

# Awareness of Blood Donation in General Population: The Cross-Sectional Analytical Study

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## Abstract

**Introduction:** Blood donation is very vital to save human life as there is no substitute for human blood. Blood transfusion is an essential component of the health care system of every country and patients who require blood transfusion service as part of the clinical management of their condition have the right to expect that sufficient and safe blood will be available to meet their needs. However, this is not always the case, especially in developing countries. To recruit and retain adequate regular voluntary non-remunerated blood donors the motivators and barriers of donors must be understood. Equally important to this goal is the knowledge of blood donors. **Methods:** This study was a cross-sectional study with purposive sampling, was done in the OPD patients of Shalinitai Meghe hospital and research center and Datta Meghe medical college, Nagpur in collaboration with ABVRH, Sawangi (Meghe). After obtaining verbal consent, the data was collected by a pre-designed, pre-structured questionnaire. The data was analyzed using SPSS version 26. **Results:** A total of 323 People took part in the study, with an average age of  $35.6 \pm 6.53$ . Out of the 323, 121 (37.5%) were donors and 202 (62.5%) were non-donors. The majority of the donors were between the ages of 31 and 40 years old (48.5%), males (63.1%), singles (40.4%), and graduates (45%). The majority of donors (69.4%), 48.8%, had donated 2-5 times, 24.8% were frequent donors, and 37.1% donated annually. "No request for blood" (63.4%) was the most common reason given by non-donors for not donating blood. Around 218 (67.5%) said they would be willing to be voluntary donors in the future, whereas 72 (22.3%) said they would only donate for family and friends, and 33 (10.2%) said they would not donate blood. Age, education, source of information, and kind of donation blood were all found to have a major impact on willingness to donate. **Conclusion:** Males and those with a higher education were the most likely to donate blood. Donors saw blood donation as a humanitarian cause, and they felt it provided them with more moral gratification than non-donors. Non-donors were more likely than donors to believe that blood donation causes weakness/anemia and is damaging to their health.

**Keywords:** Blood donation; Donors; Non-donors; Voluntary donation; Attitude

## Introduction

Blood donation is still the most common source of blood and blood components in the world. Even though there has been a lot of promising research, there is no true substitute for blood and blood components. <sup>[1]</sup> Donated blood is crucial in the treatment of a variety of disorders. It is the most important lifesaving measure for someone who has lost a substantial amount of blood due to accidents, haemorrhages, or surgery. <sup>[2,3]</sup>

The majority of the blood used in transfusions comes from unpaid, volunteer donors. <sup>[4]</sup> Despite the fact that over a million blood units are collected each year, many more are required to meet worldwide demand and maintain the adequate and timely supply of blood. However, demand and supply are not equal; in fact, demand is increasing. <sup>[2]</sup>

A vital component of any healthcare system is blood transfusion. It is a life-saving treatment for a variety of serious illnesses, including bleeding disorders, haematological disorders, and cancer. <sup>[4]</sup> Blood donations, whether voluntary unpaid or

recruited paid, can help to ensure an adequate blood supply. If the blood isn't needed for therapy, it can be used for study. For the following reasons, blood banks are attractive for biomedical research projects. <sup>[3]</sup> For starters, blood banks are convenient locations for gathering a large sample of well-characterized and healthy individuals for genomes and epidemiological screening studies. Second, having donors contact information allows individuals to be contacted again for more samples. <sup>[5]</sup> Finally, blood donors are expected to have a favourable attitude toward volunteer blood sampling research. However, it is possible that the use of donated blood for research purposes will dissuade some current and potential blood donors from donating blood in the future. <sup>[4]</sup>

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**How to Cite this Article:** Jagadish M, et al. Awareness of Blood Donation in General Population: The Cross-Sectional Analytical Study. Ann Med Health Sci Res. 2021;11:S3:28-32.

According to evidence, the world collects 112.5 million units of blood each year. In affluent countries, more than half of these blood units are collected. [1] When compared to low-income countries, the rate of blood donation per 1000 people in high-income countries is more than five times higher (33.1 donations vs. 4.6 donations). In rich countries, voluntary blood donors account for over 90% of donations, while in poorer ones, they account for less than half. [2]

### Materials and Methods

This study used face-to-face interviews with translated questionnaires to conduct a cross-sectional analytical analysis on 323 adult residents of Nagpur. A set of questions was used to test knowledge and attitude levels, and individuals who answered above the mean for knowledge and attitude questions were classified as having an above-average knowledge level and a favourable attitude, respectively. At Datta Meghe Medical College (DMMC) Wanadongri, Nagpur and Shalinitai Meghe Hospital and Research Center (SMHRC), Nagpur in collaboration with ABVRH, Sawangi (Meghe).

