

# Myths and Misconceptions Preventing College Going Students from Voluntary Blood Donation: A Prospective Study in a Tertiary Care Medical College from North India

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Submitted: 31-Jan-2022.

Revised: 23-Feb-2022.

Accepted: 19-Mar-2022.

Published: 29-Apr-2022.

## INTRODUCTION

Blood services are facing a shortage of blood all over the world. Demand for blood is rising day by day and current blood donation is insufficient to meet the demand.<sup>[1]</sup> Knowledge, attitude, and behavior surveys were performed between 1995 and 2011 in 17 countries classified as emerging and developing by the International Monetary Fund.<sup>[2]</sup> The subject of these studies was blood donation. These surveys have been used in many countries to understand factors that influence blood donation and form the basis for communication and donor mobilization strategies. These surveys were performed in 17, countries namely Bangladesh, Brazil, Burkina Faso, Chile, China, Haiti, Iran, Moldova, Nigeria, Pakistan, Saudi Arabia, South Africa, Tanzania, Thailand, Trinidad and Tobago, Togo, and Uganda. Despite considerable differences in culture and demographics of these countries, many common themes emerged from different surveys, inclusive of misinformation about blood donation, fear of blood donation, willingness to donate for family and friends, concern about selling blood,

## ABSTRACT

**Background and Objectives:** Blood services are facing a shortage of blood all over the world. Demand for blood is rising day by day and current blood donation is insufficient to meet the demand. This study was planned to assess the myths of college-going students regarding blood donation, address their misconceptions, and raise awareness among college students on the importance of blood donation.

**Methods:** The study population comprised 1000 students above the age of 18 years who qualify for blood donation after assessment of suitability to donate blood as per the blood donor questionnaire and consent form of the department.

**Results:** Myths and misconceptions were more prevalent among nonblood donor students. The most common reason for not donating blood, as stated by nonblood donor students, was fear of needle pain in 137 (27.4%), followed by being not fit to donate in 134 (26.8%) and the fear of becoming weak in 95 (19%).

**Conclusion:** The most common reason comes out to be related to health of the individual donor; almost one in two college-going students (45.8%) fear that either they are not fit enough to donate blood (26.8%) or that they will become weak (19%) after blood donation.

**KEYWORDS:** College student, knowledge, misconception, myths, voluntary blood donation

and failure to transfer positive attitude into actual blood donation.

Carrying out survey in the Indian population may provide insight into developing appropriate strategies in rooting out these misconceptions. Governments of both India and Pakistan identified knowledge and attitude survey on blood donation as a part of their strategic plan for both blood safety and HIV prevention.<sup>[3,4]</sup> Voluntary Blood Donation Program – an operational guideline, National AIDS Control Organization (NACO), Ministry of Health and Family Welfare (MOHFW), Government of India (GOI) states that blood collection target for National AIDS Control Programme (NACP-III) is 100 lakh units, while the existing annual blood collection in India is 72.7 lakh.<sup>[5,6]</sup> Therefore, as per this operational guideline of NACO, MOHFW, GOI, there

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**How to cite this article:** Mishra SK. Myths and misconceptions preventing college going students from voluntary blood donation: A prospective study in a tertiary care medical college from North India. Glob J Transfus Med 2022;7:28-35.

## Access this article online

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**Website:** www.gjtmonline.com

**DOI:** 10.4103/gjtm.gjtm\_9\_22

is a shortfall in annual blood collection of 27.3 lakh units from the set target. Therefore, it is the need of the hour not only to recruit new blood donors but also to retain existing blood donors. In European countries, each year demand for blood rises by 2%–3% and recruiting new donors is becoming increasingly difficult.<sup>[7]</sup> In the developed world, most blood donors are unpaid volunteers who give blood for community supply. In Thailand, 100% of donors are voluntary and nonremunerated because the system will not accept blood donations of any other kind.<sup>[8]</sup> In Nigeria, 67% of donors were family donors because the policy of many hospitals requires donation in order for a family member to receive antenatal care.<sup>[9]</sup> In a poor country, like Nigeria, often, the established supplies are limited and donors usually give blood when family or friends need a transfusion. A decline in altruism has been suggested as a major factor threatening blood supply.<sup>[10]</sup> Altruism can be defined as “prosocial behaviour that has no obvious benefit for the respondent but is beneficial to the recipient.”<sup>[11]</sup> Individual studies also attributed donor behavior primarily to altruism.<sup>[12]</sup>

World Health Organization has categorized zones based on whole blood donation per thousand populations, as depicted in Figure 1. The maximum blood collection occurs in developed countries such as Canada, the USA, Australia, and most of the European countries. Blood collection in most of the African countries is lowest. Russia falls in the borderline zone. Blood collection in India is lower than in Russian collection but marginally better than the African countries.<sup>[13,14]</sup> Therefore, India needs to improve its blood collection.

