

# Blood Donor's Knowledge, Attitude and Practice Towards Blood Donation among Voluntary Blood Donors at Nepal Red Cross Society Central Blood Transfusion Service Centre

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## ABSTRACT

**Introduction:** Blood donation is the major source of blood as well as components of blood worldwide. Even though there are lots of promising components to substitute blood, a true component for blood and blood components is not available. Donated blood is an essential component in the management of many diseases. It is the core lifesaving component for an individual with loss of large volumes of blood from accidents, hemorrhages, or surgery. **Aims:** To evaluate the knowledge, attitude and practices of blood donors who visit blood bank. **Methods:** A cross-sectional study was done among 227 voluntary donors during six different Blood Donation Campaigns from March to October 2023. **Results:** A total of 227 blood donors participated in this research, with ages ranging from 19 to 60 years, and an average age of 34.7 years with a standard deviation of 8.77. Among all donors, the majority were male (71.4%), with females representing 28.6%. 1.3% of the donors were illiterate, while 26 % were literate. Additionally, 33% hold a secondary-level degree, 31.3 percent have a bachelor's degree, and 8.4 percent possess a master's degree or higher. The majority (46.7%) of the voluntary blood donors were from the service sector, 11% were students, 5.3% in business, 3.5% were engaged in agriculture and 1.8% working in foreign employment. The remaining 31.7% were involved in various other occupations. **Conclusion:** Almost 1/10<sup>th</sup>, 5% had adequate knowledge and 72% showed positive attitude related to blood donation in our study the level of blood donation practice was in majority of donor about 89%.

**Keywords:** Attitude, Blood donation, Hemorrhage, Knowledge, Practice

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## INTRODUCTION

Blood donation is the main source of blood and components of blood worldwide. Despite the availability of substitutes of blood, a true component for blood and its components is unavailable.<sup>1</sup> Donated blood is essential in management of many diseases. It is core lifesaving element for an individual with loss of large volumes of blood from accidents, hemorrhages or surgery.<sup>2</sup> Even though over a million blood units are collected every year, many more millions still need to be collected to meet the global demand.<sup>3,4</sup> The demand and supply are not being balanced as demand is accelerating. This is the reason why in Sub-Saharan Africa replacement and paid donors are common contrary to voluntary and non-remunerated donors.<sup>5</sup> Blood donation rate per 1000 people in high

income countries is more than fivefold compared to low-income countries (33.1 vs 4.6 donations). Voluntary blood donors are over 90% of donations in developed countries while they are below 50% in developing countries.<sup>6</sup> Nepal is a country with high maternal mortality (MMR). MMR in Nepal decreased from 539 maternal deaths per 100,000 live births to 239 between 1996 and 2016.<sup>7</sup> But there is insufficiency and inequity in access to blood. The average annual national requirement for blood in Nepal is 100,000 units per year, but only 43% is collected.<sup>8</sup> A healthy donor may donate red blood cells every 56 days, or double red cells every 112 days. A healthy donor may donate platelets as few as 7 days apart, but a maximum of 24 times a year.<sup>9</sup>

**METHODS**

A descriptive cross-sectional study was done and data were collected from 227 voluntary donors during six different Blood Donation Campaigns organized by the Nepal Red Cross Society Central Blood Transfusion Service Centre in Kalimati, Kathmandu, using the consecutive sampling method. The campaigns were conducted at the following locations: Nepal Nijamati Karmachaari Sanghathan, Maitighar; Nepal Commerce Campus, Minbhawan; Rastriya Baniija bank, Singhadurbar; Chakku Bakku Park, Baneshwor, Malpot Office, Kalanki and Bhugol Park, New Road, from March to October 2023.

Knowledge about blood was evaluated using 18 knowledge related questions, with each correct response receiving 1 point and each incorrect response receiving 0 points. The maximum achievable score was 18, and the minimum score was 0. To categorize knowledge levels, Bloom's cutoff points 17 were applied as follows:

- 80% - 100% correct responses corresponded to a score of 14-18, indicating good knowledge.
- 60% - 79% correct responses corresponded to a score of 11-13, indicating moderate knowledge.
- Less than 60% correct responses corresponded to a score of less than 11, indicating poor knowledge.

