



## Awareness and practice regarding blood donation among people visiting a tertiary care centre in Uttar Pradesh, India

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### Abstract:

Background: In spite of increasing demand for blood and blood products, people have inadequate knowledge and interest in donating blood. This study was conducted to assess the understanding and practice of blood donation among people visiting a tertiary care centre in Barabanki, Uttar Pradesh. Methods: A cross-sectional survey was done among people registering as outpatient in a tertiary care centre to find their awareness regarding blood donation and to assess practice regarding the same. A total of 436 participants were enrolled using convenience sampling. Details including sociodemographic characteristics, awareness and practice regarding blood donation were collected. Data analysis was done using SPSS 15. Descriptive analysis for categorical data was summarized as frequency and percentage while Chi-square & Fishers' exact tests were used to find the difference between two categorical/qualitative variables. Results: 65.6% of participants knew their blood group. Majority were aware that diseases like HIV/STD and Hepatitis could be transmitted through blood transfusion while 5.5% of participants believed that it could also transmit Cancer. Further, 15.6% of the respondents had donated before which was significantly higher among males than females ( $p < 0.001$ ). Among those who donated, voluntary donation was more common than replacement donation. Fear of pain/needle (47.8%), ill-health/co-morbidities (41.3%) and lack of opportunity (65.8%) were main causes found for not donating blood. Conclusion:- Awareness related to blood donation among participants was seen to be quite low while practice was comparatively satisfactory. This information could help in implementing suitable donor gathering strategies and increasing awareness and practice among people through proper planning.

Key-words: Blood; Blood Donation; Awareness; Practice

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**Introduction:** Blood donation continued to be the key source of blood and all its components globally. In spite of the wide promising research being carried out, a proper substitute for

blood products or whole blood is not yet available.(1) Blood donation is a process which advances health and diminishes untimely death. However, lacs of the patients don't have access to blood transfusion even when they need it.(2) According to a report submitted by the WHO in the year 2020, out of total 118.5 million blood donations worldwide, 40% were collected in high income countries. In these countries, 75% of all the transfusions were found to be among patients aged 60 years and above while in low income nations, nearly 54 % of blood transfusions were done to children aged below 5 years.(3) Further, access to safe blood is considered to be a fundamental component of an efficient health care system and the basis of blood supply are the blood donors.(4) Blood transfusion has become a main issue for the society we live in since it is life saver for many people with surgeries, accidents, inherited or acquired hematological conditions, other bleeding dyscrasias, and malignancies.(5) Although every year more than a million of blood units get collected, its not sufficient and many more millions are still required to meet the universal demand and ensure the timely as well as adequate provision of blood. However, the demand is accelerating day by day which creates imbalance between demand and supply.(1,6) Blood donation was always regarded as a positive behavioural attitude and considered a humanitarian act. Based on behavioral patterns, the people had been categorized broadly as voluntary, replacement and paid donors.(7) In developing nations, the insufficiency of safe blood was aggravated by the lower number of donors where blood transfusion was needed most. Previous studies carried out in India had shown that people had several myths and fear associated with blood donation including weakness, fear of needles, infection, nervousness, and others.(4,8) Therefore, enrolment of donors and retaining them to maintain and upsurge the donor base had been crucial for all the blood banks.(8) This study intended to find awareness of people regarding blood donation in a tertiary care centre and to assess their practice regarding the same. The findings of current study will be used as an important piece of baseline information to motivate people towards blood donation.

**Aim & Objective(s):**

1. To assess the awareness of participants regarding donation of blood and
2. To determine practice regarding blood donation among them.

