A RETROSPECTIVE DEFERRAL ANALYSIS OF BLOOD DONORS IN A TERTIARY CARE MEDICAL COLLEGE BLOOD BANK UNIT- AN EXPERIENCE FROM RURAL KONKAN OF WESTERN MAHARASHTRA

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ABSTRACT

BACKGROUND

Blood transfusion safety begins with healthy donors. Blood donors are deferred for multiple reasons and are not able to donate blood successfully, either permanently or temporarily. The aim of this study is to study the main causes of pre-donation deferral of potentially healthy prospective blood donors in a Tertiary care teaching hospital, Blood Bank unit.

MATERIALS AND METHODS

A retrospective analysis of records of the donors from January 2012 to December 2016 at Swami Samarth Blood Bank attached to BKL Walawalkar Rural Medical College, Sawarde, Chiplun Taluka, Ratnagiri Dist. in order to find out the rate and causes of deferral in pre-donation period both in male and female donors.

RESULTS

Study showed that the deferral rate was 4.37%. Donors are deferred for multiple reasons. The temporary causes of deferral were more as compared to the permanent causes found to be statistically highly significant. Anaemia was the most common reason (31.30%) in temporary deferrals, while Hypertension (78.35%) is the most common reason in permanent deferral. Most of these deferral donors were (56.25%) females and (44.45%) males were of age 18 - 30 years old. Among male deferrals, hypertension constituted as a cause in 46.43% followed by other diseases and Anaemia, i.e. 22.77% and 14.73% respectively. While Anaemia (86.27%) and hypotension (9.8%) were the causes of choice in females.

CONCLUSION

The blood transfusion services should develop strategies to identify and rationalise the donor selection criteria and be able to decrease unnecessary deferrals.

KEYWORDS

Blood Donor, Deferral, Permanent, Temporary.

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BACKGROUND

Blood donors are deferred for various reasons. Moreover, deferring prospective donors often leaves them with negative feelings about themselves as well as the blood donation process.⁽¹⁾ Deferral leads to loss of precious whole blood donors (WBD) and blood units available for transfusion purposes.⁽²⁾ By developing strategies to identify and rationalise donor selection criteria, the blood transfusion services should be able to decrease unnecessary deferrals.⁽³⁾ The few studies done in India in the past have provided different common reasons for deferral of blood donors, highlighting differing demographic profile in different parts of the country.⁽⁴⁾

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The present study was undertaken to analyse the pre-donation deferral incidence and pattern among blood donors.

MATERIALS AND METHODS

This retrospective descriptive study record based analysis was carried out for whole blood donors at Blood Bank over a period of 5 years from January 2012 to December 2016 at Swami Samarth Blood Bank attached to BKL Walawalkar Rural Medical College, Sawarde, Chiplun Taluk, Ratnagiri Dist. Donors who have donated blood at our outdoor voluntary blood donation camps as well as at our blood bank (indoor) were included in the study. Standard operating procedures based on the Directorate General of Health Services Guidelines, Ministry of Health and Family Welfare (2003) were used for donor selection and deferral. Pre-donation screening tests like donor questionnaire followed by physical examination and Hb estimation by CuSO₄ (finger prick) method with cut-off value of 12.5 gm/dL were done. Donors with systolic BP between 100 and 180 mmHg and diastolic BP between 50 and 100 mmHg were accepted for blood donation. First time and repeat donors were not segregated and for the sake of simplicity of analysis, all repeat presentations were considered as independent attempts for blood donation.

Detailed information on the donor deferral including the cause of deferral was recorded in deferral register. Completeness of data assured prior collection. Deferred donor data was analysed with respect to age, sex and causes of deferral (temporary and permanent). Suitable statistical tests were applied to find significant differences among variables.

RESULTS

Sr. No.	Donors	Male	Female	Total
1	Selected	7950	354	8304 (95.63%)
2	Rejected	316 (3.82%)	64 (15.31%)	380 (4.37%)
	Total	8266	418	8684 (100%)

Table 1. Distribution of Registered, Selected and Rejected Donors

Overall, rejection rate was found to be 4.37%. More in females compared with males, i.e. 15.31% and 3.82% respectively.