#### Sample size

The sample size was calculated using Epi info 7 TM software for a population survey based on the prevalence of positive attitudes about blood donation (52.5%). which resulted in the greatest sample size. The sample size was determined to be 323 using a 95% confidence interval and a 5% margin of error, as well as a 5% non-response rate.

#### Inclusion criteria

The study comprised those who were willing to participate and was between the ages of 18 and 65 (the age range for blood donation according to Indian blood bank rules). [3]

#### Exclusion criteria

Adults who were critically ill were not included in the study.

### Sample collection

For data collection, a simple random sampling procedure was used, including face-to-face interviews utilising a structured and semi-structured pre-tested questionnaire prepared. The survey was written in both Hindi and Marathi.

### Statistical analysis

A data documentation sheet was created and utilized to create a data entry form in Epi info 7, as well as check instructions to prevent out-of-range and unlawful values. After data was coded and input into EPI info version 7, it was cleaned and analysed using SPSS version 25. The results were presented using tables and narratives, with frequencies and percentages for categorical variables and averages and standard deviations for numerical variables. Wherever possible, the Chi-square test was used, and a p value of <0.05 was considered statistically significant.

### Result

A total of 323 workers took part in the research. They ranged in age from 18 to 51 years old, with a mean age of 35.6 ± 6.53. The gender breakdown was nearly equal, with 160 (49.5%) males and 163 (50.5%) females. However, statistically significant associations for blood donation were discovered for age group, gender, type of family, and education. The donors were predominantly in the age group 31 years-40 years. (48.5%), men (63.1%), single (40.4%), and graduates (45%) [Table 1 and Table 2].

In this study, 121 (37.5%) of the participants were donors, while 202 (62.5%) were non-donors. Table 2 lists the donors' blood donation information.

Blood donation was viewed as a humanitarian cause by 99.2% of donors, and it provided moral gratification to 97.5% of non-donors (p=0.001). Non-donors were more likely than donors (p=0.000) to believe that blood donation causes weakness/

**Table 1: Socio-demographic factors affecting blood donation.**

Particulars		Frequency N (%)	Donors N (%)	Non-donors N (%)	χ2 value	df	P value
Age groups	≤ 30 Yrs	188 (58.2)	61 (32.4)	127 (67.6)	7.6639	2	0.0216
	31-40 Yrs	101 (31.3)	49 (48.5)	52 (51.5)			
	>40 Yrs	34 (10.5)	11 (32.4)	23 (67.6)			
Gender	Male	160 (49.5)	101 (63.1)	59 (36.9)	89.1337	1	<0.00001
	Female	163 (50.5)	20 (12.3)	143 (87.7)			
Religion	Hindu	313 (96.9)	116 (37.1)	197 (62.9)	0.6925	1	0.4053
	Muslim	10 (3.1)	5 (50.0)	5 (50.0)			
Residence	Urban	200 (31.9)	79 (39.5)	121 (60.5)	0.9318	1	0.3344
	Rural	123 (38.1)	42 (34.1)	81 (65.9)			
Marital Status	Single	109 (33.8)	43 (39.5)	66 (60.5)	0.2902	2	0.8649
	Married	211 (65.3)	77 (36.5)	134 (63.5)			
	Widow	3 (0.9)	1(33.3)	2 (66.7)			
Type of family	Nuclear	204 (63.1)	81 (39.7)	123 (60.3)	6.071	2	0.048
	Joint	59 (18.3)	14 23.7	45 (76.3)			
	Three generation	60 (18.6)	26 (43.3)	34 (56.7)			
Education	Illiterate	13 (4.0)	2 (15.4)	11 (84.6)	9.7042	4	0.0471
	Primary school	19 (5.9)	6 (31.6)	13 (68.4)			
	High school	51 (15.8)	20 (39.2)	31 (60.8)			
	Diploma course	91 (28.2)	26 (28.6)	65 (71.4)			
	Graduate	149 (46.1)	67 (45.0)	82 (55.0)			
<b>Total</b>		<b>323 (100)</b>	<b>121 (37.5)</b>	<b>202 (62.5)</b>			

anaemia (39.1%) and is damaging to health (29.7%). Donors, on the other hand, were more likely than non-donors to assume that blood donation can spread HIV infection (p=0.000). Donors also believed that blood donating causes them to age faster, have infertility, and lose vitality than non-donors, however this was not statistically significant (p>0.05) [Table 3].

