

The knowledge, attitude, and practice toward blood donation among voluntary and replacement blood donors in Ambala, India

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ABSTRACT

Background: An integrated strategy for blood safety is required for the provision of safe and adequate blood. Recruiting a sufficient number of safe blood donors is an emerging challenge. The shortage of blood in India is due to an increase in the demand, with fewer voluntary and limited number of replacement blood donors. A study on the knowledge, attitude, and the practice of donors may prove to be useful in the successful implementation of the blood donation programme. **Objectives:** The aim was to find the level of the knowledge, attitude, and practice of blood donation among voluntary and replacement blood donors. **Materials and Methods:** A hospital-based cross-sectional design was conducted among 800 blood donors to assess their knowledge, attitude, and practice with respect to blood donations. The statistical analyses were performed using the SPSS software. The associations between the demographic factors were analyzed using the Chi-square test. **Results:** Mean age of replacement group was $28 \pm 7.392\%$. Majority (82.4%) knew about their blood group, in replacement group 82.4% and in the voluntary group 92.2%. Majority (95.3%) of study subjects in replacement group had a good attitude toward blood donation, and 86.8% of study subjects in replacement group said precautions should be taken during blood donation. **Conclusion:** A majority of the donors were willing to be regular donors. The donors showed positive effects such as a sense of satisfaction after the donation. Creating an opportunity for blood donation by conducting many blood donation camps may increase the voluntary blood donations.


KEY WORDS: Voluntary; Replacement; Blood Donors; Knowledge; Safe Blood Transfusion

INTRODUCTION

“Blood connects us all” - was the theme for the World Blood Donor Day 2016. Blood transfusion is an important concern for the society, as it is lifesaving for patients with bleeding disorders, accidents, surgeries, inherited/acquired hematological diseases, and malignancies.^[1] There is only one amazing factory which makes the blood - “Human body.”^[2]

An essential element of human life is “blood” and there are no substitutes to it.^[3] A critical component in improving health care and in preventing the spread of infectious diseases globally is safe blood.^[4]

The recruitment of voluntary non-remunerated blood donors, the selection and care of blood donors, the quality-assured testing of donated blood for markers of Transfusion-Transmissible Infections (TTI), blood processing, and the safe and rational use of transfusion, is done by safety and availability of blood and blood components for transfusion.^[5] The availability of blood still remains short to meet the increased demand in spite of extensive efforts and a number of blood donation programs. The ideal rate for maintaining a country’s stock of blood and blood products at acceptable level can be maintained if 3–5% of the population donates blood every

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year according to the WHO. Unfortunately, 83% of the global population who live in developing countries have access to only 40% of blood supplied, and this blood in 60% of cases is collected from paid or replacement blood donors rather than from voluntary, non-remunerated low-risk donors.^[6]

Around 92 million of blood donation is collected globally from all types of donors.^[7] It is estimated that 12 million units of blood are the annual requirement of blood in India and the endeavor is to meet the blood needs through voluntary non-remunerated blood donation (VNRBD) of blood through a well-coordinated and networked blood transfusion service.^[8] Annual requirement of blood in Haryana is 1,25,000 units, of which 1,14,743 units are collected.^[9] All the blood banks organize voluntary blood collection camps in the premises to start an organized voluntary blood donation (VBD) movement in Haryana on 15th of every month.^[10]

The idea of honorary blood donations is a perfect example of engaging community into helping patients. Everyone between 18 and 65 years of age is allowed to be a donor.^[11] Blood donors can be categorized broadly as - voluntary blood donors, replacement blood donors, and professional blood donors, although professional donation is forbidden by law with effect from 1st January 1998.^[1]

NBP, in April 2002, was adopted by the Government of India, which aims to develop a nationwide system to ensure an adequate and safe blood supply.^[12] The first step toward blood safety is to encourage blood donation from VNRBD.^[13] These blood donors are the cornerstone of a safe adequate supply of blood and blood components. Promotion of VBD is done under safe blood program in India, and 1st October is celebrated as the "National VBD Day."^[14] A mobile app to locate the nearest blood bank was launched on 14th June 2015 by the National Blood Transfusion Council in collaboration with National Health Portal and Ministry of Health and Family Welfare.^[8] Keeping above facts in the view, it was planned to conduct a study to assess the knowledge level, attitude/belief, and practices regarding blood donation among the blood donors.

MATERIALS AND METHODS

Study Area

The study was conducted in the Blood Bank in the Department of Pathology of Maharishi Markandeshwar Institute of Medical Sciences and Research, Mullana, district Ambala, Haryana.

Study Population

The participants are coming to the Department of Blood Bank. These participants were both voluntary and replacement donors.

