

**CAUSES AND INCIDENCE OF BLOOD DONOR DEFERRAL IN
KHAMBHAT, GUJARAT: A RETROSPECTIVE STUDY****Azima Mansuri and Prof. Dr. Meghna Patel***

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ABSTRACT

Transfusion of safe blood is the top most priority in transfusion medicine all over the world. It starts with screening and selection of donor in blood bank practice. Safe blood transfusion practice may lead to temporary deferral or permanent rejection of blood donor as routine protocol and results in decreased availability of the blood. This retrospective study quantifies and analyzes rate and reasons of blood donor deferral in Khambhat Taluka of Gujarat, India during the period of August-2012 to July 2016. The overall deferral and/or rejection rate was 3.36%. Further dissection of these incidences revealed that 90.7%

cases of deferral and/or rejection were due to temporary reason and most common cause for deferral was low hemoglobin level (52.11%) closely followed by the major cause of permanent rejection of blood donor i.e. hypertension (33.33%).

KEYWORDS: Transfusion, temporary deferral, hemoglobin, hypertension.

INTRODUCTION

In current medical and surgical practice, a blood transfusion is undoubtedly a vital, life-saving procedure.^[1,2] Blood banking is one of the pillars of modern medicine.^[3] It contributes to saving millions of lives each year in both routine and emergency situations, permits increasingly complex medical and surgical interventions and dramatically improves the life expectancy and quality of life of patients with a variety of acute and chronic conditions. But it requires an adequate supply of safe blood from a healthy donor. For this, donor selection is necessary in addition to the screenings of blood bags for infectious diseases. Hence the proper pre-screening of the blood donors is essential to ensure quality of donor's blood in view of safety of donor as well as recipient. This deferral/rejection must be studied and

evaluated carefully as it decreases the overall inflow of the blood and thus influence the serving capacity of blood bank.

Blood donor counseling is a confidential dialogue between a blood donor and a trained counselor about issues related to the donor's health and the donation process; it may be provided before, during and after blood donation which is beneficial for both the Blood Transfusion Service (BTS) provider and the wider health system. It minimizes the unnecessary loss of suitable donors while maximizing the retention of donors, including those who are temporarily deferred.^[4]

MATERIALS AND METHODS

This retrospective study included all the donors reported for blood donation in Lions Voluntary Blood Bank, Khambhat, Gujarat (India) During August-2012 to July-2016 and the deferral rate with a causes of deferral were evaluated. The donors were evaluated on the basis of clinical history and basic medical examination like Hb estimation, blood pressure and body temperature. Hemoglobin was measured by CuSO₄ specific gravity method, blood pressure, pulse rate, body temperature etc. was checked by their respective devices. Blood samples were screened for presence of HBsAg, anti-HIV antibody, anti-HCV antibody determination by 3rd Generation ELISA method, Malarial parasite antigen Pf/Pan by immunochromatographic assay and syphilis by solid phase immunochromatographic assay for the qualitative determination of antibodies against non-specific *Treponema palladium* antigen.

A separate questionnaire has also been filled which can reveal the past clinical conditions and their previous blood donation. On basis of these criteria we evaluated the incidences of temporary deferral and permanent rejection of blood donors. We further subcategorized the causes of the deferral or rejection which may reveal the overall health status of the community.

RESULTS

During August-2012 to July-2016, total 7721 blood donors were registers; out of which 4278 (55.40%) were voluntary donors rest 3443 (44.59%) were replacement donors. Form total 7721 registered blood donors, 7461 (96.63%) were accepted and 260 were deferred before blood donation. From total 7387 male donors, 7141 were accepted where as from total 334 female donors, 312 were accepted, thus overall there is a great gender bias observed in the

blood donors. Deferral rate was significantly higher among females i.e. 6.59% as compare to male i.e. 3.37%. Regardless the gender majority of deferral was due to temporary reasons (n=236, 91%) and very few (n=24, 9%) donors were permanently deferred. The causes of deferral in temporary and permanent groups are shown in Table-1 and Table-2. The most common reason for overall deferral was low hemoglobin level, followed by alcohol intake in last 24 hours. The five major causes of deferral among males and female are given in Table-3. Out of total 143, Post-donation deferral of donors from August 2012 to July-2016, 98(68.53%) blood donors were temporarily deferred and 45 (31.46%) blood donors were permanently rejected. The causes of deferral for post donation of blood donors are shown in Table-4.

Table-1: Causes and incidences of temporary deferral (n=236).

Sr. no	Causes of temporary deferral	Number	% Temporary deferral
1	Anemia	123	52.11%
2	Alcohol intake	25	10.59%
3	Low body weight	12	5.08%
4	Low age	08	3.38%
5	Tuberculosis	00	00%
6	Jaundice/ Hepatitis	09	3.81%
7	Medication	16	6.77%
8	Fever/ Cold/ Dyspnoea	06	2.54%
9	Typhoid dysfunction	10	4.23%
10	Lactation	01	0.42%
11	Tetoo Drawing	02	0.84%
12	Skin Lesion	06	2.54%
13	Dental Extraction	01	0.42%
14	Recent Vaccination	02	0.84%
15	Previous blood donation	04	1.69%
16	Menses	02	0.84%
17	Miscellaneous	09	3.81%
	Total	236	100%

Table-2: Causes and incidences of permanent rejection (n=24).

