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A Study of Causes of Donor Deferral at Tertiary Care Hospital- Bhavnagar, Gujarat

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Abstract
Donors are deferred for several reasons which are related to the safety of the donor as well as the potential threat to the recipient. The present study enlightens various causes of donor deferral which ultimately results in donor loss. Analysis of causes will help in understanding the common health problems of the donor population & also it can guide us to retrieve donor in future.
Aims & Objectives: *To study the donor deferral rate. To find out various causes of donor deferral & apply relevant findings to modify recruitment strategy for blood donors.*
Material and Methods: *The present retrospective observational study was carried out at blood bank pathology department, Govt. Medical College and Sir T General Hospital Bhavnagar for a period of 6. 5 yrs (01 Jan'10- 30 June '16). Donors were screened according to the standard guidelines of D&C act, DGHS, NACO and deferred accordingly. Data retrieved from computer & records have been tabulated, analyzed & compared with similar studies.*
Results: *In present study donor deferral rate was 2.92%. Frequency of deferral for temporary reasons was 98.51% whereas for permanent reasons was 1.49%. Amongst temporary causes, the commonest one was low Hb (34.87%) in both sexes followed by use of medications (21.26%) in males & underweight (33.23%) in females.*
Conclusion: *Temporary causes of deferral contributed to 98.51 % of total donor deferral. Anemia was the commonest cause in both sexes. A large number of temporarily deferred donors can be recruited back into the donor pool if managed actively. This will also help in maintaining a healthy donor pool in the long run & improvement of efficiency of the donor programme.*
Keywords: *Donor deferral, Temporary deferral, Permanent deferral.*

Introduction

In order to improve the quality and safety of blood transfusion to the recipients, healthy non renumerated donor selection is an important component of the process. Great efforts are required for blood centre to motivate, recruit and retain the

healthy voluntary donors. Deferrals for whatever reason represent loss of time and effort for both potential donors and blood bank staff[1]. Analysis of rejection patterns may help medical personnel to be more focused in donor screening & donor awareness. This will not only help in improving donor and recipient safety but also in maintaining a healthy donor pool in the long run, provided the potential donors are appropriately counselled and managed to improve the efficiency of the donor programme.

Information Education & Communication (IEC) material related to causes and duration of deferral may "prime" prospective donors about possibility of deferral.[2] Any such sensitization beforehand results in better acceptability of "rejection" and thereby less "negative" feeling about blood donation and more chances of future return.[2] We have tried to analyse the deferral rate & various causes of donor deferral.

Aims and Objectives

1) To study the year wise donor deferral rate.
2) Frequency of various causes of donor deferral.
3) To study common modifiable causes of temporary deferral in relation to age and sex and apply relevant findings to modify recruitment strategy for blood donors.

Material and Methods

The present retrospective observational study was carried out at blood bank pathology department, Govt. Medical College and Sir T General Hospital Bhavnagar for a period of 6. 5 yrs (from 01 Jan'10- to 30 June '16). Study included both voluntary donors coming to blood bank and in blood donation camps and replacement donors at blood bank. Donors were screened according to the standard guideline of Drugs and Cosmetics act 1940 (D&C act)[3], Directorate General Of Health Services (DGHS) [4] manual, National AIDS Control Organisation (NACO) [5], Drugs and Cosmetics (2nd Ammendment) Rules, 2011[6] and deferred accordingly. Data retrieved from computer & records have been tabulated, analyzed & compared with similar studies. Analysis of deferral reasons were categorised based on age, sex, type of donation. Donors have been categorized into three conventional age group categories for the sake of convenience of analysis. For deferral due to low Hb, Hb estimation was done by CuSo4/hemocue method.

Results

Over a period of 6.5 yrs total 82719 donors were presented for donation. Voluntary donors were 80685 (97.54%) and replacement donors were 2034(2.46%). Total no. of deferred donors were 2419(2.92%). No. of deferred voluntary donors were 2305(2.86%) and deferred replacement donors were 114 (5.60%) (Table-1).

No. of male donors were 78013(94.31%) & females donors were 4706 (5.69%). No. of deferred male donors were 2080 (2.66%) and deferred female donors were 339(7.20%). (Table-2) (Percentage derived from total no. of male or female donors for a particular year.)

Table-3 shows no. of year wise deferred donors due to temporary & permanent reasons which was 2383 (98.51%) & 36 (1.49%) respectively.

Majority deferred donors (51.47%) belonged to 18-30 age group followed by 31-50 age group (42.37%). (Table-4).

Table-5 shows that In temporary causes, commonest causes of deferral in general & also in male donors were low Hb (34.87%), use of medications (18.80%) & diseases (16.49%). Category of other causes includes anxiety, lack of sleep which contributed to(9.65%) of total deferral. In females underweight (33.23 %) was the second most common cause after anemia (48.66 %).