Inclusion Criteria

The participants who are willing to give consent and whose hemoglobin levels are more than 12 gm/dL were included in the study.

Exclusion Criteria

The following criteria were excluded from the study: Age <18 years and >65 years, weight <45 kg, suffering from any disease or on medication, and professional/commercial/paid donors.

Study Period

The study duration was 6 months, i.e., from January 2015 to December 2015.

Study Design

This was a hospital-based cross-sectional design.

Method of Sampling

Systemic random sampling technique was used for sample collection.

Sample Size

The sample size was decided taking into account the $n = 4$ pq/L².

Where n = minimum sample size required, P = expected prevalence rate, $q = 100-p$, and L = allowable error (10%). Literature review reveals that the overall prevalence was 35.65%, in a study by Manikandan *et al.*,^[15] in Tamil Nadu. Hence, keeping this study into consideration, the sample size was calculated assuming a prevalence of 35% and the sample size for the study came out to be 743, and the sample size was rounded off to 800 donors.

Sampling Technique

Approximately 2000 donors attend the blood bank in a year. Considering sample size of 800, sampling fraction was calculated; therefore, in the current study, every 3rd donor was included for the study, and till the sample size completed. However, 6.6% of the blood donors refused to participate, and therefore, a total of 747 donors were participated in the study.

Study Tools

A self-designed, pre-tested, semi-structured, open- and close-ended questionnaire was used for collecting relevant information.

Ethics Consideration

The study was approved by the Institutional Ethics Committee. The present study did not impose any financial burden to the participants, and an informed and written consent was taken.

Data Analysis

The data were analyzed using the SPSS Version 21. Percentages and means were calculated for the data. Chi-square test of significance was used. $A P < 0.05$ was considered to be statistically significant.

RESULTS

In the present study [Table 1], it was found that males were more in both the groups. Mean age of replacement group was 28 ± 7.3925 , and for voluntary group, it was 27 ± 8.3068 .

Majority belongs to 21–30 years of age in both the groups, majority were Hindus and mostly belong to rural area, and upper class group was dominant for blood donation in both the groups. About their diet, majority (57.6%) of study subjects in replacement group and 53.7% in voluntary group were non-vegetarians. About their smoking behavior, 53.9% of study subjects in replacement group and 64.3% in voluntary group were non-smokers, and 73.2% of study subjects in replacement group and 71.4% in voluntary group were non-alcoholic.

knowledge among the study subjects about their own blood group. 82.4% subjects in replacement group and 92.2% subjects in voluntary group correctly knew about their own blood group. In replacement group 70.8% and in voluntary group, 52.5% of study subjects didn't know about minimum and maximum age of donation. A total of 44.3% were knew about minimum weight for blood donation, in replacement group 38.8% and

Table 1: Sociodemographic profile of the respondent

Variables	Replacement		Voluntary		Total		χ^2, P
Sex							
Male	380	89.4	297	92.2	677	90.6	$\chi^2-1.721, P-0.190$
Female	45	10.6	25	7.8	70	9.4	
Age							
<20	47	11.1	71	22.0	118	15.8	$\chi^2-19.630, P-0.001$
21–30	253	59.5	155	48.1	408	54.6	
31–40	95	22.4	70	21.7	165	22.1	
41–50	27	6.4	21	6.5	48	6.4	
>50	3	0.7	5	1.6	8	1.1	
Area							
Rural	271	63.8	177	55.0	448	60.0	$\chi^2-5.904, P-0.015$
Urban	154	36.2	145	45.0	299	40.0	
Religions							
Hindu	281	66.1	203	63.0	484	64.8	$\chi^2-21.622, P<0.001$
Sikh	70	16.5	69	21.4	139	18.6	
Muslim	44	10.4	10	3.1	54	7.2	
Others	30	7.1	40	12.4	70	9.4	
Ses							
Class 1	321	75.5	275	85.4	596	79.8	$\chi^2-11.087, P-0.011$
Class 2	87	20.5	39	12.1	126	16.9	
Class 3	15	3.5	7	2.2	22	2.9	
Class 4	2	0.5	1	0.3	3	0.4	
Diet							
Vegetarian	180	42.4	149	46.3	329	44.0	$\chi^2-1.142, P-0.285$
Non-vegetarian	245	57.6	173	53.7	418	56.0	
Smokers							
Yes	196	46.1	115	35.7	311	41.6	$\chi^2=8.160, P-0.004$
No	229	53.9	207	64.3	436	58.4	
Alcohol							
Yes	114	26.8	92	28.6	206	27.6	$\chi^2-0.280, P-0.597$
No	311	73.2	230	71.4	541	72.4	