Figure 1. Year Wise Distribution of Blood Donors

Year wise deferral did not show significant differences in rate.

Sr. No.	Age in Years	No. Male (%)	No. Female (%)
1	<18	19(6.12)	03(4.68)
2	18-30	141(44.45)	36(56.25)
3	30-40	81(25.64)	15(23.45)
4	40-50	58(18.36)	06(9.37)
5	50-60	16(5.07)	03(4.69)
6	>60	01(0.36)	01(1.56)
	Total	316(100)	64(100)

Table 2. Age and Sex Wise Distribution of Deferral Respondents

Age is taken in completed years.

Majority of deferrals were in age range of 18 to 30 followed by 30 to 40 in both males and females.

Deferrals	No. of Cases	Percentage
Temporary	246	64.73%
Permanent	134	35.26%
Total	380	100%

Table 3. Types of Deferrals

$\chi^2 = 33$, d.f. = 1, $P < 0.001$ H.S.

Rejection on the basis of cause was found to be in an approximate ratio of 2: 1 for temporary and permanent was found to be statistically highly significant.

Sr. No.	Causes	No. of Cases	%
1	Anaemia	77	31.30
2	Alcohol	24	9.75
3	Medication	20	8.13
4	Low Wt.	17	6.91
5	Low Age	16	6.50
6	Inadequate Sleep	15	6.09
7	Jaundice	13	5.28
8	Tuberculosis	11	4.47
9	Vaccination	8	3.25
10	Malaria	7	2.84
11	Fever	6	2.43
12	Typhoid	5	2.03
13	Loose Motion	4	1.62
14	Previous Blood Donation	3	1.21
15	Menses	3	1.21
16	Surgery	3	1.21
17	Dog Bite	3	1.21
18	Pulse Rate	2	0.81
19	Chicken Pox	2	0.81
20	Piles	2	0.81
21	Dental Pain	2	0.81
22	Headache	1	0.40
23	Venepuncture Problem	1	0.40
24	Sweating at Night	1	0.40

Table 4A. Temporary Deferral

Multiple Responses

Almost 1/3rd, i.e. 31.30% revealed low haemoglobin level as a cause of temporary rejection followed by alcohol (9.75%), medication (8.13%), under age and weight > 6.50 etc.

Sr. No.	Causes	Number of Cases	Percentage
2	Hypertension	105	78.35%
6	Low BP	21	15.57%
1	Diabetes Mellitus	3	2.23%
7	Kidney Disease	3	2.23%
3	Asthma	1	0.74%
5	Epilepsy	1	0.74%

Table 4B. Permanent Deferral

Multiple Responses

Amongst permanently rejected respondents, hypertension remained the cause in 78.35% followed by hypotension i.e. 15.57%.

Sr. No.	Causes	Male (%)	Female (%)
1	Hypertension	104 (46.43)	1 (1.96)
5	Disease	51 (22.77)	1 (1.96)
2	Low Hb	33 (14.73)	44 (86.27)
4	Medication	20 (8.93)	0 (0)
3	Low BP	16 (7.14)	5 (9.8)
	Total	224(100)	51 (100)

Table 5. Distribution of Respondents according to Leading Five Causes of Deferral

Among male deferrals, hypertension constituted as a cause in 46.43% followed by diseases and Anaemia i.e. 22.77% and 14.73% respectively. While Anaemia (86.27%) and hypotension (9.8%) were the causes of choice in females.