**Material and Method:**

An observational, cross sectional study was conducted among people visiting a tertiary health care centre in the Barabanki district of Uttar Pradesh, India between August-September 2021. People between 18-60 years were eligible to partake in the current study. A single population-proportion formula was used and sample size(N) (9) was estimated as denoted below:

$$N = \frac{(Z\alpha/2)^2 \times p(1 - p)}{d^2}$$

where  $Z\alpha/2 = 1.96$  at 95% confidence interval, precision (d) of  $\pm 4\%$  and  $p=80\%$ . Considering non-response rate to be 5%, the sample size came out to be 404. The technique used to enrol participants in the study was convenient non-random sampling. Ethical clearance was taken from the Institutional Ethics Committee(IEC) vide letter Ref. No. MIMS/EX/2021/162. The people coming for out-patient department (OPD) registration were approached near the registration counter. All eligible people consenting to participate in the study were finally

enrolled. Before administering the questionnaire, the eligible participants were explained very well about the nature of the study, confidentiality, right to withdraw from the study, and subsequently consent was obtained. The data was collected by using a pre-validated and pre-tested questionnaire that comprised of the socio-demographic details of the participants as well as various aspects of their awareness and practices including reasons for donating and not donating blood. A face-to-face interview was conducted with enrolled participants using the translated questionnaires. The questionnaire contained mostly close-ended questions with multiple options and all participants had to tick any of the given options while a few questions were open-ended. Some of the questions had multiple options prospect in which participants could mark more than one option.

### **Data analysis**

Entry of data was completed in SPSS (Statistical Package for Social Sciences) version 15 and then statistical analysis was done. The descriptive statistics (frequency & percentages) for categorical/qualitative data were computed and summarized in tables. Fishers' exact and Chi-square tests were used to find the difference in proportions between two variables. *P* value of <0.05 was considered as statistically significant.

### **Results:**

We could enrol 436 participants in our study which was slightly more than the calculated sample size. Out of the total 436 participants, 268(61.5%) were males and 168(38.5%) females. More than half of the participants (51.4%) were found to be between 18-30 years of age. Almost three-fourths (72.9%) of the participants were residing in rural areas. Few participants (12.4%) were illiterate, 230(52.7%) educated up to secondary school and 152(34.9%) had a college & above degree. As far as occupation is concerned, the majority among them were Farmers/daily wages workers, homemakers, or students. More than two-thirds of the participants were married (69.3%) and more than half (57.8%) had a nuclear family. According to the BG Prasad classification for socio-economic status (SES) updated for the year 2021, more than two-thirds of the respondents were in Class II, III, or IV while only a few belonged to Class I or V (Table 1).(10) Furthermore, 248(56.9%) were aware of common blood group types and males (58.2%) were slightly more aware as compared to females (54.8%). Approximately two-thirds (65.6%) of the respondents were having knowledge of their blood groups and the remaining (34.4%) did not know as they never got tested. More common blood groups among the participants were found to be B+ (29.3%), A+ (27.9%), and O+ (27.2%) as compared to other types of blood groups. It was found that 254(58.3%) participants felt that a person can get infected through a blood transfusion while the rest either didn't know (35.3%) or they didn't feel so (6.4%). Among those who felt so, 184(72.5%) said HIV/STD, 162(63.8%) said Hepatitis, 34(13.4%) responded Malaria, and 10 (3.9%) mentioned other infections can be transmitted through blood transfusion. 14(5.5%) participants believed that blood transfusion can transmit Cancer also. When asked about how often can an individual donate blood, 186(42.7%) didn't know the answer while only 46(10.6%) said correctly i.e. 3-months. Further, many participants responded that healthy men (63.3%) and healthy women (47.7%) can donate blood. 16(3.7%) said young below 18 years and very few said elderly with co-morbidities can also donate blood. Only 82(18.8%) participants could answered correctly regarding the blood volume to be collected during