Table 2: Knowledge among study subjects about blood donation

Variables	Replacement		Voluntary		Total		χ^2, P
Blood group							
Yes	350	82.4	297	92.2	647	86.6	$\chi^2=15.433, P<0.001$
No	75	17.6	25	7.8	100	13.4	
Minimum and maximum age of donation							
Yes	124	29.2	153	47.5	277	37.1	$\chi^2=26.408, P<0.001$
No	301	70.8	169	52.5	470	62.9	
Minimum weight of donor							
Yes	165	38.8	166	51.6	331	44.3	$\chi^2=12.030, P<0.001$
No	260	61.2	156	48.4	416	55.7	
Number of times donation							
Yes	168	39.5	160	49.7	328	43.9	$\chi^2=7.678, P=0.006$
No	257	60.5	162	50.3	419	56.1	
Diseases transmitted							
Yes	118	27.8	121	37.6	239	32.0	$\chi^2=8.108, P=0.004$
No	307	72.2	201	62.4	508	68.0	
Blood volume collection							
Yes	232	54.6	201	62.4	433	58.0	$\chi^2=4.615, P=0.032$
No	193	45.4	121	37.6	314	42.0	
Knowledge about storage of blood							
Yes	105	24.7	114	35.4	219	29.3	$\chi^2=10.11, P=0.001$
No	320	75.3	208	64.6	528	70.7	
Duration of donation process							
Yes	153	36.0	179	55.6	332	44.4	$\chi^2=28.474, P<0.001$
No	272	64.0	143	44.4	415	55.6	
Types of blood donor							
Yes	172	40.5	174	54.0	346	46.3	$\chi^2=13.561, P<0.001$
No	253	59.5	148	46.0	401	53.7	
Tests to ensure safe blood							
Yes	119	28.0	120	37.3	239	32.0	$\chi^2=7.231, P=0.007$
No	306	72.0	202	62.7	508	68.0	

Table 3: Attitude of study subjects toward blood donation

Attitude	Replacement <i>n</i> =425 (%)	Voluntary <i>n</i> =322 (%)	Total <i>n</i> =747 (%)	χ^2, P
Good	405 (95.3)	319 (99.1)	724 (96.9)	$\chi^2=8.74, P=0.003$
Not good	20 (4.7)	3 (0.9)	23 (3.1)	
Asking relatives for blood donation				
Yes	395 (92.9)	320 (99.4)	715 (95.7)	$\chi^2=18.51, P<0.001$
No	30 (7.1)	2 (0.6)	32 (4.3)	

in the voluntary group 51.6%, respectively. Majority 60.5% in replacement group and 50.3% in voluntary group did not have correct knowledge about the number of times a person can donate in a year. Majority 72.2% of study subjects in replacement group and 62.4% in voluntary group did not have correct knowledge about the diseases transmitted through blood transfusion, and 54.6% in replacement group and 62.4% in voluntary group had correct knowledge about the blood volume collected. 75.3% in

replacement group and 64.6% in voluntary group did not have correct knowledge about the duration of storage of blood. 36.0% in replacement group and 55.6% in voluntary group have correct knowledge about the duration of donation process. Knowledge about the types of blood donor in case of replacement group was 40.5% and in voluntary group 54.0%. Only 28.0% of replacement group and 37.3% of voluntary group were knew about the tests performed to ensure safe blood.

Source of knowledge regarding blood donation [Figure 1]: Most common source was TV/Radio/Internet 84.2%, followed by newspaper/magazine/advertisement 51.1%, heard from people 24.7%, and school/college 23.3% in replacement group, and in the voluntary group also, the most common source was TV/Radio/Internet 65.8%, followed by school/college 31.1%, newspaper/magazine/advertisement 29.8%, workshop/blood camp 17.1%, and heard from people 16.5%.

Positive attitude is shown by both the groups [Table 3]. 95.3% of study subjects in replacement group and 99.1% in voluntary group had good attitude toward blood donation, and the difference was found to be statistically significant. Need of asking relatives for blood donation 92.9% of study subjects in replacement group and 99.4% in voluntary group said relatives should be asked for donation, and the difference was found to be statistically highly significant.

Reasons of blood donation [Figure 2]: The most common reason among replacement group was knew someone who needed blood 69.9%, followed by someone asked to go with them being 60.5%, they give regularly being 15.8%, noble act 11.5%, and family/friend/classmate encouraged for it being 11.3%, whereas among the voluntary group, the most common reason of blood donation was noble act 93.8%, followed by family/friend/classmate encouraged for it being 27.0%, they give regularly being 20.5%, they wanted test result for infectious disease being 16.5%, knew someone who needed blood being 13.0%, someone asked to go with them being 8.1%, and wanted to receive gift being 7.8%, respectively.