During the recent year, the percentage of voluntary blood donation was 79.4% against the target of

80%.<sup>[15]</sup> Thus currently, there is a shortfall in blood collection across India.

### Aim and objective

The aim of the study was to assess the myths of college-going students regarding the blood donation, address their misconceptions, and raise awareness among college students on the importance of blood donation so that voluntary blood donation may increase in the near future.

## MATERIALS AND METHODS

### Study design and Ethical clearance

The study was done at the Department of Transfusion Medicine, PGIMER, Chandigarh, after obtaining approval from the Institutional Ethics Committee (IEC approval reference no.-NK/364/MD/10046-47). The study was a prospective case-control study. The study was exploratory in nature, exploring the myths and misconceptions among college-going students with regard to voluntary blood donation.

### Study population

The study population comprised five hundred students above the age of 18 years who qualify for blood donation after assessment of suitability to donate blood as per the blood donor questionnaire and consent form of the department. Five hundred students of a similar age group who were not participating in blood donation were also recruited.

### Study area

Study area included educational institutions where regular voluntary blood donation camps being conducted by the Department of Transfusion Medicine, PGIMER, Chandigarh.

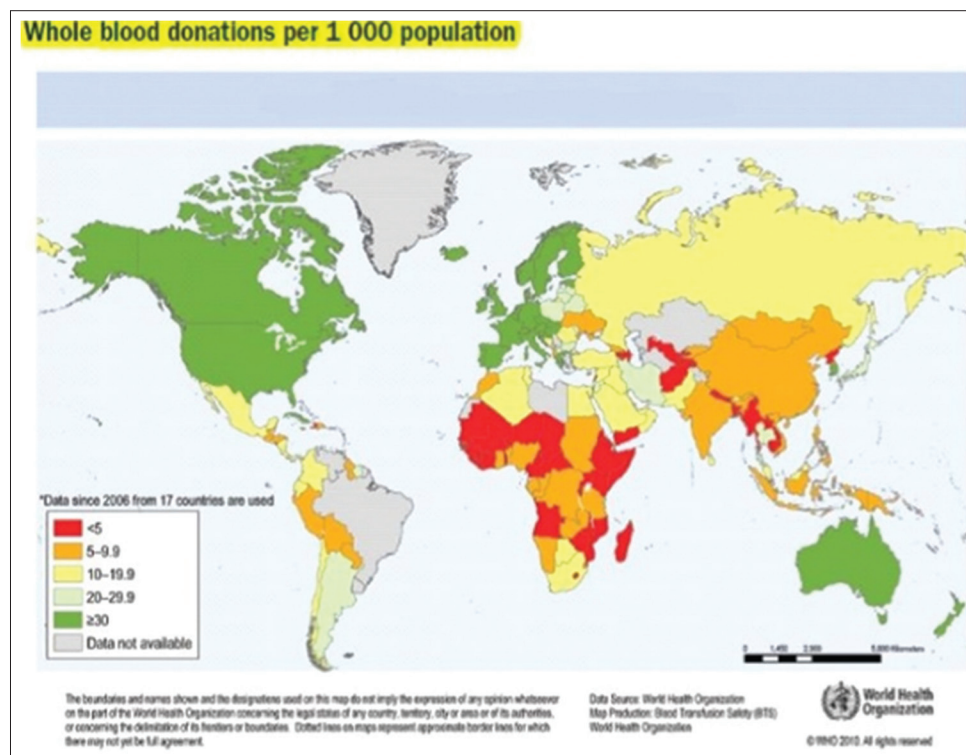


Figure 1: Whole blood donation per thousand population across the world<sup>[13,14]</sup>

## Methodology

The questionnaire was offered to the students of college willing for blood donation. They were recruited for blood donation after screening by a medical officer from the department as per the blood donor questionnaire and consent form. The questionnaire was also got filled from students who were not blood donors present at the venue of blood donation. The questionnaire was distributed in a separately demarcated area at the blood donation venue and was collected personally from the participants. Care was taken that participants answered questions individually and not after discussion amongst themselves. The participants were helped to interpret any question that they did not understand [Figure 2].