DISCUSSION

This retrospective descriptive study record based analysis was carried out for whole blood donors at Blood Bank over a

period of 5 years. Out of 8684 donors, 8304 (95.63%) were selected and 380 (4.37%) were rejected. More in females compared with males, i.e. 15.31% and 3.82% respectively. However, validation of finding alert caution because of less representation of female donors R. Vasudev⁽⁵⁾ (2016) reported incidence of deferral was 7.22%. A total of 343 males were deferred out of 6630 who reported to us for blood donation (5.18%) and 181 females were deferred out of 623 reporting for donation (29.05%). The rate of deferral differs from region to region and sometimes in the same region and one centre to another. In this study, the overall deferral rate was about 4.37% and the deferral rate was about three times higher in females compared with males. The lowest reported rate of rejection was by Talonu T⁶ (4%) in Papua New Guinea⁷ and higher rate (8% - 15%) was reported by Chaudhary,⁽³⁾ Blumberg⁽⁷⁾ and Ranveet.⁽⁸⁾ Year wise deferral did not show significant rate differences in present analysis. Deferral rate among females was highest among 18 - 30 years' age group (56.25%) followed by 31 - 40 years (23.45%), while highest deferral rate among males in same brackets were 44.45% and 25.64% respectively constituting approximately 2/3rd bulk of respondents. Majority of donors (47.16%) deferred were between 18 - 30 years reported by H. Gajjar et al (2014)⁽⁹⁾- A retrospective study on Blood donor deferral analysis at General Hospital Blood Bank and Dr. Kartikeyan et al⁽¹⁰⁾ (2015), while Dr. Krishna and Dr. Sharada MS et al⁽¹⁾ (2015) reported commonest age group of 18 - 25 years. Rejection of donors was found predominantly on temporary cause criteria, i.e. 64.27% which can be effectively modified by appropriate interventions comparable with H. Gajjar et al⁽⁹⁾ (2014) reporting 81.15%. Temporary deferrals accounted for 97% in a study by Dr. Kartikeyan et al⁽¹⁰⁾ (2015), while TA Ekwere et al⁽¹¹⁾ (2016) reported major reasons as permanent (50.4%) and temporary (39%) for deferral of donors. The present study revealed almost 1/3rd, i.e. 31.30% low haemoglobin level as a cause of temporary rejection and hypertension remained the cause in 78.35% for permanent deferral. Among male deferrals, hypertension constituted as a cause in 46.43% followed by diseases and Anaemia i.e. 22.77% and 14.73% respectively. While Anaemia (86.27%) and hypotension (9.8%) were the causes of choice in females, H. Gajjar et al⁽⁹⁾ (2014) reported the most common reasons were low haemoglobin (48.33%), high blood pressure (11.94%), underweight donors (7.95%) and history of medication use (6.13%) among total deferral donors. Girish CJ et al⁽¹²⁾ (2012) reported the most common cause of deferral was hypertension (189, 39.95%) followed by anaemia (92, 19.45%) and low body weight (43, 9.09%). While A Shah et al⁽¹³⁾ (2016) reported the most common reason for deferral was history of jaundice (35.71%). Other causes were anaemia, high blood pressure and menorrhagia. Dr. Kartikeyan et al⁽⁹⁾ (2015) reported most common cause of deferral was low haemoglobin followed by a history of recent illness in male donors. Among females, the most common cause was low haemoglobin accounting for 96% of the deferrals. Dr. Krishna and Dr. Sharada MS et al⁽¹⁾ (2015) found the most common reasons for deferral were low haemoglobin levels, low body weight, hypertension and alcohol consumption. R Vasudev's⁽⁵⁾ (2016) report revealed similar findings with the present study.

CONCLUSION

This study showed that the deferral rate was 4.37%. Donors are deferred for multiple reasons. The temporary causes of deferral were more as compared to the permanent causes found to be statistically highly significant. Anaemia was the most common reason (31.30%) in temporary deferrals, while Hypertension (78.35%) is the most common reason in permanent deferral. Most of these deferral donors, (56.25%) females and (44.45%) males were of age 18 - 30 years old. Among male deferrals, hypertension constituted as a cause in 46.43% followed by other diseases and Anaemia i.e. 22.77% and 14.73% respectively. While Anaemia (86.27%) and hypotension (9.8%) were the causes of choice in females. Temporary causes for deferral can be easily alleviated by proper nutritious supplement and timely appropriate interventions. The deferral data is not widely recorded and reported to policy makers for transfusion services. If collected and studied in a systematic way, it will definitely improve the collection of blood from prospective blood donors. The blood transfusion services should develop strategies to identify and rationalise the donor selection criteria and be able to decrease unnecessary deferrals.

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