Practice regarding blood donation [Table 4]: In replacement group, 41.4% of study subjects never donated before, followed by 37.6% who donated once before and only 2.8% of the study subjects had donated more than 5 times, whereas in voluntary group 36.6% were donated blood once before, followed by 35.7% who had never donated before and only 1.6% were donated blood more than 5 times. 77.9% of study subjects in replacement group and 91.0% in voluntary group wanted to be regular donors, and the difference was found to be statistically highly significant.

DISCUSSION

In the present study, it was found that 86.6% of the respondents knew about their own blood group while 13.4% did not know. The comparable observations were also found in the study conducted by Kumari and Raina, where 42.9% of the participants knew about blood groups, whereas in a study done by Mirza *et al.*, 90.1% of the respondents knew about their blood groups.^[16,17]

According to the studies conducted by Patel *et al.*, Rajshree and Joshi, and Singh *et al.*, blood Group B was seen with

the highest frequency being 39.4%, 36.4%, and 38.83%, respectively, and the least frequency was seen in Group AB with 7.86%, 9.4%, and 9.54%, respectively, which was similar to the present study being 31.1% and 9.8%, respectively.^[18-20]

The present study observed that only 37.1% of the study donors were aware of the recommended age of blood donation, 44.3% of the respondents had knowledge about lowest necessary body weight for blood donation, and 43.9% were aware of the interval of blood donation. The findings were similar to the studies done by Chopra and Jauhari, Devi *et al.*, and Uma *et al.*, where 90%, 56.8%, and 79.4% of donors knew about age limit for donation and 48.9%, 36.5%, and 51.2% of donors knew about correct interval of the donation, whereas in the studies done by Singh *et al.* (2015) and Giri *et al.* (2012), 84.75% and 72% of the donors were aware of minimum weight required for blood donation.^[12,13,20,21,23]

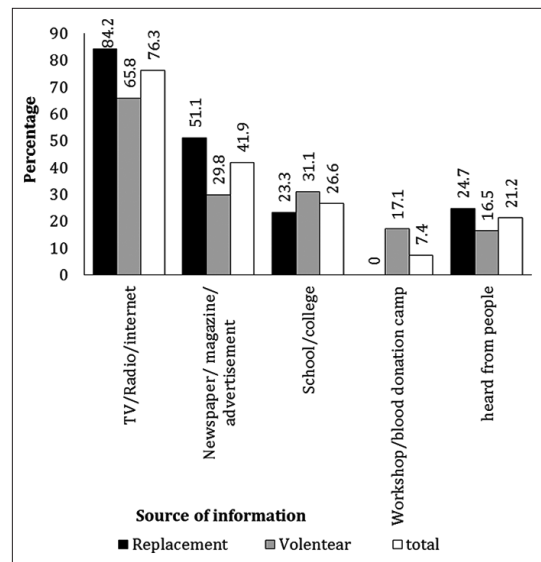


Figure 1: Sources of information regarding blood donation

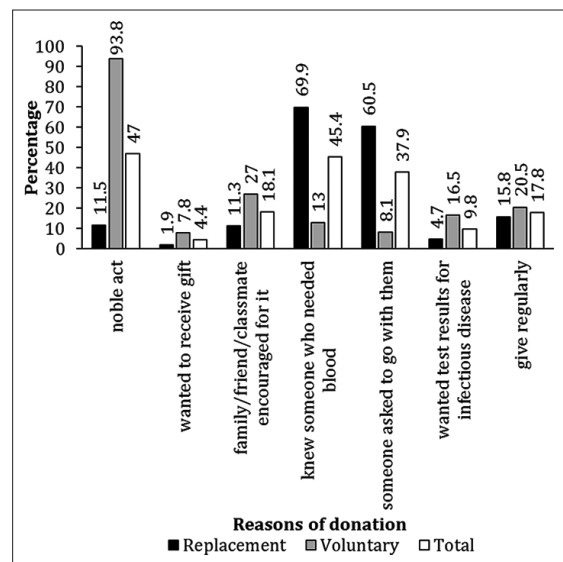


Figure 2: Distribution of donors according to the reasons of donation

Table 4: Practice among study subjects toward blood donation

Practice	Replacement	Voluntary	Total	χ^2, P
	<i>n</i> =425 (%)	<i>n</i> =322 (%)	<i>n</i> =747 (%)	
Donated blood before				
Never	176 (41.4)	115 (35.7)	291 (39.0)	$\chi^2=8.274, P=0.041$
Once	160 (37.6)	118 (36.6)	278 (37.2)	
2–5 times	77 (18.1)	84 (26.1)	161 (21.6)	
>5 times	12 (2.8)	5 (1.6)	17 (2.3)	
Willingness of being a regular donor				
Yes	331 (77.9)	293 (91.0)	624 (83.5)	$\chi^2=22.897, P<0.001$
No	94 (22.1)	29 (9.0)	123 (16.5)	