## Statistical analysis

The statistical analysis was carried out using Statistical Package for the Social Sciences (SPSS Inc., Chicago, IL, USA, version 25.0 for Windows). Scores were presented as mean  $\pm$  standard deviation, median, and interquartile range. Qualitative or categorical variables (e.g., age gender) were described as frequencies and proportions. Normality of quantitative data was checked by measures of Kolmogorov–Smirnov tests of normality. Independent *t*-test was applied for comparison of age of two groups (donors and nondonors). Mann–Whitney *U*-test was used for statistical analysis of scores. Kruskal–Wallis test was applied for comparison of scores for more than two groups. Proportions were

compared using Chi-square or Fisher's exact test whichever was applicable. All statistical tests were two sided and were performed at a level of  $\alpha = 0.05$ .

## RESULTS

Data were analyzed based on the objectives using descriptive and inferential statistics. The data collected was transferred to a master sheet for each section of the tool.

### Age distribution among participants

The minimum age of both donors and nondonors was 18 years and maximum age of participating donors was 24 years and that of nondonors was 26 years with  $P = 0.278$ .

Table 1 depicts that the mean age for blood donors was  $19.80 \pm 1.31$  (years) and for nondonors was  $19.69 \pm 1.69$  (years) with an overall mean of  $19.75 \pm 1.51$ .

Figure 3 depicts the age distribution of study participants (donor and nondonor participants).

**Table 1: Age distribution among participants**

Participants (n=500)	Age (years), mean $\pm$ SD	Range (years)	P
Donors	19.80 $\pm$ 1.31	18-24	0.278
Nondonors	19.69 $\pm$ 1.69	18-26	
Total	19.75 $\pm$ 1.51	18-26	

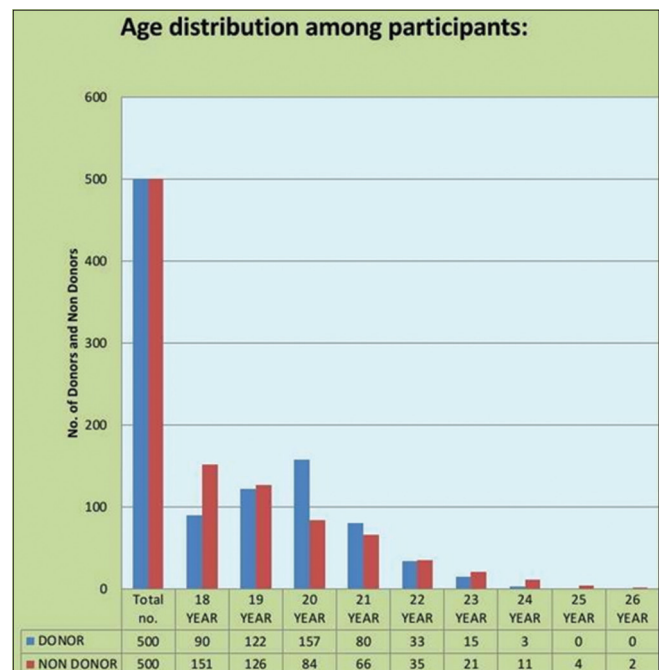
SD: Standard deviation

**Table 2: Gender distribution among participants**

Group	Donor (n=500)	Percentage within group	Nondonor (n=500)	Percentage within group	P
Male	379	75.80	275	55.00	<0.001
Female	121	24.20	225	45.00	



**Figure 2: Flowchart of research methodology**



**Figure 3: Age distribution among participants**



### Gender distribution among participants

Data presented in Table 2 and Figure 4 show that 75.80% of donors were male and 24.20% were female in blood donor students, whereas among nonblood donor participants, 55.0% were male and 45.0% were female. More male than female donated blood, and the difference was statistically significant in both donor and nondonor group.

### Reasons for not donating blood

Among nonblood donor students, 287 students cited a single reason, 119 students cited two reasons, 50 students told three reasons, 20 students told four reasons, 14 students told five reasons, and 10 students told six reasons for not donating blood, which is shown in Table 3 and Figure 5.