We assessed attitudes using 10 statement items measured on a 5-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree). The participants' scores from all 10 statements were summed up, and the average score was calculated. Participants who scored equal to or above the mean (40) were considered to have positive attitudes, while participants who scored below the mean were considered to have negative attitudes. In this study, participants' willingness to donate blood in the past and any adverse effects experienced after donation were assessed to gauge their practice regarding blood donation. Additionally, participants who had never donated blood were asked to provide reasons for their decision not to donate. Ethical approval was taken from Institutional Review Committee of Nepal Medical College.

**Inclusion criteria:** Individuals who give consent and agree to participate.

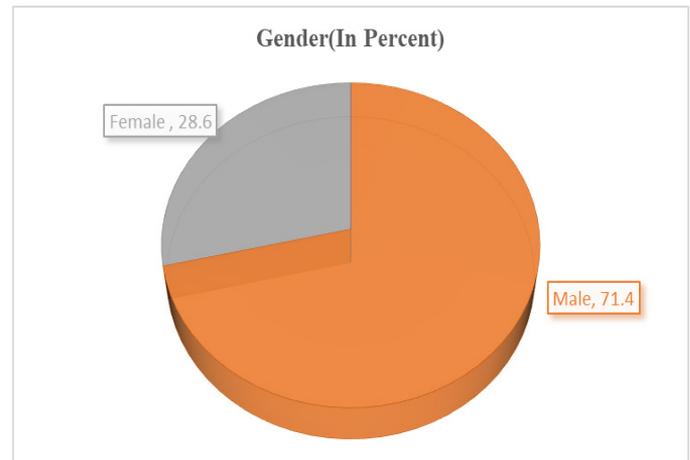
**Exclusion criteria:** Individuals who do not agree to participate.

Descriptive analysis was done by the use of frequency, percentage, mean, median, standard deviation and range as per the nature of data. Inferential analysis was done by the use of t- test, ANOVA and chi-square test as per the types of variables. Data was analyzed by using Ms - Excel and SPSS.

**RESULTS**

A total of 227 blood donors participated in this research, with ages ranging from 19 to 60 years, and an average age of 34.7

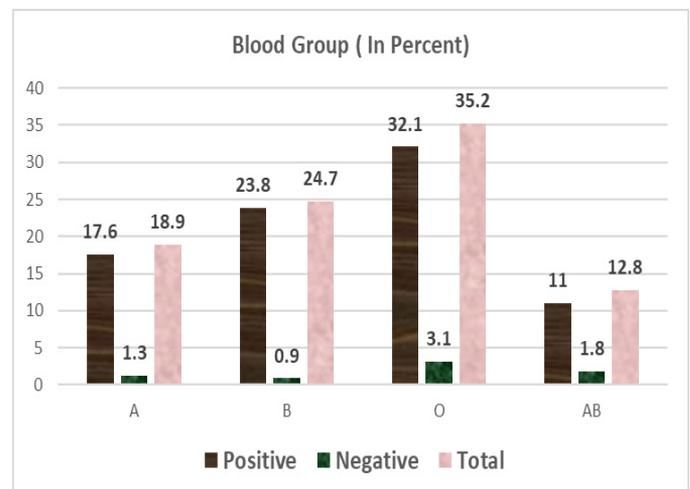
years with a standard deviation of 8.77. Among all donors, the majority were male (71.4%), with females representing 28.6%.



**Figure 1: Distribution of Donors based on Gender**

1.3 percent of the donors were illiterate, while 26 percent were literate. Additionally, 33 percent held a secondary level degree, 31.3 percent had bachelor's degree, and 8.4 percent possessed a master's degree or higher.

Voluntary blood donors made up 11% of the students, while those engaged in agriculture constituted 3.5%. The majority, 46.7%, were in the service sector, followed by 5.3% in business and 1.8% working in foreign employment. The remaining 31.7% were involved in various other occupations. Among all the donors 18.9% had blood type A (17.6% positive and 1.3% negative), 24.7% had blood type B (23.8% positive and 0.9% negative), 35.2% had blood type O (32.1% positive and 3.1% negative), and 12.8% had blood type AB (11% positive and 1.8% negative). Additionally, 8.4% of donors are unaware of their blood group.



