

A Cross-Sectional Study of Sociodemographic Profile of Blood Donors and Their Knowledge about Blood Donation in a Rural Area of Kerala

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ABSTRACT

BACKGROUND

Even in the presence of sufficient voluntary blood donors, the need of blood is not met yet. We wanted to evaluate the causes that hinder the smooth functioning of well-maintained blood transfusion services (BTS).

METHODS

This is a population based cross-sectional study conducted among blood donors from voluntary outreach blood donation camp for period of one year. Total 1536 blood donors from 32 blood donation camps were subjected to study for the socio-demographic characteristic and their knowledge of blood donation. Statistical analysis of data was done using Microsoft Excel, analysed using statistical package for social sciences (SPSS) ver.16 software.

RESULTS

A total of 32 blood donation camps were conducted during the study period that provided 1536 donors. In most of the camps, male donors (75 %) were more than female donors. Donors of age group of 30 to 39 years (43.9 %) were more when compared to others. Donors those who were married accounted for 79.9 %. Blood donors of Hindu religion (53 %) were more.

CONCLUSIONS

The main hindrance for blood donor motivation is lack of knowledge. Literacy and chance to mingle in society have a positive effect on blood donor motivation. Targeting of effective donor motivation, recruitment, and retention were attained by conducting awareness classes, seminars, workshops, and visual communication modalities.

KEYWORDS

World Health Organization, Altruistic Blood Donor, Blood Transfusion Services, Transfusion Transmitted Infections, Blood Components and Plasma Derivatives, Director General of Health Services (DGHS), National Blood Transportation Council (NBTC)

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BACKGROUND

To deliver a high-quality health care system, the demand of a well-systematized blood transfusion service (BTS) is very important. An amalgamated strategy for blood safety is essential for reduction of transfusion transmissible infections (TTIs) and there by provide a safe blood transfusion services to the beneficiary. Three keystone elements of an integrated strategy of blood transfusion service include collection of blood only from voluntary altruistic blood donors, follow best method of screening for transfusion transmitted infections (TTIs) and good rationale for blood transfusion practices.¹

Human blood is a necessary component of human life which is globally accepted as one of the most significant element that retain basic life support and there is no alternative for blood and blood product as yet.² Adequate supply of safe blood and blood products is an analytical facet in improving health care system.³ Even though blood transfusion saves millions of lives each year, a competent and cautious blood supply is still challenging task for developing countries like India. Hence, world health organization (WHO) has introduced a policy which aims to achieve 100 % voluntary blood donation by the year 2020.⁴ In 2011, world health organization noted that worldwide blood donation was about 90 million units comprising all types of blood groups, among them 45 % donors were under 25 years. Among them, female blood donors were less compared to male blood donors. In the twenty-five countries of worldwide blood donation, female donors were 40 %, but in some countries female blood donors were more.⁵

In India that picture was different. Only six per cent of total donor populations were females during the year 2011.

Our nation demand is about four crore units of blood in every year but we procure only an average of 40 lakh units of blood and blood product. A nation can't achieve the need for blood if only one percentage or three percentage of its eligible population contribute to blood donation. In Indian scenario, on an average, 50 % of eligible donors come forward to donate blood.⁶ As a result of advancement of treatment modalities of clinical medicine, the requirement of blood and blood product is growing day by day. Every patient's requirements for blood and blood products differs according to clinical conditions. Since transfusion medicine is an upcoming specialty better treatment protocols are being introduced, meanwhile which found to have significant relief to several disease conditions. In the advent of modern transfusion services, instead of using whole human blood, specific portions of that whole human blood is made as blood components like packed red concentrate, platelet concentrate and plasma derivatives e.g., factor VIII concentrates or anti-haemophilic factor concentrate. So, one unit of whole human blood can satisfy four or more patient's needs. But unavailability of adequate whole human blood as raw material for blood component is a big issue. When voluntary blood donations were not sufficient to meet the need of patient's requirement, the hospitals impart pressure on the relatives of a patient to donate. This will eventually lead to donate blood to a maximum on replacement basis. Blood banks officials and the relatives of the patient urge to send replacement donors to maintain the blood inventory. It

is frequently observed that when the relatives of the patients are forced to find donors, professional blood donors come to donate blood in the form of being replacement donors. It is found that professional donors are most important source of transfusion transmitted infection (TTI) since they are high-risk behaviour group.⁷