donation (350 ml) while the remaining either didn't know (62.4%) or gave incorrect responses (18.8%). Most of the participants were unaware of the duration of the donation process (73.2%) and also about who can be an ideal blood donor (55.0%) (Table 2). Out of the total participants, 68(15.6%) had donated their blood before. The practice of blood donation was found to be significantly higher among males than their females counterparts ( $p < 0.001$ ). Further, it was found that only 41.2% of the donors donated their blood frequently ( $\geq$  once in a year). Also, a difference between males and females with regard to the frequency of blood donation was seen and this difference was observed to be statistically significant ( $p = 0.048$ ). Among those who donated blood, the voluntary donation was more common type (73.5%) as compared to replacement donation (26.5%). When they were asked about reasons of their previous blood donation, majority (79.4%) told that a friend or relative was in need whereas others donated to help society (17.7%) and to get remuneration (2.9%). Most of the participants who donated blood previously had a good experience (77.9%) and the difference of experience between male and female counterparts was seen to be significant ( $p = 0.042$ ) [Table 3]. Among those who never donated blood, three main reasons were fear of pain/needle (47.8%), ill-health/co-morbidities (41.3%), and no opportunity (65.8%) while other reasons including lack of awareness (23.9%), nervousness (22.3%), harmful for health (19.0%), inconvenience (3.8%), the bad experience of a relative/friend (1.4%) and a myth that their blood is not safe for others (1.1%) (Figure 1). However, they responded that they would donate blood if family/friend require (71.2%), if paid (1.1%), or to know the HIV status (0.5%). 7.1% said that they would never donate blood. Male participants were found to be recommending relative/friend to donate blood more than the female respondents and this difference of recommendation was significant ( $p = 0.048$ ). Two main reasons for their recommendation were saving a life (70.2%) and family need (58.3%). Some of them also thought it to be a noble work as well as it purifies the blood (Table 3).

### **Discussion:**

This descriptive study was done to know the awareness and practice regarding donation of blood among people visiting a tertiary care centre. The socio-demographic data in our study revealed that participation of males and females were accounted for 61.5% and 38.5% respectively which was almost similar to other studies done in various parts of India.(11,12) Further, in our study, 30.7% of the participants were Unmarried/Single in contrast to a study done in Saudi Arabia in which 85.0% were single mostly due to the inclusion of participants of a younger age group.(13) 34.9% participants were having educational status of college & above in the current study as compared to 27.3% participants with Diploma/graduate and above degree in a study done in Chennai. Also, as per Modified BG Prasad classification for socio-economic status (SES), 80.3% of participants belonged to Class II, III, and IV in the current study which is similar to the above-reviewed study where 77.9% of the participants belonged to the SES mentioned.(14) The present study showed that 65.6% of the respondents were having knowledge of their blood group type which was almost similar to the findings of a research in Saudi Arabia where 64.5% of participants knew their blood group type.(9) In our study, awareness regarding age and weight criteria for blood donation was found in 26.6% and 6.4% of the participants respectively which is much lesser in comparison to 87.2%

and 75.1% participants respectively as seen by Anand N et al. in their study. (14) A study conducted in Meghalaya showed that 66.2% and 77.2% of participants respectively were mindful about 3 months' interval between subsequent blood donation and correct amount (350ml) of blood donated in each transfusion.(12) However, our study participants showed much lesser awareness regarding 3 months interval (10.6%) as well as the correct amount of blood donated in each donation (18.8%). Furthermore, our study revealed 15.6% of the participants had donated blood earlier as compared to only 9.7% of people having a history of blood donation in a study done in Iran.(15) However, in another study done in Rajasthan 31.2% of the participants were found to have donated blood previously since it was done among medical students who were young and more aware.(16) Also, the current study showed the prevalence of donating blood to be significantly higher among males than females ( $p < 0.001$ ) which is similar to findings in a study by Mahfouz MS et al in Saudi Arabia.(13) A study done in Malaysia revealed that among those with the history of blood donation, 47.3% had donated 1-2 times and 52.7% had donated more than two times as compared to our study in which 32.4% donated 1-2 times and 8.8% donated more than twice previously.(17) Our study results depicted that among 15.6% of participants who donated blood before, voluntary donation (73.5%) was more common than replacement donation (26.5%) unlike a study done in Central Ethiopia in which replacement type of donation (85.7%) was more common than a voluntary donation (11.5%).(2) Fear of pain/needle, lack of awareness and ill health were the three main reasons for not donating blood in the current study as compared to a study done in Mumbai in which mostly indolence, fear of infection, and needle were the reasons.(18) Overall our study revealed that although the practice of donating blood among participants is comparable to other studies awareness regarding the same is much lower in every aspect. This information could be useful in the implementation of suitable donor gathering strategies and increasing the awareness and practice among people through proper planning. This can contribute significantly to augmenting lifesaving and health-promoting activity of blood donation in our society.