**Figure 2: Distribution of Donors on the basis of Blood group**

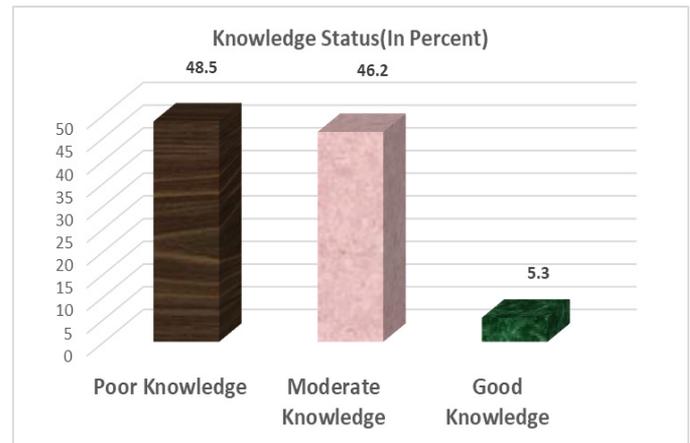
**Knowledge**

| Questions  | Correct Answer  | Frequency (%) |
|--|---|---------------|
| What is the age limit for donating blood?                                | 16 to 65 years  | 129 (56.8)    |
| What is minimum weight required for donating blood?                      | 110 pounds or 50 kgs  | 199 (88.7)    |
| What is minimum gap between two blood donations?                         | 8 weeks (56 days)   | 183 (80.6)    |
| What is the quantity of blood donated at a time?                         | 500 ml or 1 pint  | 29 (12.8)     |
| What are the screening tests for donation of blood?                      | Infectious diseases such as HIV, Hepatitis B and C, syphilis and sometimes Malaria                                      | 88 (38.8)     |
| As per WHO, what core tests are done on blood?                           | Infectious diseases such as HIV, Hepatitis B and C, syphilis and sometimes Malaria                                      | 166 (73.1)    |
| World Blood Donor's Day is observed on?                                  | 14th June   | 147 (64.8)    |
| Blood is collected from artery/vein?                                     | Vein  | 147 (64.8)    |
| How long blood can be preserved?   | Red – 42 days, Plasma and Platelets may be frozen for up to a year  | 13 (5.7)      |
| Can a person donate immediately after consumption of alcohol?            | No  | 211 (93.0)    |
| Which blood group is universal donor?                                    | O negative  | 199 (87.7)    |
| Infectious diseases transferred due to blood donation?                   | Yes   | 144 (63.4)    |
| Any complications of blood donation?                                     | Fainting, bruising at the donation site, and in rare cases, more serious reactions like allergic reactions or infection | 130 (57.3)    |
| Can a person donate his own blood beforehand, to use in his own surgery? | Yes   | 20 (8.8)      |
| In which anticoagulant is blood preserved in blood banks?                | CPD (Citrate Phosphate Dextrose) or ACD (Acid Citrate Dextrose)   | 56 (24.7)     |
| Is blood donation harmful to donor?                                      | No  | 199 (87.7)    |
| Is blood stored in blood bank safe?                                      | Yes   | 211 (93.0)    |
| Is blood donation painful procedure?                                     | No  | 209 (92.1)    |

**Table I: Knowledge about Blood donation (n= 227)**

Based on Bloom's cut-off scoring, approximately 49% had poor knowledge, followed by 46% at a moderate level, and less than

one-tenth possessed good knowledge (5%) about blood and blood donation. [Figure 5]