Even though in most of the developing countries, replacement blood donors come from their own family, paid donors seem to be remarkable source of blood component for transfusion. The unavailability of such safe blood adversely affects transfusion dependent anaemia patients, patients who need massive transfusion, women who had bad obstetric history, chemotherapy patients and patients who underwent major surgeries with blood loss.⁸

The problem in getting voluntary blood donation in developing countries is ignorance, misconceptions and fears about the blood donation procedure and its sequela, which reflect as number of voluntary donors, come in front for blood donation. This study was therefore conducted with an aim to find parameters that lead people towards voluntary blood donation to encompass the situations for need of blood and to light the pathway where we can enhance eligible blood donors for voluntary blood donation in a state like Kerala which is a part of developing country as well.

Objectives

To study the socio-demographic pattern of blood donation in a rural area and to analyse the effect of knowledge of blood donation on such socio-demographic characteristic of the voluntary blood donation, thereby modifying the donor motivation, recruitment and retention modalities which they follow now.

METHODS

This population based cross-sectional study was conducted in hospital-based blood bank in coastal area of Alappuzha in the state of south Kerala, India for a period of one year from 01 January 2015 to 31 December 2015, without any interventions. The study population was blood donors selected from voluntary outreach camps during the period. There was a total study population of 1536 voluntary blood donors from 32 different outreach voluntary blood donation camps. All these camps were from different organizations in rural areas of Alappuzha district. As per blood donation criteria age for donation is 18 to 60 years, so study population comprises of 1536 voluntary blood donor between the age of 18 and 60 years.

The recruitment of 1536 adult for the study was carried out by cluster sampling technique. Main parameters that analysed were socioeconomic status, age, sex, marital status, occupation, education, religion, and community status. Before conducting the voluntary outreach camp in an area, awareness class was conducted by the medical officers and social health workers to organizers and blood donors, and provided them with necessary brochures and leaflets relating to knowledge about blood donation and its importance related to socio-demographic situation prevailing

in India. This was helpful to gather more reliable persons towards each blood donation camp and to make a list of blood donors willing to participate in outreach camp. On the day of such an arranged voluntary outreach blood donation camp, a closed-ended questionnaire contained 42 questions relating to socioeconomic and demographic characteristics, questions regarding permanent and temporary criteria of blood donation was given to those blood donors. This pre-donation questionnaire was prepared according to manual of Director General of Health Services (DGHS) and National Blood Transportation Council (NBTC). A standard operative procedure was made by initial translation, back-translation and re-translation of DGHS criteria as well as NBTC for ensuring feasibility, acceptability, time management, validity and reliability at the institute with assistance from the faculty members and other experts. The written informed consents in regional language were taken from each blood donor before the interview and answering of the questionnaire. The participants were given the option to either participate or not participate in the study based on their desire to make sure that they are true altruistic voluntary blood donors. After filling up of given questionnaire by an interview technique, the principal investigator collected the data. Knowledge score was analyzed with the questionnaire as well as interview by principal investigator, and categorized the knowledge score as poor knowledge score, moderate knowledge score as 33.2th Percentile and high knowledge score as 66.8th percentile.

Statistical Analysis

Statistical analysis of data was arranged as bivariate and multivariate variables using Microsoft Excel. For analysis of data, 16th version of SPSS software was used. After analysis, continuous variables were expressed as mean plus or minus two standard deviation and qualitative data was expressed as proportions and percentages. Risk estimation was calculated using odd's ratio with 95 % confidence interval. Independent t test was used for comparing qualitative data between groups of the study and categorical variables were compared using chi square test. All P values were two tailed and values of P < 0.05 were considered statistically significant.