### **Conclusion:**

The results of our study show that the practice of donating blood in the participants is not good enough. Although its comparable to other studies. The level of awareness among participants regarding blood donation is even lower. Hence, there is a need to organize targeted campaigns by developing awareness programs to increase the awareness in the community regarding the life-saving role of blood donation and to relieve the stigma, anxiety and fears related to it. Further studies need to be conducted including healthy and younger age group people who can effectively motivate other people in their surroundings.

### **Recommendation**

The results of our study revealed low awareness with regard to diseases transmitted through blood transfusion as well as criteria for blood donation. The practice of donating blood was also found to be low due to existing fear and misconceptions among participants. Therefore, awareness should be enhanced by different methods in order to bring changes in approach and practice of people towards blood donation.

### **Limitation of the study**

Since the participants of the study were selected from a tertiary care centre through convenience sampling, the findings of our study cannot be generalised.

### **Relevance of the study**

Presently lacs of people are known to die every year due to scarcity of blood in various health care centres. This is because of insufficient availability of blood and its products through blood donation. Therefore, we intended to conduct a study to know awareness and practice regarding blood donation so that proper measures could be taken to increase proportion of people donating blood.

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**Table 1: Socio-demographic characteristics of study participants (n=436)**

Variable	Category	Total n (%)	Male n (%)	Female n (%)
Age (years)	18-30	224 (51.4)	120 (44.8)	104 (61.9)
	31-44	128 (29.4)	76 (28.4)	52 (31.0)
	≥45	84 (19.2)	72 (26.8)	12 (7.1)
Religion	Hindu	354 (81.2)	232 (86.6)	122 (72.6)
	Muslim	80 (18.3)	36 (13.4)	44 (26.2)
	Others	2 (0.5)	0 (0)	2 (1.2)
Residence	Urban	118 (27.1)	72 (26.9)	46 (27.4)
	Rural	318 (72.9)	196 (73.1)	122 (72.6)
Education	Illiterate	54 (12.4)	36 (13.4)	18 (10.7)
	Primary	110 (25.2)	60 (22.4)	50 (29.8)
	Secondary	120 (27.5)	82 (30.6)	38 (22.6)
	College and above	152 (34.9)	90 (33.5)	62 (36.9)
Occupation	Government	10 (2.3)	6 (2.2)	4 (2.4)
	Private	54 (12.4)	46 (17.2)	8 (4.8)
	Self-employed	50 (11.5)	50 (18.7)	0 (0)
	Farmer/daily wages	114 (26.1)	108 (40.3)	6 (3.6)
	Homemaker	104 (23.9)	4 (1.5)	100 (59.5)
	Students	82 (18.8)	42 (15.7)	40 (23.8)
	unemployed	22 (5.0)	12 (4.5)	10 (6.0)
Marital status	Married	302 (69.3)	184 (68.7)	118 (70.2)

	Unmarried/single	134 (30.7)	84 (31.3)	50 (29.8)
Family type	Nuclear	252 (57.8)	154 (57.5)	98 (58.3)
	Joint / Three generation	184 (42.2)	114 (42.5)	70 (41.7)
Number of family members	1-5	232 (53.2)	142 (53.0)	90 (53.6)
	6-10	184 (42.2)	116 (43.3)	68 (40.5)
	>10	20 (4.6)	10 (3.7)	10 (6)
Socioeconomic class (Modified BG Prasad scale 2021)	I	48 (11.0)	30 (11.2)	18 (10.7)
	II	108 (24.8)	70 (26.1)	38 (22.6)
	III	112 (25.7)	68 (25.4)	44 (26.2)
	IV	130 (29.8)	74 (27.6)	56 (33.3)
	V	38 (8.7)	26 (9.7)	12 (7.1)