Data presented in Table 4 depict that fear of needle pain was the most common reason which inhibits nonblood donor students to donate blood, 137 (27.4%) students did not donate for fear of needle pain, 134 (26.8%) students thought that they were not fit to donate blood, 95 (19.0%) student stated reason as fear of becoming weak, and 23 (4.6%) students stated fear of contracting disease. Another 21 (4.2%) students felt that blood bank sell their collected blood, 10 (2.0%) students had no time for blood donation, 9 (1.8%) students had fear of discovering unknown disease, 8 (1.6%) students told that they would not be able to donate blood when someone close to them might require blood in future, and 5 (1.0%) had no knowledge of blood donation place.

Pie chart in Figure 6. depicts the various reasons for not donating blood.

### DISCUSSION

This study was conducted in order to obtain information from the college-going students which may be useful in implementing donor recruitment and introducing strategies for maintaining an adequate and safe blood supply. Table 5 depicts the comparative sample size, population surveyed, sample selection, and survey delivery methods among various studies.

A study from Bangladesh consisted of 200 university students, a study from Brazil consisted of 1600 blood donors and another from Burkina Faso comprised of 544 blood donors.

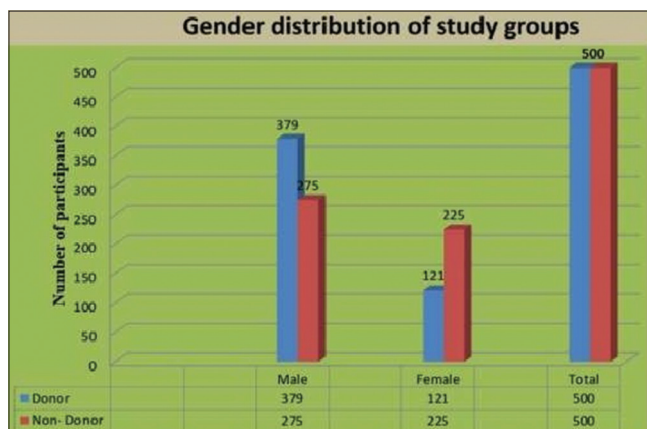


Figure 4: Gender distribution among participants

Among the various studies depicted in Table 6, the risk of contracting disease was observed as misconception in 94.6% of participants in Chile.<sup>[19]</sup> This misconception was more common

Table 3: Number of reasons for not donating blood by non blood donor students

Number of reasons	Number of nondonor, n (%)
1	287 (57.40)
2	119 (23.80)
3	50 (10.00)
4	20 (4.00)
5	14 (2.90)
6	10 (2.00)

Table 4: Overall reason stated by nonblood donor students for not donating blood

Question (n=500)	Number of nondonor and, n (%)
Fear of needle pain	137 (27.4)
I may not be fit to donate blood	134 (26.8)
Fear of becoming weak	95 (19.0)
No one ever asked me to donate blood	49 (9.8)
Fear of contracting disease	23 (4.6)
Blood banks sell our collected blood	21 (4.2)
No time for blood donation	10 (2.0)
Fear of discovering some unknown disease on testing	9 (1.8)
I may not be able to donate when someone close to me actually requires blood	8 (1.6)
Many people are donating blood; I do not need to donate blood.	7 (1.4)
Do not know where to donate blood	5 (1.0)
I do not donate blood as I did not get blood when someone close to me required	2 (0.4)
Total	500 (100)