**Figure 3: Distribution of donors on the basis of knowledge status**

**Bivariate Analysis**

| Variables                         | Knowledge in Category            |                    |                | (P-Value) |                 |
|-----------------------------------|----------------------------------|--------------------|----------------|-----------|-----------------|
|                                   | Poor Knowledge                   | Moderate Knowledge | Good Knowledge |           |                 |
| Age                               | Below 25 years                   | 14                 | 16             | 0         | 3.621* (0.442)  |
|                                   | (25-40) years                    | 65                 | 68             | 9         |                 |
|                                   | Above 40 years                   | 31                 | 21             | 3         |                 |
| Education Level                   | Illiterate                       | 1                  | 1              | 1         | 16.871* (0.019) |
|                                   | Literate                         | 36                 | 23             | 0         |                 |
|                                   | Secondary level (Up to 12 class) | 26                 | 43             | 6         |                 |
|                                   | Bachelor level                   | 37                 | 30             | 4         |                 |
| Occupation                        | Masters and above                | 10                 | 8              | 1         | 17.362* (0.039) |
|                                   | Student                          | 7                  | 18             | 0         |                 |
|                                   | Agriculture                      | 2                  | 6              | 0         |                 |
|                                   | Service                          | 52                 | 45             | 9         |                 |
|                                   | Business                         | 10                 | 2              | 0         |                 |
|                                   | Foreign Employment               | 1                  | 3              | 0         |                 |
| Donor's history of blood donation | Others                           | 38                 | 31             | 12        | 1.848* (0.370)  |
|                                   | Yes                              | 95                 | 95             | 12        |                 |
|                                   | No                               | 15                 | 10             | 0         |                 |
| Post-Donation Adverse Events      | Yes                              | 37                 | 32             | 0         | 6.526* (0.038)  |
|                                   | No                               | 73                 | 73             | 12        |                 |

**Table II: Bivariate Analysis of Knowledge and different demographic and Practice related variables**

\*Fisher's Exact Test

The knowledge level of donors did not show significant associations with factors such as age group ( $\chi^2 = 3.621^*$ , p-value = 0.442) and previous blood donation experience ( $\chi^2 = 1.848^*$ , p-value = 0.370).

Nevertheless, a noteworthy relationship was observed between knowledge and variables such as education level ( $\chi^2 = 16.871^*$ , p-value = 0.019), occupation ( $\chi^2 = 17.362^*$ , p-value = 0.039), and post-donation adverse effects ( $\chi^2 = 6.526^*$ , p-value = 0.038).

**Attitude**

| Attitude Variables                                   | Level of Agreement (Likert Scale) |                     |                    |                  |                           |
|--|-----------------------------------|---------------------|--------------------|------------------|---------------------------|
|  | Strongly Disagree<br>No. (%)      | Disagree<br>No. (%) | Neutral<br>No. (%) | Agree<br>No. (%) | Strongly Agree<br>No. (%) |
| I am ready to donate blood within 6 months           | 5 (2.2)                           | 3 (1.3)             | 12 (5.3)           | 126 (55.5)       | 81 (35.7)                 |
| I believe donating Blood is noble act                | 4 (1.8)                           | 1 (0.4)             | 9 (4.0)            | 82 (36.1)        | 131 (57.7)                |
| If I donate blood, I will be saving lives            | 4 (1.8)                           | 8 (3.5)             | 76 (33.5)          | 77 (33.9)        | 62 (27.3)                 |
| I feel blood donation is painful                     | 5 (2.2)                           | 25 (11.0)           | 79 (34.8)          | 100 (44.1)       | 18 (7.9)                  |
| If I am paid for donating blood, I will donate more. | 6 (2.6)                           | 3 (1.3)             | 32 (14.1)          | 77 (33.9)        | 109 (48.0)                |
| Only physically strong people can donate blood       | 17 (7.5)                          | 12 (5.3)            | 45 (19.8)          | 121 (53.3)       | 32 (14.1)                 |
| Blood should be collected only from voluntary donors | 8 (3.5)                           | 6 (2.6)             | 57 (25.1)          | 103 (45.4)       | 53 (23.3)                 |
| Blood donation is extremely safe                     | 8 (3.5)                           | 4 (1.8)             | 31 (13.7)          | 76 (33.5)        | 108 (47.6)                |
| Someday I need blood transfusion                     | 5 (2.2)                           | 1 (0.4)             | 23 (10.1)          | 62 (27.3)        | 136 (59.9)                |
| Blood donation helps in blood purification           | 6 (2.6)                           | 4 (1.8)             | 36 (15.9)          | 116 (51.1)       | 65 (28.6)                 |