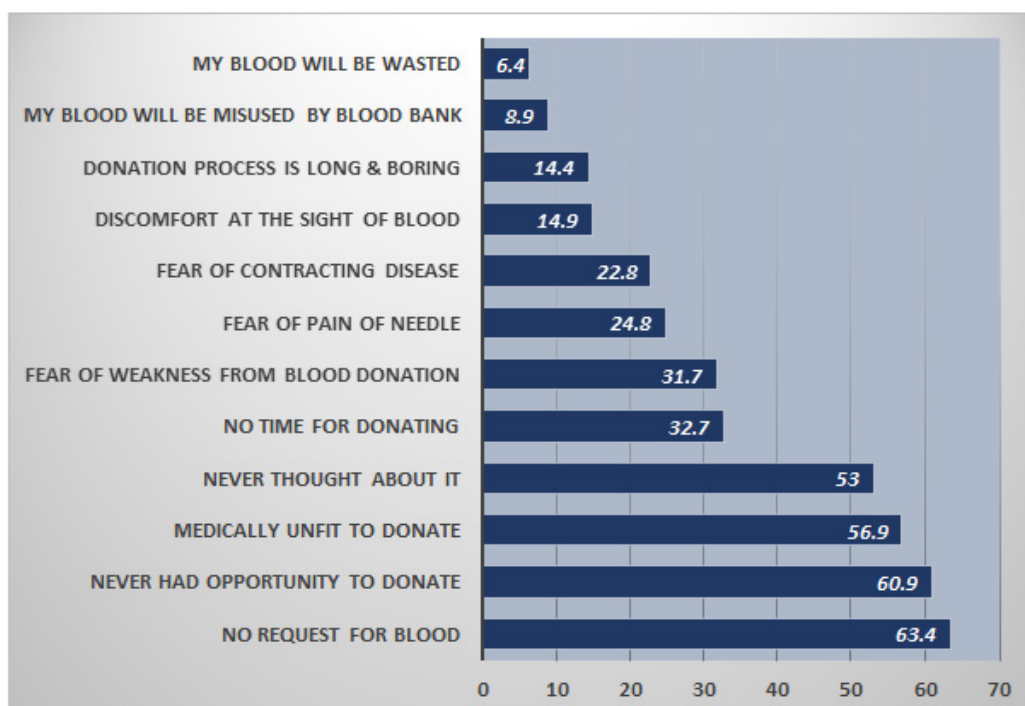
No request for blood (63.4%) was the most common reason given by non-donors, followed by Never had opportunity to donate (60.9%), Medically unfit to donate (56.9%), Never thought about it (53%), and No time for donating (32.7%), Fear of blood donation causing weakness (31.7%), fear of needle pain (24.8%), fear of catching disease (22.8%), discomfort at

**Table 2: Blood donation among the donors.**

Particulars	Frequency	Percentage (%)
Type of donation	Voluntary	84 69.4
	Replacement	37 30.6
First time donated for	Friends	19 15.7
	Family	8 6.6
	Relatives	18 14.9
Frequency	Unknown	76 62.8
	Once	36 29.8
	(2-5)	59 48.8
	(6-10)	15 12.3
Regular donation	>10	11 9.1
	Yes	30 24.8
	No	91 75.2
Frequency of regular donation	3 Months	40 33.1
	6 Months	36 29.8
	Yearly	45 37.1

**Table 3: Factors affecting blood donation.**

Sr. No.	Blood donation	Donors (%) (Total 121)	Non-donors (%) (Total 202)	P value
1	Saves lives	119 (98.3)	200 (99.0)	0.43
2	Is a humanitarian cause	120 (99.2)	177 (87.6)	0.01
3	Gives moral satisfaction	118 (97.5)	168 (83.2)	0.001
4	Can transmit HIV infection	80 (66.1)	92 (45.5)	<0.00001
5	Leads to weakness/anaemia	31 (25.6)	79 (39.1)	0.083
6	Donation is harmful to health	14 (11.6)	60 (29.7)	<0.00001
7	Leads to accelerated aging	19 (15.7)	17 (8.4)	0.095
8	Leads to infertility and loss of vitality	8 (6.6)	14 (6.9)	0.669