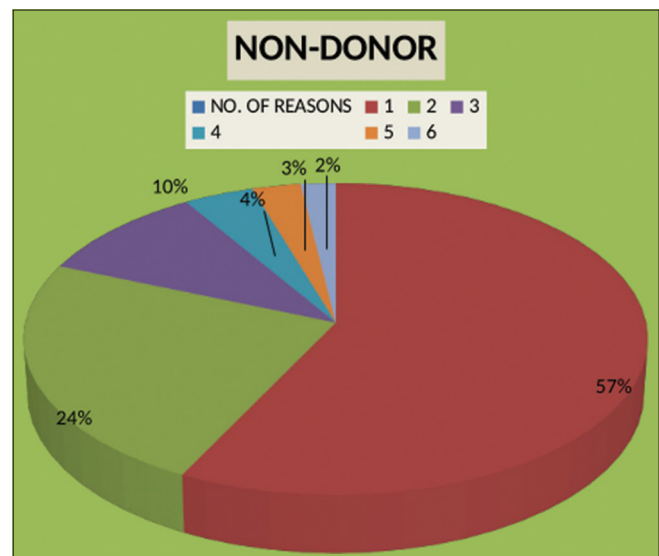


Figure 5: Pie chart showing number of reasons for not donating blood

**Table 5: Comparative sample size among various studies**

Country	Authors	Year	Population surveyed	Sample selection	Survey delivery
Present study	Present study	2013	1000 college students	Random sample	Self-administered structured questionnaire
Bangladesh <sup>[16]</sup>	Hosain <i>et al.</i>	1997	200 university students in an urban setting	Random sample	Self-administered questionnaire
Brazil <sup>[17]</sup>	Gonzalez <i>et al.</i>	2008	1600 blood donors at large urban donation centre	Random, time location sample	Self-administered structured questionnaire
Burkina Faso <sup>[18]</sup>	Nébié <i>et al.</i>	2007	544 blood donors from an urban teaching hospital	Systematic, quasi-random sample	Self-administered questionnaire
Chile <sup>[19]</sup>	Vásquez <i>et al.</i>	2007	487 students, staff, and faculty at a university	Unclear	Self-administered questionnaire
China <sup>[20]</sup>	Zaller <i>et al.</i>	2005	1280 adults in a rural area	Cluster sampling	Trained fieldworkers administered surveys
Haiti <sup>[21]</sup>	Cho <i>et al.</i>	2005	1622 adults	Systematic, quasi-random sample	Trained fieldworkers administered surveys
Iran <sup>[22]</sup>	Javadzadeh Shahshahani <i>et al.</i>	2006	1394 adults in an urban setting	Cluster sampling	Trained fieldworkers administered questionnaires
Iran <sup>[23]</sup>	Javadzadeh Shahshahani	2007	1602 women in an urban setting	Cluster sampling	Questionnaire (method of completion unclear)
Moldova <sup>[24]</sup>	USAID	2007	700 adults	Random sample	Trained fieldworkers administered surveys
Nigeria <sup>[9]</sup>	Olaiya <i>et al.</i>	2004	542 blood donors in a teaching hospital	Random sample of donors	Self-administered questionnaire
Pakistan <sup>[25]</sup>	Gilani <i>et al.</i>	2007	83 medical and 83 paramedical personnel	Unclear	Self-administered questionnaire
Saudi Arabia <sup>[26]</sup>	Alam and Masalmeh Bel	2004	500 adult men from an Armed Forced Hospital	Convenience sample	Self-administered questionnaire
South Africa <sup>[27]</sup>	Mwaba and Keikelame	1995	40 high school students	Random sample from one school	Self-administered structured questionnaire
Tanzania <sup>[28]</sup>	Jacobs and Berege	1995	Sample of 1423 adults in one rural region	Random sample	Face-to-face structured interview
Thailand <sup>[8]</sup>	Wiwatitkit	2002	400 students at a university	Non-random, voluntary	Self-administered questionnaire and interview
Togo <sup>[29]</sup>	Agbovi <i>et al.</i>	2006	300 adults in the city of Lome	Convenience sample	Face-to-face structured interview
Trinidad and Tobago <sup>[30]</sup>	Sampath <i>et al.</i>	2007	Survey of 1146 adults from residential homes and group settings	Convenience sample	Combination of questionnaire and face-to-face interview
Uganda <sup>[31]</sup>	Uganda red cross society	2003	230 household door-to-door surveys; twenty focus groups of 8-10 individuals	Systematic, quasi-random sample	Household visits and focus groups by trained field workers
SGPGI Lucknow <sup>[32]</sup>	Dubey <i>et al.</i>	2012	400 each voluntary, replacement donor and nondonor	Random sample	Self-administered questionnaire with face-to-face interview

in China.<sup>[20]</sup> A study from Haiti<sup>[21]</sup> concluded a similar finding done on 1622 adults by trained fieldworker administered survey and study from Nigeria, Tanzania, Trinidad and Tobago, Togo, Iran,<sup>[22,23]</sup> and Moldova,<sup>[24]</sup> as compared to the present study. Studies conducted in Chile, Uganda, Iran, and Togo depicted that participants think that donated blood is sold by the hospitals; however, this misconception was less prevalent among the participants in the present study. More number of Bangladeshi respondents believed that blood donation affects physical health as compared to the participants in the present study; however, participants in Chile and South Africa had less such misconception than participants in the present

study. Participants in the study done in Bangladesh, Chile, Iran, South Africa, and Tanzania had more misconception that donating blood poses a health risk and causes adverse effects as compared to the participants in the present study. This misconception was least common among the participants in the present study.