RESULTS

There were out reach blood donation camps in all months of the years, highest number of camps were in the month of July and lowest number in the month of March (Table1). There were a total of 32 blood donation camp during the study period with average donation of 48 (48 plus or minus 60.9 standard deviation). Total number of camps and total donation was noticeably more in month of June where world blood donor day was celebrated and in the month of October where the National blood donation day comes, that is 243 and 209 respectively.

Among 1536 adults those come forward for voluntary blood donation through 32 voluntary outreach blood donation camps, 30 % of the donors had poor knowledge

score about blood donation while 21 % had moderate knowledge score and 49 % were found to have a high knowledge score [Table 2].

Month	No. of Blood Donation Camps	Total Donation
January 2015	2	86
February 2015	3	41
March 2015	1	144
April 2015	2	72
May 2015	3	128
June 2015	5	243
July 2015	2	91
August 2015	3	166
September 2015	3	176
October 2015	4	209
November 2015	2	102
December 2015	2	78

Table 1. Monthly Distribution of Voluntary Outreach Blood Donation Camps

Knowledge Score	Number	Percentage
Poor	461	30 %
Moderate*	322	21 %
High**	753	49 %
Total	1536	100 %

Table 2. Knowledge Scoring

Moderate knowledge score was 33.2th percentile, high knowledge score was 66.8th percentile. It was observed that there was a statistically significant knowledge score with respect to occupation (P < 0.005) and education (P < 0.001) in the bivariate analysis. [Table 3]. Government servants comprise huge part of blood donation (41 %) when compared to donors of other occupation. Similarly, the knowledge score and number of participants was more among blood donors with education qualification of graduation and post-graduation.

Socio-Demographic Variable	Knowledge about Blood Donation			Number (%)	Chi Square (P Value)
	Poor	Moderate	High		
Occupation	Unemployed	124	49	70	0.004
	Government servant	135	122	382	
	Business officials	139	97	213	
	Agriculture workers	63	54	88	
	Total	461	322	753	
Education	Illiterate	60	10	0	<0.001
	Below 10 th standard	68	15	68	
	Higher secondary school	58	84	384	
	Graduate	90	98	101	
	Postgraduate	185	115	200	
Total	461	322	753	1536 (100 %)	

Table 3. Correlation of Sociodemographic Characteristics with Knowledge of Blood Donation Which was Found to Be Significant in Bivariate Analysis

Donors in age group of 30 to 39 years (43.9 %) were more predominant part of donation. Male donors (75 %) came forward for voluntary blood donation compared to female blood donors. When marital status of donors was analysed, married people (79.9 %) showed more interest towards voluntary blood donation. The believers of different religion showed different pattern of strength for blood donation, among them Hindu (53 %) were comparatively more than Christians and Muslims. But no statistical relevance noted between the knowledge of blood donation with variables like age, gender, marital status and religion. [Table 4].

Socio-Demographic Variable	Knowledge about Blood Donation			Number (%)	Chi Square (P Value)
	Poor	Moderate	High		
Age group	< 30 years	142	52	251	424 (27.6 %)
	30 – 39 years	166	175	322	675 (43.9 %)
	40 years and above	153	95	180	437 (28.5 %)
	Total	461	322	753	1536 (100 %)
Sex	Male	331	248	572	1152 (75 %)
	Female	130	74	181	384 (25 %)
	Total	461	322	753	1536 (100 %)
Marital status	Married	355	273	590	1228 (79.9 %)
	Single	106	49	163	308 (20.1 %)
	Total	461	322	753	1536 (100 %)
Religion	Hindu	244	185	382	814 (53 %)
	Christian	183	117	279	584 (38.1 %)
	Muslim	34	20	92	138 (8.9 %)
	Total	461	322	753	1536 (100 %)

Table 4 Correlation of Sociodemographic Characteristics with Knowledge of Blood Donation Which was Found to Be Not Significant in Bivariate Analysis

Knowledge score for blood donation showed statistical significance in bivariate analysis with occupation and education. The blood donors those who are employed had a higher knowledge score than the unemployed personals. Similarly, blood donors from higher educational levels have high knowledge score about voluntary blood donation, and are motivated and recruited easily.