Sr. no	Causes of permanent deferral	Number	% of permanent rejection
	Hypertension	08	33.33%
	Over age	05	20.83%
	Diabetes mellitus	02	8.33%
	Heart Surgery	03	12.5%
	High Risk Behavior	04	16.66%
	Thyroid dysfunction	01	4.1%
	Epilepsy	01	4.1%
	Hemoglobinopathies	00	00%
	Total	24	100%

Table-3: Gender wise incidences of top five causes for pre donation deferral (n= 187).

Male			Female		
Causes	Number	% of deferral	Causes	Number	% of deferral
Low Hb	106	44.91%	Low Hb	17	77.27%
Alcohol intake	25	10.59%	Menses	02	9.09%
Medication	16	6.77%	Low Weight	01	4.54%
Low Weight	10	4.23%	Lactation	01	4.54%
Typhoid	09	3.81%	Typhoid dysfunction	00	0.00%

Table-4: Causes and incidences of post-donation deferral (n=143).

Donors come reactive for	Numbers	% of total deferral
Anti HIV 1&/or 2 Positive	06	4.19%
HBsAg Positive	35	24.47%
Anti HCV Positive	04	2.79%
VDRL Positive	98	68.53%
Malarial antigen Positive	00	0.00%
Total	143	100%

DISCUSSION

A deferral rate study of blood donors may shed light on the health status of general population, which may affect the present and future blood supply. Adequate inflow of blood in blood bank is vital to serve the society optimally; simultaneously it is also essential that the blood collection procedure does not harm the donors as well as the recipient. Safe donor is the first step towards safe transfusion service. In order to quantify the loss due to deferred donors and to understand the health problem of donor population a retro specific study was conducted. The rate and reason for deferral differs from region to region and from the center to center at different period of time. Most of the donors in present study were male 95.67% (from August 2012-July 2016) and females accounted only 4.32%. The overall deferral rate of blood donors of our center from August 2012 to July 2016 was 3.36% which is far lower than the values reported by Zou et al^[5] which is 12.8% and H.Gajjar et al^[6] which is 11.16%. Such low deferral rate could be due to inclusion of more repeated donors in our study. However diverse range of deferral /rejection percentage has been documented by various researchers in their reports which is compiled and included as Table 5. The difference in the deferral incidences in their population which probably reflects the regional diversity and marked differentiation in whole blood donor eligibility criteria internationally. In our study of whole blood donor deferral we have categorized the cases in pre-donation deferral and post-donation deferral.

The incidences of pre-donation deferral were further subcategorized as temporary Pre-donation deferral and Permanent Pre-donation rejection. During August-2012 to July-2016, out of total 7721 registered donors 236 (90.77%) blood donors were deferred due to temporary reasons and 24 (9.23%) blood donors were deferred due to permanent reasons. These results matches with the report of Arsalan et al.^[7] who has reported the relevant rate of 10.0% and Custer et al.^[8] who has reported the rate of 10.6% in their study. In Pre-donation temporary deferral of blood donor's most common reason was low hemoglobin (52.11%) which is near to similar to study of H.Gajjar et al.^[6] (59.55%) where as some studies have reported very low rate (17.95%) by Rehman et al.^[1] All these can be actively and aggressively managed by calling them back after correction of their cause which can help to retain future donor pool. The most common reason for Permanent deferral in our study was high blood pressure (33.33%). Deferral rate of female in our study is 6.59%, significantly low deferral rate in female of our study could be due to inclusion of less number of female donors.

Amongst the post donation deferral due to one or more TTDs positivity, the rate of temporary and permanent post-donation deferral was 68.53% and 31.46% respectively.

Table 5: Comparative deferral rate reported by various researchers.

Categories		Our findings	Other studies	Relevant references
Total deferral rate		3.37%	4% 12.8% 11.16%	Talonu et al. ^[9] , John F and Varky R ^[10] Zou et al. ^[5] Gajjar
Deferral due to low hemoglobin value		52.11%	59.55% 40.7% 17.95%	Gajjar H. et al. ^[6] Rabeya Y et al. ^[11] Rehman et al. ^[1]
Gender wise deferral rate	Male	3.22%	4.06%	Layla A.M Bashawri. ^[12]
	Female	6.59%	19.85%	Layla A.M Bashawri. ^[12]
Pre donation temporary deferral		91%	84%	Sundar P. et al. ^[13]
Pre-donation permanent deferral		09%	16%	SundarP. et al. ^[13]

CONCLUSION

Findings of our study are summarized as follows.

- Ratio of male donors was far higher than female donors.

- Maximum cases of temporary pre-donation deferral were observed due to low hemoglobin value which demands to increase the public awareness about anemia and its prevention and treatment, which ultimately increase blood donor pool.
- Maximum cases of permanent pre-donation deferral were observed due to high B.P. which indicate overall health status of community and need the counseling about hypertension, cardiac problem and other risks related to it.

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