**Table 2: Awareness regarding Blood donation (n=436)**

Variable	Category	Total n(%)	Male n(%)	Female n(%)
Aware of common blood group types	Yes	248 (56.9)	156 (58.2)	92 (54.8)
	No	188 (43.1)	112 (41.8)	76 (45.2)
If yes, mention* (n=248)	All blood groups	152(61.3)	92(59.0)	61(66.3)
	3 blood groups	26(10.5)	18(11.5)	8(8.7)
	2 blood groups	42(16.9)	28(18.0)	14(15.2)
	1 blood group	28(11.3)	18(11.5)	9(9.8)
Knowing own blood group	Yes	286 (65.6)	168 (62.7)	118 (70.2)
	No	150 (34.4)	100 (37.3)	50 (29.8)
Specify own blood group (n=286)	A+	80(27.9)	44(26.2)	36(30.5)
	B+	84(29.3)	50(29.8)	34(28.8)
	AB+	32(11.2)	16(9.5)	16(13.6)
	O+	78(27.2)	50(29.8)	28(23.7)
	A-	2(0.7)	2(1.2)	0(0.0)
	B-	6(2.1)	4(2.4)	2(1.7)
	AB-	4(1.4)	2(1.2)	2(1.7)
Can a person get infected through blood transfusion?	Yes	254 (58.3)	158 (59.0)	96 (57.1)
	No	28 (6.4)	14 (5.2)	14 (8.3)
	Don't know	154 (35.3)	96 (35.8)	58 (34.5)
If yes, what diseases are transmissible through blood transfusion?*	HIV/STD	184(72.5)	118(74.7)	66(68.7)
	Hepatitis (B/C)	162(63.8)	94(59.5)	68(70.8)
	Malaria	34(13.4)	26(16.5)	8(8.3)
	Cancer	14(5.5)	10(6.3)	4(4.2)
	Other infections (TB, tetanus, coronavirus)	10(3.9)	4(2.5)	6(6.3)
How often can an individual donate blood?	≤ 1 week	8(1.8)	2(0.7)	6(3.6)
	1 Month	54(12.4)	38(14.2)	16(9.5)



	3 Months	46(10.6)	30(11.2)	16(9.5)
	6 Months	60(13.8)	40(14.9)	20(11.9)
	Annually	82(18.8)	52(19.4)	30(17.9)
	Don't know	186(42.7)	106(39.6)	80(47.6)
Who can donate blood? *	Healthy Men	276(63.3)	178(66.4)	98(58.3)
	Healthy Women	208(47.7)	120(44.8)	88(52.4)
	Young (<18 years)	16(3.7)	14(5.2)	2(1.2)
	Elderly with co-morbidities	6(1.4)	4(1.5)	2(1.2)
	Don't know	148(33.9)	84(31.3)	64(38.1)
volume of blood collected during each donation	<350 ml	28(6.4)	20(7.5)	8(4.8)
	350 ml	82(18.8)	56(20.9)	26(15.5)
	>350 ml	54(12.4)	36(13.4)	18(10.7)
	Don't know	272(62.4)	156(58.2)	116(69.0)
duration of a donation process	<20 minutes	47(10.8)	32(11.9)	15(8.9)
	20-60 minutes	70(16.0)	50(18.7)	20(11.9)
	Don't know	319(73.2)	186(69.4)	133(79.2)
Ideal blood donor*	Age group of 18-60 year	116(26.6)	74(27.6)	42(25.0)
	Weight $\geq$ 45kg	28(6.4)	20(7.5)	8(4.8)
	Blood pressure 160/90 to 110/60 mm Hg	10(2.3)	8(2.9)	2(1.2)
	Hemoglobin $\geq$ 12gm%	90(20.6)	64(23.9)	26(15.5)
	Not sure/Don't know	240(55.0)	142(52.9)	98(58.3)

**Table 3: Practice of blood donation (n=436)**

Variable	Category	Total n(%)	Male n(%)	Female n(%)	$\chi^2$	p value
Have you donated blood before?	Yes	68 (15.6)	56 (20.9)	12 (7.1)	<b>14.837</b>	<b>&lt;0.001</b>
	No	368 (84.4)	212 (79.1)	156 (92.9)		
If yes, then how often do you donate blood? (n=68)	Less than once a year	40 (58.8)	30 (53.6)	11 (91.7)	<b>6.063</b>	<b>0.048</b>
	1-2 times a year	22 (32.4)	20 (35.7)	1 (8.3)		
	$\geq$ 3 times a year	6 (8.8)	6 (10.7)	0 (0)		
If yes, Type of previous blood donation (n=68)	Voluntary	50 (73.5)	40 (71.4)	10 (83.3)	0.72	0.396
	Replacement	18 (26.5)	16 (28.6)	2 (16.7)		
Reason	A friend or relative	54 (79.4)	44 (78.6)	10 (83.3)	0.465	0.792