Males were more frequently deferred for permanent reasons as compared to females. Common causes of permanent deferral were heart disease & HbsAg positivity & antithyroid drugs. (Table-6)

Discussion

Criteria for whole blood donor selection and deferral in India are based partially on scientific facts borrowed from developed countries and

partially on tradition. However, sufficient in house data and its scientific validation are still required to test the applicability of these criteria in our blood donors[2].

Table -7 shows comparison of deferral rate of present study with other similar studies. In present study the total deferral rate was 2.92% which is comparable to various studies with lower rate of deferral in table-7 (Agravat et al[7], Rathod K et al[8] etc.) Difference between deferral rates in various studies probably reflects the regional diversity, health status & socio economic status of a particular regional population. Rate of donor deferral is more amongst replacement donors (5.60%) as compared to voluntary donors (2.86%) in our study. This may be because voluntary donors are repeated donors most of the time who are well aware about the criteria of deferral /guidelines for donor selection which will result in low incidence of rejection.

Table-1 Year wise distribution of total & deferred no. of voluntary and replacement donors.

Year	Voluntary donors	Voluntary Deferral (%)	Replacement Donors	Replacement Deferral (%)	Total donor	Total Deferral (%)
2010	7912	293(3.70%)	255	16(6.27%)	8167	309(3.78%)
2011	8832	248(2.81%)	297	20(6.73%)	9129	268(2.93%)
2012	10925	145(1.33%)	368	17(4.62%)	11293	162(1.43%)
2013	13415	293(2.18%)	264	15(5.68%)	13679	308(2.25%)
2014	15067	546(3.62%)	438	16(3.65%)	15505	562(3.62%)
2015	17043	609(3.57%)	348	20(5.75%)	17391	629(3.62%)
06’2016	7491	171(2.28%)	64	10(15.62%)	7555	181(2.39%)
Total	80685	2305(2.86%)	2034	114(5.60%)	82719	2419(2.92%)

Table-2 Year -wise distribution of deferred male and female donors

Year	Male deferred	Female deferred	Total deferred donors
2010	278 (3.60%)	31 (6.69%)	309
2011	186 (2.21%)	82 (11.4%)	268
2012	121 (1.16%)	41 (4.82%)	162
2013	255 (1.96%)	53 (7.25%)	308
2014	497 (3.42%)	65 (6.81%)	562
2015	582 (3.49%)	47 (6.23%)	629
06’2016	161 (2.20%)	20 (8.44%)	181
Total	2080(2.66%)	339 (7.20%)	2419

Table-3 Year-wise distribution of temporary and permanent deferred donors.

Year	Temporary Deferral	Permanent deferral	Total (100%)
2010	308 (99.68%)	1 (0.32%)	309(12.77%)
2011	266 (99.25%)	2 (0.75%)	268(11.08%)
2012	161 (99.38%)	1 (0.62%)	162(6.70%)
2013	305 (99.03%)	3 (0.97%)	308(12.73%)
2014	545 (96.98%)	17 (3.02%)	562(23.23%)
2015	620 (98.57%)	9 (1.43%)	629(26.00%)
2016	178 (98.34%)	3 (1.66%)	181(7.48%)
Total	2383 (98.51%)	36 (1.49%)	2419

Table-4 Age wise distribution of temporary and permanent deferred donors in males & females

Age	Male		Female		TOTAL
	Temporary deferral	Permanent deferral	Temporary deferral	Permanent deferral	
<18	31	0	4	0	35(1.45%)
18-30	1070	12	163	0	1245 (51.47%)
31-50	843	20	160	2	1025(42.37%)
>50	102	2	10	0	114(4.71%)
Total	2046	34	337	2	2419

Table -5 Common causes of temporary deferral in male & female donors.

Cause of temporary deferral	Male	Female	TOTAL
Low Hb	667	164	831 (34.87%)
Drugs (medications)	435	13	448 (18.80%)
Diseases	381	12	393(16.49%)
Others	205	25	230 (9.65%)
Underweight	74	112	186 (7.81%)
Surgery	95	05	100 (4.20%)
Donation interval <3 month	91	02	93 (3.90%)
Alcohol & ill habits	67	00	67 (2.81%)
Age <18 yrs	31	04	35 (1.47%)
TOTAL	2046 (85.85%)	337 (14.15%)	2383 (100%)

Table -6 Common causes of permanent deferral in male & female donors.

Causes of permanent Deferral	Male	Female	Total
HbsAg positive	10	1	11
Heart disease	12	0	12
Thyroid drugs	4	1	5
Anti-convulsant drugs	3	0	3
Brain tumor operated	1	0	1
>65[6]	2	0	2
Diabetic on Insulin	1	0	1
Chronic kidney disease	1	0	1
Total	34(94.44%)	2(5.56%)	36

Table-7 Comparison of deferral rate of present study with other studies.