**Figure 1: Reasons for not donating blood among the non-donors.**

**Table 4: Factors affecting the willingness to donate blood in the future.**

Particulars	No N (%)	Blood donation in the future		χ <sup>2</sup> value	df	P value
		Only if family/friends require N (%)	Yes, as a voluntary donor N (%)			
Blood donation	Donors	3 (2.5)	14 (11.6)	31.08	2	<0.00001
	Non-donors	30 (14.9)	58 (28.7)			
Gender	Male	10 (6.3)	34 (21.3)	5.466	2	0.065
	Female	22 (13.5)	38 (23.3)			
Age groups	≤ 30 yrs	14 (7.4)	53 (28.2)	15.726	4	0.034
	31-40 yrs	11 (10.9)	14 (13.9)			
	>40 yrs	8 (23.5)	5 (14.7)			
Education	Illiterate	6 (46.2)	3 (23.1)	30.318	8	0.0001
	Primary school	4 (21.1)	1 (5.3)			
	High school	4 (7.8)	15 (29.4)			
	Diploma course	11 (12.1)	21 (23.1)			
	Graduate	8 (5.4)	31 (20.8)			
Source of information	Books	2 (3.1)	22 (34.4)	23.241	6	0.0007
	Media/Internet	5 (11.6)	9 (20.9)			
	Heard from other people	20 (16.5)	29 (24.0)			
	Blood bank	5 (5.3)	12 (12.6)			
Type of donation	Voluntary	2 (2.4)	4 (4.8)	10.33	2	0.0057
	Replacement	0	10 (27.0)			

the sight of blood (14.9%), donation process is long and dull (14.4%), my blood would be exploited by the blood bank (8.9%), and my blood will be wasted (6.4%) [Figure 1].

In this study, 218 (67.5%) people said they would be willing to be voluntary donors in the future, whereas 72 (22.3%) said they would only donate for family and friends, and 33 (10.2%) said they would not donate blood. The majority of donors (86%) were more inclined to be voluntary donors than non-donors (56.4%), a statistically significant difference (p=0.000) [Table 4].<sup>[6]</sup>

### Discussion

Blood is something that everyone needs at some point in their lives. Because human blood donation is the only means to obtain blood, it is critical to determine what variables inspire donors to donate voluntarily and regularly, as well as what hinders non-donors from doing so.

In this study, 37.5% of the participants were donors, which is comparable to a study of health workers but higher than studies of students.<sup>[4,5,7,8]</sup> The majority of the donors were between the ages of 31 and 40, with the younger and older age groups donating less. However, only gender, type of family, and education status were found to have a significant relationship with blood donation, with males donating more than females (p=0.00001) and those from higher education donating more than those from lower education (p=0.0471). Other investigations have found a similar male majority among the donors.<sup>[4,5,9]</sup> Related studies were reported by Chandhi et al.,<sup>[10]</sup> Gupta et al.,<sup>[11,12]</sup> and Balwani et al.<sup>[13,14]</sup>

The reasons for giving blood and non-giving were comparable to those found in prior research. Those who donated blood more frequently did so because it gave them a sense of moral fulfilment.<sup>[8,9]</sup> The primary reason for not donating was that they were not asked for it or that they did not have the opportunity to

do so.<sup>[7]</sup> Related studies from Global burden of disease studies were reviewed.<sup>[15-17]</sup>

Voluntary donors also donated more frequently than replacement donors, and they were also more willing to donate in the future (p=0.0057). Even while 89.8% said they would donate in the future, only 67.5% said they would donate voluntarily, with the remaining 22.3% saying they would donate mainly for friends and relatives. Only 10.2% people did not want to donate blood. Because age, education, source of information, past contribution, and type of contribution were all found to be strongly correlated with willingness to donate, these aspects can be investigated further to increase the number of contributors.

### Conclusion

Males and those with a higher education were the most likely to donate blood. Donors saw blood donation as a humanitarian cause and felt it provided them with higher moral gratification than non-donors. Non-donors were more likely than donors to believe that blood donation causes weakness/anaemia and is damaging to their health. In comparison to non-donors, the majority of donors were willing to be voluntary donors in the future. Non-donors had not given blood since they had not been solicited. As a result, it can be stated that suitable incentive and enough awareness through campaigns can be used to attract more contributors for voluntary giving. The concept of voluntary blood donation must be heavily pushed in order to attract regular, unpaid donors.

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