DISCUSSION

In scrutiny regarding the inconsistency in blood donation behaviour pattern and to tackle the problems to improve voluntary blood donation expressed that 49 % of total blood donors had significantly higher knowledge score and the same was associated to be statistically significant with the occupation and the education. There was a comparable study in the Indian subcontinent on analysis of factors related to knowledge of blood donation by Raghuwanshi B et al. conducted at Maharashtra in year 2004.⁹

The Baltimore study revealed that decreased rates of voluntary blood donation by the general public have been assigned to a variety of socioeconomic, medical and attitudinal factors. Lack of apprehension about the necessity for donation, fright of misbelieve like will get infected with human immunodeficiency virus (HIV) and other serious blood born infections while donating blood and loss of physical well-being after donation have been proposed as potential reasons for ethnic and racial disparities in blood donation.¹⁰ The socio-demographic determinants like age, gender, marital status, and religious thoughts did not have any influence on the awareness of blood donation thereby we could not increase the voluntary blood donation. The study done at Saudi Arabia also found predominance of male (55.1 %) blood donors in the study than female donors (45 %).¹¹ The females need to get more motivation as most of the females step back because of the dare about post donation reactions and insufficient good health like anaemia, low body weight. Religious myths are still being stickered in some believers mind. Such people demand autologous

transfusion, and it is very hard to change such thought storms and to drop down since they developed this belief from childhood onwards and same thing has been practiced by their ancestors without affecting any deleterious effect. This observation was comparable with a study conducted in Thailand among students of Chulalongkon University in which 80 % of population were well known about blood donation but 11 % of the participants donated blood voluntarily with least knowledge of safe and healthy blood donation.¹² The same evidence was also put forward in the study among students of Delhi university by Saleem M et al.¹³ Donors in the age group of 30 - 39 years are more compared to other age groups.

The overall inference of the study leads to the conclusion that greater knowledge about blood donation is beneficial to promote donation and that specific campaigns are demanded to convert this into actual altruistic voluntary donation.

In study conducted at United States in 1973 , it was noted that educational strata and family per capita income are evident indicators of chance for someone to donate blood.¹⁴ Primary measure to donate blood is altruism (i.e., a selfless concern to help others such as friends and relatives). In several national disasters conditions, such a blood donor’s perceives that it’s her or his civic duty to join whole heartedly in deteriorating situations, thus this attitude is benefitted and plays main role in disaster management.¹⁵⁻¹⁷ Since the audio–visual modalities have great impact in health awareness, one stride in that path to be useful for improving the good blood transfusion services is by providing awareness classes in medias such as television, radio, social media, advertisement and providing blood donation information leaflet, modules and posters during blood donations camps and special days like World blood donor day, National blood donation day, National AIDS day etc.¹⁸ These kind of donor motivation has good results. This is what we found in our study that during the month of June in which world blood donor day comes and during the month of October where the National blood donation day is celebrated, total number of voluntary blood donation camps as well as total monthly blood donation were huge compare to other months. Such motives were also established in Kenya National Blood Transfusion Services Red Cross and their various universities should organize periodic interactive awareness sessions utilizing the mass media (TV, Radio) and social media to achieve safe and effectively targeted blood donation practices.^{19,20}

CONCLUSIONS

The factors of the research stipulated that the insights toward blood donation could be substantiated to a large extent by knowledge and was also significantly related to the occupation and education among the general population. The regular move of voluntary blood donors will have a positive effect on the different categories of society leading to minimization in irrelevant fear associated with voluntary blood donation. Better understanding of blood donor motivations was key factor to improve fruitful donor

recruitment and retention programs. By this study, we were able to effectively motivate prospective donors of different socioeconomic and cultural background of the community.

Data sharing statement provided by the authors is available with the full text of this article at jebmh.com.