**Table III: Attitude of donors regarding blood donation (n = 227)**

| Variables                         | Attitude                         |                   | $\chi^2$ -Value<br>(P- Value) |                   |
|-----------------------------------|----------------------------------|-------------------|-------------------------------|-------------------|
|                                   | Negative Attitude                | Positive Attitude |                               |                   |
| Age                               | Below 25 years                   | 9                 | 21                            | 1.458<br>(0.482)  |
|                                   | (25-40) years                    | 43                | 99                            |                   |
|                                   | Above 40 years                   | 12                | 43                            |                   |
| Education Level                   | Illiterate                       | 0                 | 3                             | 2.942*<br>(0.561) |
|                                   | Literate                         | 20                | 39                            |                   |
|                                   | Secondary level (Up to 12 class) | 21                | 54                            |                   |
|                                   | Bachelor level                   | 20                | 51                            |                   |
|                                   | Masters and above                | 3                 | 16                            |                   |
| Donor's history of blood donation | Yes                              | 53                | 149                           | 3.467<br>(0.054)  |
|                                   | No                               | 11                | 14                            |                   |
| Post-Donation Adverse Events      | Yes                              | 25                | 44                            | 3.164<br>(0.054)  |
|                                   | No                               | 39                | 119                           |                   |

**Table IV: Bivariate Analysis of Attitude and different demographic and Practice related variables**

The study found that the attitude of donors towards donation was not significantly influenced by factors such as age group ( $\chi^2 = 1.458$ , p-value = 0.482), education level ( $\chi^2 = 2.942^*$ , p-value = 0.651), previous blood donation experience ( $\chi^2 = 3.467$ , p-value = 0.054) and post-donation adverse effects ( $\chi^2 = 3.164$ , p-value = 0.054).

| Practice related questions                     | Yes (%)   | No (%)      |
|--|-----------|-------------|
| Did the donor donate blood earlier?            | 202 (89%) | 25 (11%)    |
| Experiences of adverse effects after donation? | 69 (30.4) | 158 (69.6%) |

**Table V: Distribution of donors on the basis of practice related variables**

The majority of the donors (89%) had previously donated blood, while 11% were first-time donors. We also inquired about any adverse effects experienced after donation, with 30% responding affirmatively and 70% reporting no adverse effects. When we inquired about why they had not donated blood before, their responses indicated various reasons such as being below the minimum age, having low blood pressure, lacking the time, or simply not getting the opportunity.

**DISCUSSION**

The increasing demand for blood maintaining an adequate and

safe blood supply continuously is an alarming issue to health related planners. That's why understanding the knowledge, attitude, and factors associated with the practice of blood donation is essential. This study intended to evaluate knowledge, attitude, and practice of blood donation among blood donors of various blood collection centre of Kathmandu, Nepal. In our study most of the blood donors were male. Participant in the study (males: 104; females: 97) with pre-tested questionnaire was distributed and collected data was analyzed. High number of participants agreed about encouraging general public about voluntary blood donation (96%; 193/201), lack of awareness in general public (82%; 164/201). But not a single participant was able to respond to the knowledge part of the questionnaire with 100% accuracy. Almost all the participants had correct knowledge about blood groups (98%; 196/201) and blood matching need (195/201; 97%) Limayae D et al<sup>12</sup> did the study which is quite similar with our study.

Giri P, Phalke D<sup>13</sup> did a study in religious institutions in which there were 512 participants selected in the survey. The majority (92%) did not ever donate blood to anyone, yet over 42% wanted to be regular donors. More than 80% considered blood donation a moral responsibility and an Islamic act. The common reasons for not donating blood were lack of knowledge (40%), lack of opportunity (20%), thinking it was harmful to health (21%), fearing needles (16%) and no financial benefit (6%), more than 67% did not know their blood group, and about 61% of the respondents said they did not hear of or could not remember any blood donation program. This study reveals that many potential donors are being neglected, although they may be a valuable resource in addressing the ongoing blood donation issue. Amatya M et al<sup>8</sup> conducted a comparative study between two medical colleges to assess their knowledge and practice of blood donation. 106 students from Chitwan Medical College (CMC) and 173 from Nepal Medical College (NMC) were recruited with a total of 279 students. Amongst the two, CMC students had a higher average knowledge score and donated blood more often 50.9%. Different medical colleges differ in their knowledge, attitude and practice of blood donation.<sup>15</sup> In our study 5% had good knowledge followed by moderate level 46% and approximately 49% of populations have poor knowledge.