In the study from Pakistan,<sup>[25]</sup> 51.6% of participants stated that no one ever asked them to donate blood as a major reason for not donating blood.

Data presented in Table 7 depict the specific fear cited as a reason not to donate blood. Fear of physical harm or infection

was the most common deterrent among nondonors in nine of the 18 surveys. Just over 90% of those surveyed in China reported a fear of pain upon needle insertion. Fear of being infected by HIV was the most common fear in both Nigeria and Tanzania. In Saudi Arabia, 4.8% of respondents stated fear of infection or fear of contracting a disease.<sup>[26]</sup> The women in Iran most commonly cited fear of infection and hepatitis. In South African studies, no participant stated any specific reason for not donating blood.<sup>[27]</sup> In the present study, the most common fear among the respondent for not donating blood was fear of needle followed by fear of becoming unfit on blood donation. More than 50% of Bangladeshi and Chinese respondents had fear of physical harm, whereas in Moldova and Thailand and respondents had less fear compared to the respondents in the present study. Participants in the Nigerian, Tanzanian,<sup>[28]</sup> Togo,<sup>[29]</sup> Uganda, and Moldova study had more fear of infection than participants in the present study, whereas participants in the Saudi Arabia had almost the same fear as the participants in the present study. Only participants in the Chinese study had more fear about needle pain, whereas Moldova and Saudi Arabian participants had less fear as

compared to the participants in the present study. Fear of being unfit to donate blood was a common perception in the present study.

Table 8 depicts a comparison of various reasons for not donating blood. More number of participants in the study conducted in Moldova, China, and Chile reported being anemic as a cause for nondonation as compared to the participants in the present study, whereas the participants in Bangladesh, Iran, Trinidad and Tobago,<sup>[30]</sup> and Uganda stated this reason less than the participants in the present study.

Participants in Uganda,<sup>[31]</sup> Trinidad and Tobago, Iran, and Bangladesh stated that collection facility was not accessible, and comparatively lesser number of the participant in the present study stated such reason. Participants in the study in China and Iran stated that they did not have enough time to donate blood; however, this reason was told by less number of participants in the present study. A similar percentage of South African participants stated this reason as compared to the participants in the present study. More number of participants in Chile and Bangladesh were concerned about

**Table 6: Prevalence of common misconceptions among nondonors**

Country	Donor has risk for contracting infection/disease (%)	Blood is sold to patients by hospitals (%)	Blood donation affects physical strength (%)	Donating poses a health risk, causes adverse effects/(%)
Present study	4.6	4.2	19.0	1.8
Bangladesh <sup>[16]</sup>	3.1	*	71.3	21
Chile <sup>[19]</sup>	94.6	49.6	7.8	73
China <sup>[20]</sup>	42.5	*	*	*
Iran, 2007 <sup>[23]</sup>	19.3	26.5	*	31.5
Moldova <sup>[24]</sup>	44	*	*	*
Nigeria <sup>[9]</sup>	52.4	*	*	*
South Africa <sup>[27]</sup>	37.5		2.5	34
Tanzania <sup>[28]</sup>	59	*	*	47
Togo <sup>[29]</sup>	31.7	14.63	*	*
Trinidad and Tobago <sup>[30]</sup>	40	*	*	*
Uganda <sup>[31]</sup>	11	42	*	*

\*Cells indicate that data were not available

**Table 7: Comparison of specific fears cited as reason for not to donate**

Country	Fear of physical harm or pain/weak (%)	Fear of infection/fear of contracting disease (HIV or other) (%)	Fear of not fit to donate/sterility (%)	Fear of needles (%)
Present study	19	4.6	26.8	27.4
Lucknow <sup>[32]</sup>	9.25	*	6.75	3.75
Bangladesh <sup>[16]</sup>	50	*	*	*
China <sup>[20]</sup>	90.1	*	*	44
Iran 2007 <sup>[23]</sup>	*	*	6.4	*
Moldova <sup>[24]</sup>	13	11	*	10
Nigeria <sup>[9]</sup>	*	52.4	*	*
Saudi Arabia <sup>[26]</sup>	*	4.8	*	6.7
South Africa <sup>[27]</sup>	*	*	*	*
Tanzania <sup>[28]</sup>	*	52.3	*	*
Thailand <sup>[8]</sup>	8.4	*	*	*
Togo <sup>[29]</sup>	*	31.7	*	*
Uganda <sup>[31]</sup>	*	11	*	*