In the present study, 58.0% of the donors knew about the total blood volume collected at each donation, 29.3% of the respondents had correct knowledge about the duration of the blood stored at blood bank, and 44.4% of the donors knew about the correct duration of a donation process. These findings were similar with the studies done by Uma *et al.* and Mishra *et al.*^[21,24]

46.3% of the donors in the present study knew about the different types of blood donors which was almost similar to the study conducted by Singh *et al.* (2015), where it was 32.4%, whereas the finding was quite high (84.7%) in a study done by Devi *et al.*^[13,22]

The donors were also questioned about sources of information which had contributed to their awareness about the blood donation process. TV/Radio/Internet (76.3%), followed by newspaper/magazines/advertisement (41.9%), school/college (26.6%), heard from people (21.2%), and workshop/donation camp (7.4%) were found to be the most common source of knowledge regarding blood donation in our present study. Similar finding was seen in the study done by Shidam *et al.* and Olejniczak *et al.*^[6,11]

Majority of the donors (96.9%) in the present study showed a positive attitude toward a donation of blood. These findings were found similar to the studies done by Al-Rahili *et al.* and Agravat *et al.*, where majority of donors subjects showed a positive attitude toward blood donation (99% and 96.6%, respectively).^[25,26]

It was seen in the present study that the major reasons of donation were noble act (47%), followed by knew someone who required blood 45.4%, someone asked to go with them being 37.9%, and while 18.1% of donors said they were encouraged by their family/friend/classmate. Comparable findings were found in a study done by Mishra *et al.*, Abderrahmana and Salehb, and Benedict *et al.*^[24,27,28]

In the present study, majority of the donors (39%) had never donated blood previously, 37.2% of donors who had donated

blood once previously, while 21.6% had donated 2–5 times in past and only 2.3% had donated more than 5 times in the past. The findings were similar in the study done by Devi *et al.* and Salaudeen *et al.*^[13,29]

It was also observed, in the present study, that 83.5% of the donor subjects were willing to donate blood in future which is comparable to the study done by Devi *et al.*, Uma *et al.*, and Kumari and Raina where the donors who were willing to donate blood in future were 89.8%, 99.4%, and 90.13%, respectively.^[13,16,21]

In the studies done by Uma *et al.*, Abderrahmana and Salehb, and Alfouzan, only 3.4%, 1.6%, and 3.7% of the respondents experienced some problems after donation, which was almost similar to the present study (1.3%).^[21,27,30]

Recommendations

According to the present study, the following recommendations such as Health education: Role of health care institutions and its student's in VBD are pivotal. Information, education, and communication activities should be increased using mass media such as TV, Radio, and Internet, and regular continuing medical educations and seminars should be conducted. It must also focus on removing the myths and misconceptions about blood donation and keep the people well informed about the importance of saving life through blood donation. Provision of better facilities: The general public must be encouraged and motivated to donate blood. Making people aware of recent findings such as donation is associated with a lower risk of cardiovascular events, reduces the insulin resistance and increases the insulin sensitivity, and thus improves the glucose balance in the body. There should be provision of incentives such as screening of health; T-shirts, meal vouchers, and entertainment passes; and certificates, pins, medals, badges, and pens.

CONCLUSION

Knowledge about their own blood group was found to be significantly associated with age, educational status, and

socioeconomic status. TV/Radio/Internet was found to be the most common source and showed positive attitude toward donation of blood. It is important to create opportunities regarding blood donation, but it is equally important to spread the awareness of VBD. Awareness or knowledge can only change behavior, if the facilities for adopting such practices are readily available. Availability of "blood donor diary" at every blood bank containing the details of prospective blood donors could also go a long way. Non-monetary incentives for blood donation such as appreciation certificates may lead to the achievement of goal of 100% VNRBD. Voluntary donation system is by far the best, and it needs to be strengthened. Thus, the study of the various factors that could change the perception and awareness about blood donation among the general population may come out to be useful for the successful implementation of blood donation program in the state, especially in improving the VBD system. India is a multicultural and multilingual country. Any short-term solution may not help us to reach the goal of universal VBD in India in the near future.

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