## CONCLUSION

Almost 1/10<sup>th</sup>, 5% had adequate knowledge and 72% showed positive attitude related to blood donation in our study. The most common reasons behind the poor knowledge about blood donating practice were lacking time, young age, low blood pressure and not having interest or not getting the opportunity.

## REFERENCES

1. Lowe KC, Ferguson E. Benefit and risk perceptions in transfusion medicine: blood and blood substitutes. *J Int Med* 2003;253(5):498–507.
2. WHO. WHO AFRO: blood safety. 2013. <https://www.afro.who.int/health-topics/blood-safety>. Accessed 25 Oct 2019.
3. Uma S, Arun R, Arumugam P. The knowledge, attitude and practice towards blood donation among voluntary blood donors in Chennai, India. *J Clin Diagn Res* 2013; 7: 1043–6.
4. Abderrahmana BH, Salehb MY. Investigating knowledge and attitudes of blood donors and barriers concerning blood donation in Jordan. *Procedia Soc Behav Sci* 2014; 116: 2146–54.
5. Osaro E, Charles AT. The challenges of meeting the blood transfusion requirements in Sub-Saharan Africa: the need for the development of alternatives to allogenic blood. *J Blood Med* 2011; 2: 7–21.
6. WHO. Blood safety and availability. Geneva: WHO; 2016.
7. Nepal Red Cross Society. Blood donation: general information. Kathmandu: Nepal Red Cross Society Central Blood Transfusion Service 2014: 44.
8. Amatya M. Study on knowledge, attitude and practice of blood donation among students of different colleges of Kathmandu, Nepal. *Int J Pharm & Biol Archives* 2013; 4: 424 – 28.
9. Amatya M, Gorkhali B, Mahotra N, Prajapati R, Yadav SR. Knowledge, attitude, and practice of medical students on blood donation: a comparison between two medical colleges of Nepal. *Int J Curr Res* 2013; 5: 2641-44.
10. Enawgaw et al. *BMC Res Notes* 2019; 12: 729.
11. Neupane P, Jha JP, Amgain K, Nepal R. Knowledge, Attitude and Practice of Blood Donation Among Health Science Students at Kathmandu: A Cross-Sectional Study. *Nepal Med J* 2022; 4: 75-9.
12. Limayae D, Naik P, Varekar T, Salunkhe P, Shah C, Sydymanov A. et al. Knowledge and attitude towards voluntary blood donation among students from Mumbai University. *Int J Sci Rep* 2018; 4: 142-6.
13. Giri P, Phalke D. Knowledge and attitude about blood donation amongst medical students. *Annals Trop Med Pub Heal* 2012; 5: 569-73.
14. Hussain MS. Knowledge, attitude, and practice towards blood donation among residential students and teachers of religious institutions in Bangladesh – A cross-sectional study. *Heliyon* 2022; 8:1-6.
15. Amatya M, Gorkhali B, Mahotra N, Prajapati R, Yadav SR. Knowledge, attitude, and practice of medical students on blood donation: a comparison between two medical colleges of Nepal. *Int J Cur Res* 2013; 5: 2641-4.
16. Pokhrel B, Pandey N, Parajuli K. Knowledge, Attitude and Practice regarding voluntary blood donation among the bachelor level students of Chitwan, Nepal. *J Med Col J Med Sci* 2015; 3: 21-8.
17. Alzahrani MM, Alghamdi AA, Alghamdi SA, Alotaibi RK. Knowledge and Attitude of Dentists Towards Obstructive Sleep Apnoea. *International Dental Journal* 2021; 5: 1-7.