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REFERENCES

- [1] National Blood Policy: 2003. <http://www.unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN00984>
- [2] An Action Plan for Blood Safety. National AIDS Control Organization: Ministry of Health and Family Welfare, Government of India: Jul 2003: p. 7.
- [3] Agrawal A, Tiwari AK, Ahuja A, et al. Knowledge, attitude and practices of people towards voluntary blood donation in Uttarakhand. *Asian J Transfus Sci* 2013;7(1):59-62.
- [4] Benedict N, Usimenahon A, Alexander NI, et al. Knowledge, attitude and practice of voluntary blood donation among physicians in a tertiary health facility of a developing country. *IJBTI* 2012;2:4-10.
- [5] Shenga N, Thankappan KR, Kartha CC, et al. Analyzing socio-demographic factors amongst blood donors. *J Emergencies Trauma Shock* 2010;3(1):21-25.
- [6] WHO. Blood Safety. WHO. Regional Office for Africa. 2017. <https://www.afro.who.int/health-topics/blood-safety>. Accessed on 12 January 2020.
- [7] Damesyn MA, Glynn SA, Schreiber GB, et al. Behavioural and infectious disease risks in young blood donors: implications for recruitment. *Transfusion* 2003;43(11):1596-1603.
- [8] Makroo RN. Compendium of transfusion medicine. New Delhi: Alps Printers 1999: p. 91-92.
- [9] Raghuwanshi B, Pehlajani NK, Sinha MK. Voluntary blood donation among students - a cross-sectional study on knowledge and practice vs. attitude. *J Clin Diagn Res* 2016;10(10):18-22.
- [10] Boulware LE, Ratner LE, Ness PM, et al. The contribution of socio-demographic, medical and attitudinal factors to blood donation among the general public. *Transfusion* 2002;42(6):669-678.
- [11] Wiwanitkit V. Knowledge about blood donation among a sample of Thai university students. *Vox Sanguinis* 2002;83(2):97-99.
- [12] Fisher AA, Laing JE, Stoeckel JE, et al. *Hand Book for Family Planning Operations Research Design*. 2nd edn. New York: Population Council 1991: p. 45. Accessed on 3 January 2020. <https://www.popcouncil.org/uploads/pdfs/HbkFPOR.pdf>.
- [13] Saleem M, Kumar N, Sultana A, et al. Knowledge, attitude and practices towards blood donation: a study among students of Central Universities of Delhi *J of Medical Erudite* 2015;3(2):23-38.
- [14] Blood donor characteristics and types of blood donations. United States-1973, Department of Health, Education and Welfare, Mar 1976.
- [15] Glynn SA, Kleinman SH, Schreiber GB, et al. Motivations to donate blood: demographic comparisons. *Retrovirus Epidemiology Donor Study. Transfusion* 2002;42(2):216-225.
- [16] Glynn SA, Busch MP, Schreiber GB, et al. Effect of a national disaster on blood supply and safety: the September 11 experience. *JAMA* 2003;289(17):2246-2253.
- [17] Nguyen DD, Devita DA, Hirschler NV, et al. Blood donor satisfaction and intention of future donation. *Transfusion* 2008;48(4):742-748.
- [18] Valentine's Day blood donation camp. Accessed on 12 January 2020. <https://amref.org/uncategorized/valentines-day-blood-donation-campaign/>.
- [19] KNBTS. Launch of bleed for the throne blood donation drive at The Kenya National Archives Grounds, Nairobi On 14th March 2019. Kenya National Blood Transfusion Service. 2019. <https://nbtkenya.or.ke/remarks-by-dr-josephine-githaiga-director-kenya-national-blood-transfusion-service>. Accessed on 10 January 2020.
- [20] Oduor M. Remarks by Dr. Margaret Oduor, Director Kenya National Blood Transfusion Service during the Transition of CDC Foundation to MHealth Kenya. Accessed on 10 January 2020. <https://nbtkenya.or.ke/remarks-by-dr-margaret-oduor-director-kenya-national-blood-transfusion-service-during-the-world-blood-donor-day-2015/>.