\*Cells indicate that data were not available

Table 8: Comparison of reasons for not donating blood

Country	Person is sick, or unsuitable/unfit (e.g., anaemic) (%)	Collection facility not accessible (%)	Do not have enough time to donate (%)	Concerned with sterility of equipment (may contact disease) (%)	No one ever asked (%)	Believe there is no need for blood (%)
Present study	26.8	1.0	2.0	4.6	9.8	1.4
Lucknow <sup>[32]</sup>	6.75	6.25	*	*	40.75	*
Bangladesh <sup>[16]</sup>	14.3	7.1	*	10.7	*	*
Chile <sup>[19]</sup>	64.2	*	*	73.4	*	*
China <sup>[20]</sup>	63.2	*	17	*	*	*
Haiti <sup>[21]</sup>	*	“Majority”	*	*	*	*
Iran 2006 <sup>[22]</sup>	*	9	27.6	*	*	3.1
Iran 2007 <sup>[23]</sup>	9.3	13.9	23.3	*	*	*
Moldova <sup>[24]</sup>	60	*	*	*	40	11
Pakistan <sup>[25]</sup>	*	*	*	*	51.6	*
Saudi Arabia <sup>[26]</sup>	*	*	*	*	42.6	*
South Africa <sup>[27]</sup>	*	*	2.5	*	*	*
Trinidad and Tobago <sup>[30]</sup>	23	28	*	*	*	54
Uganda <sup>[31]</sup>	2	55	*	*	*	*

\*Cells indicate that data were not available

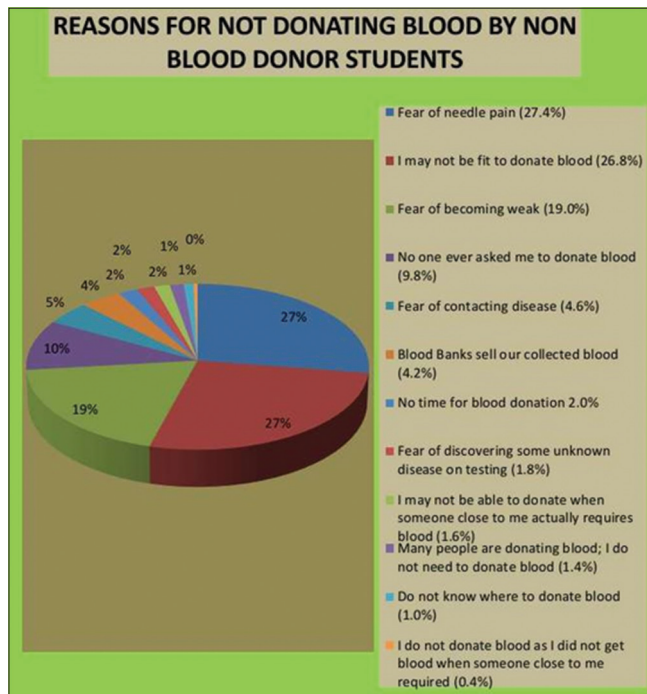


Figure 6: Pie chart showing percentage of reasons stated by nondonor as a reason for not donating blood

the sterility of equipment as compared to the participants in the present study.

No one ever asked for blood donation was the reason for not donating blood in the study by Dubey *et al.* from Lucknow,<sup>[32]</sup> Pakistan, Saudi Arabia, and Moldova; however, in the present study, this reason was stated by less number of participants.

## CONCLUSION

The most significant finding in the present study is the reasons brought out for not donating blood. The most common reason comes out to be related to health of the individual donor,

almost one in two college-going students (45.8%) fear that either they are not fit enough to donate blood (26.8%) or that they will become weak (19%) after blood donation. This observation is in contrast to the other study from India, where majority of participants responded that no one ever asked them to donate blood (40.8%), so they never volunteered. Therefore, it can be concluded from the findings of the present study that blood donor motivation, recruitment, and retention strategies should be more specific and focus on the myths and misconceptions prevalent in the donor demographic area. Such studies are recommended across different parts of the country with the aim of sampling all representative eligible blood donor population in order to generate evidence to formulate region-specific blood donor recruitment and retention strategies for a stable and sustainable blood supply.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

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