behind your previous donation (n=68)	needed blood					
	To help society	12 (17.7)	10 (17.8)	2 (16.7)		
	Remuneration/for money	2 (2.9)	2 (3.6)	0 (0)		
How was your experience regarding donating blood? (n=68)	Good	53 (77.9)	41 (73.2)	12 (100)	<b>4.124</b>	<b>0.042</b>
	Bad/Neutral	15 (22.1)	15 (26.8)	0 (0)		
What is/are the reason(s) for not donating blood* (n=368)	Lack of awareness	88 (23.9)	54 (25.4)	34(21.8)		
	Fear of Pain/needle	176 (47.8)	116 (54.7)	60(38.5)		
	Ill health/co-morbidities	152 (41.3)	94 (44.3)	58(37.2)		
	Nervousness	82 (22.3)	40 (18.8)	42(26.9)		
	Harmful for health	70 (19.0)	46 (21.7)	24(15.4)		
	Bad experience of a relative/friend	5 (1.4)	3 (1.4)	2(1.3)		
	Blood not safe for others	4 (1.1)	2 (0.9)	2(1.3)		
	Inconvenience (location/ time)	14 (3.8)	12 (5.6)	2(1.3)		
	No opportunity	242 (65.8)	154 (72.6)	88(56.4)		
Will you donate if called upon or reminded to do so?* (n=368)	Never	26(7.1)	20(9.4)	6(3.8)		
	If family/friend require	262(71.2)	158(74.5)	104(66.7)		
	Only if paid	4(1.1)	2(0.9)	2(1.3)		
	To know HIV status	2(0.5)	2(0.9)	0(0.0)		
	Voluntarily	174(47.3)	110(51.9)	64(41.0)		
Do you recommend your friend or relative to donate blood (n=436)	Yes, often	90 (20.6)	62 (23.1)	28 (16.7)	<b>6.051</b>	<b>0.048</b>
	Yes, sometimes	154 (35.3)	100 (37.3)	54 (32.1)		
	Never	192 (44.0)	106 (39.5)	86 (51.2)		
If yes, specify reason* (n=242)	Family need	141 (58.3)	86 (54.4)	55 (65.5)		
	Save life	170 (70.2)	112 (70.9)	61 (72.6)		

	Noble work/ Help society	69 (28.5)	42 (26.6)	27 (32.1)		
	Purify blood	24 (9.9)	15 (9.4)	9 (10.7)		

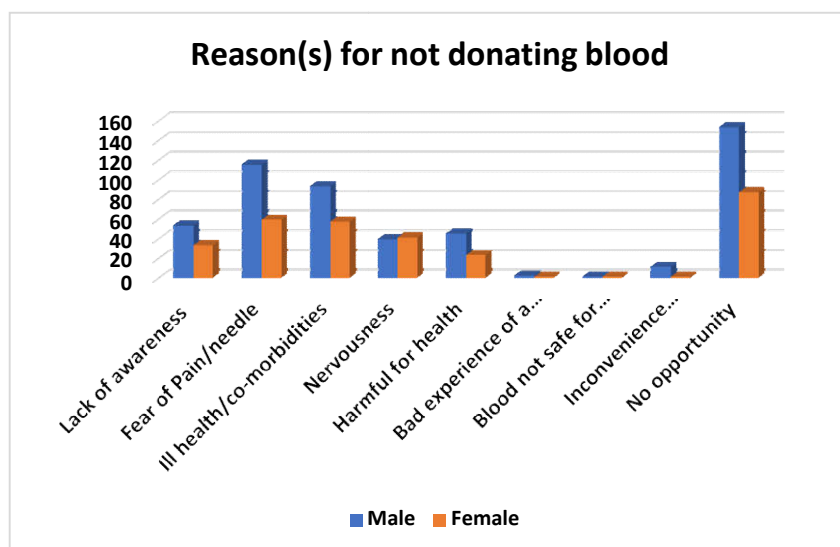


Figure 1. Reason(s) for not donating blood (n=368)