Studies reported lower rate of deferral		Studies reported higher rate of deferral	
Present study	2.92%	Agnihotri[2]	11.6%
Agravat et al[7]	3.72%	Gajjar et al[22]	11.16%
Rathod K et al.[8]	3.55%	Lim JC et al[16]	14.4%
Talonu T[17]	4%	Arslan[12]	14.61%
Chauhan DN et al.[20]	4.6%	Choudhary et al[15]	16.4%
Agrawal et al[11]	4.79%	Mangwana[13]	17.88%
John F et al.[19]	5.12%	Sareen R et al[21]	22.32%
Sunder P et al.[18]	5.84%	Jasnani[1]	25.2%
Rabeya[14]	5.6%	-	-
Angurana et al[10]	7.8 %	-	-
Bahadur et al[9]	9.0%	-	-

Table-8 Comparison of common causes of temporary deferral of present study with other studies

	Present study	Neha et al[10]	Jasnani et al[1]	Mangwada[13]	Bahadur et al[9]	Agnihotri et al[2]	Preeti et al[11]	Chaudhari et al[15]	Rabeya et al[14]
Low Hb	34.87	19.7	27.5	25.68	36.1	55.8	56.92	18.6	40.7
Drugs	18.80	1.49	8.7	18.77	2.0	6.9	3.07		
Diseases	16.49	3.4	4.4		-				15.6

Majority of donors deferred belonged to 18-30 yr age group (51.47%) which is also seen in Bahadur et al study in 18-40 yrs age group (89.7%)[9] whereas in Agnihotri study it is 20.2[2]. This highlights the fact that a sizable proportion of young generation is malnourished reflecting the impact of low socioeconomic status or health of Indian youth.

Female donors are deferred more frequently (7.20 %) as compared to male donors (2.66 %) in present study which is also seen in Angurana et al (40.3%)[10] & Agrawal et al (15.58%)[11] studies. Lack of awareness & motivation, fear and physiological reasons may be the reasons for more deferral in females. Anemia & underweight due to poor nourishment status are also the two most important modifiable causes.

Majority of donors were deferred due to temporary reasons in present study as well as all compared studies. Deferral rate for temporary reasons was 98.51% whereas for permanent reasons is 1.49% in present study. Similar rates are seen in Bahadur et al (91% Vs 9%)[9] and Jasnanii et al (93.2% Vs 6.8%)[1] & Arslan et al(90% Vs 10%)[12]studies. In comparison of these studies, a slightly lower rate of deferral for temporary causes are seen in Preeti et al (73.8% Vs 26.2%)[11]& Neha et al (56.7 % Vs 43.3 %)[10]studies. This can be because of self deferral by person in most of the conditions of permanent deferral.

Even though the deferral rate in our study is lower as compared to other studies, common causes of deferral are similar to other studies. Commonest cause of deferral in temporary category is low Hb (34.87%) in both sexes, followed by use of medications (18.80%), diseases (16.49%), other causes (9.65%) & underweight (7.81%) in our study. Low Hb is found to be the commonest cause of temporary deferral in all the studies. Deferral rate for anemia in present study is comparable to Bahadur et al[9], Mangwada[13], Jasnani et al[1] & Rabeya et al[14] studies (Table-8).Low Hb & underweight contributes 81.9 % of total deferral in females in present study that shows compromised nutritional status especially in female donors. Both the conditions are easily curable so large no. of temporarily deferred female donors can be recruited back into the donor pool. Adolescents and youth should be targeted for eradication of anemia by different, yet coordinated initiatives. Setting of new hemoglobin criteria for donor deferral according to the reference range obtained for the particular population is recommended[11]. It has also been suggested that hemoglobin standard should be decided in accordance to the biological reference range of regional population to increase donor eligibility and to offer iron treatment for premenopausal woman who want to donate or who are frequent donors[1].

Medications include commonly used antibiotics for which donor is deferred for few days. Rate of deferral due to drugs (18.80%) & diseases (16.49%) in this study are comparable to Mangwada (18.77%)[13] & Rabeya et al study(15.6%)[14] respectively. Other causes of deferral which includes anxiety, lack of sleep occupies 9.65 % in our study. To avoid unnecessary rejections, blood bank can make a practice to educate the organizing team few days prior to the date of blood donation camp regarding deferral in case of use of medications & lack of sleep etc.

In every case of deferral, It is important to provide donors with a clear message on their deferral status and should guide them for further health care whenever possible. [1] All selected or deferred donors who are given an explanation, feel motivated to check their eligibility to donate blood and return for future donation.[1]

Conclusion

In the present study donor deferral rate was 2.92% over a period of six & half years. Voluntary donors had significantly lower deferral rate (2.86%) as compared to replacement donors (5.60 %). Majority (51.47 %) of deferred donors were in 18 to 30 yr age group. Temporary causes of deferral contribute to 98.51 % of total donor deferral. Most common reason for temporary deferral was anemia in both sexes (34.87%) followed by use of medications (21.26%) & diseases (18.62%) in males & underweight (33.23%) in females. Amongst

permanent causes heart disease & HbsAg positivity were common causes. In addition to motivation of new donors, we can add a significant no. of donors by recruiting back a large number of temporarily deferred donors.

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