevalence of TTI was Hepatitis B (1.2%), syphilis (0.1%), HIV (0.06%), Hepatitis C (0.02%). Hepatitis B was the most common cause for permanent deferral among seropositive donors in our study, similar to the one reported by chauhan et al.[8] Such a huge proportion of permanent deferral adds to significant loss of donor population. This warrants the need to encourage voluntary blood donation and to restrict replacement donors. Analysis of rates and reasons of donor deferral in every region can help health care and blood bank professional to assess the health status of general population, so that necessary steps can be taken to implement health camps, public awareness programmes, voluntary blood donation camps, mass screening programmes for anemia, hypertension etc…so that proper guidance and referral can be given to specific health condition.

Limitations

This study failed to analyse donor deferral in terms of voluntary and replacement donors.

CONCLUSION

Though there are many studies conducted to analyze patterns of donor deferral, it is necessary that every blood bank as well health professional to analyse health status, rates and patterns of donor deferral in their own region so that unnecessary deferral especially due to temporary reasons can be avoided by conducting awareness programmes, mass screening programs atleast a week before blood donation camps can be organized. Such screening programmes also helps to detect incidental finding like hypertension and hepatitis positive donors and other seropositive donors and their family members to receive proper management and follow up. These steps will ensure safe and quality blood and blood products for the patients.

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